

INDIA

**CONCEPTUALISATION, MEASUREMENT AND DIMENSIONAL
ASPECTS OF POVERTY IN INDIA**

by

**P.D. Joshi
Department of Statistics
India**

for presentation at

**Seminar on Poverty Statistics
Santiago
7-9 May 1997**

Conceptualisation, measurement and dimensional aspects of poverty in India

*National Sample Survey Organisation
Department of Statistics, New Delhi*

Abstract

This paper focuses mainly on the conceptual and measurement aspects of poverty and describes the methods of estimating the incidence of poverty in India. The sensitivity of movements in poverty to the methods used employing National Sample Survey data on consumer expenditure as available from different rounds at the all India level separately for the rural and urban sector has been presented for (a) judging the robustness in the pattern of poverty to the manner in which poverty is measured and (b) for drawing conclusion about progress in poverty alleviation. Trend in relative poverty employing different inequality measures has been presented. Lastly, efforts made on pilot basis for obtaining profile of the poor utilising National Sample Survey data on consumer expenditure and identification of poor families through below poverty line (BPL) census have been reported.

Introduction

Poor and poverty are historical in nature and their concern appears to be as old as human history. Generally, the terms are used as if their meanings are clear, but this is not so. The word “poor” is adjectival to the word “Poverty” and is realised as economic and or social difference between the human beings.

A poor person is one who does not have command over or access to the basic physical needs like adequate food, drinking water, clothing and shelter and social needs like education and health.

Poverty is visualised as “The state or condition of having little or no money, goods, or means of support or to a condition of being in want of something that is needed, desired or generally recognised as having value”. The meaning of poverty, therefore, not only varies from society to society but it also varies within the same society at different points of time.

Traditionally, poverty had been thought of in terms of relative deprivation. However, it sounds differently depending upon its context. Poverty exists in all countries and in all societies and has various aspects viz., lack of income, productive resources, hunger and malnutrition, illiteracy, homelessness and inadequate housing, unsafe environment, social discrimination and exclusion.

Study on the extent of poverty and a constant watch on it is therefore of great importance for (i) direction of effort required to alleviate poverty (ii) evaluation of the success or failure of government programmes and policies and the need for modifications in them and (iii) identification of the poor.

In a developing country like India, the problems of assessing the incidence of poverty are enormous, primarily because poverty is a multi-dimensional concept and the extent of poverty differs from one part of the country to the other. No single symptom of poverty can be relied upon for getting a realistic idea of the true incidence of poverty.

Conceptual and Measurement Approach

Poverty may be measured either in relative or in absolute terms depending upon whether it is related to the relative or the absolute concept of deprivation. This involves some element of arbitrariness for making it operational. The arbitrariness comes in determining “need” and in specifying the irreducible level of each need. In the absolute concept some absolute norm of income or consumption which determines the cut-off point or the line of demarcation between the poor and the non poor are laid down and all persons below demarcation line are considered as poor. The concept of relative poverty is related to inequality. Thus, whereas an absolute -poverty view point defines poverty as the inability of an individual’s income to meet the subsistence needs, a relativist view point defines poverty as a situation in which an individual’s income is low relative to some social standard.

Poverty reflects the deficiencies in the essential requirements of individuals. It refers to a situation in which the overall needs of an individual are not satisfied due to lack of adequate purchasing power. Monetary cut-off therefore could be fixed in terms of income or expenditure. Certainly, per capita income indicates the purchasing power of person but the individual utility depends on consumption expenditure. There is no consensus on the definition of poverty in India in terms of minimum per capita per month income. Reliable income data at the household level is not available as may be seen in Joshi (1996a). Further, income (even after correcting for prices) measures the potential consumption of the household or the individual. Poverty is not directly associated with regular cash income flow. On the other hand it is associated with the actual consumption of the individual or household. Consequently, expenditure is more immediate proxy measure than income. Further, income may be generated by individuals but the consumption is shared among the member of the household. It is unlikely that the household will be poor but not the individuals in it. Moreover, expenditure is more stable over time and probably reflects the permanent income of the household. Also, for the agricultural and other self employed households, it is broadly easier to recall expenditure. On the other side, income fluctuates according to season. Actual consumption expenditure determines the living standard and is not always met wholly out of current income and can also come from assets, debt and dis-savings. Thus, consumption expenditure is considered to be more appropriate and relevant than income for the purpose of directional idea on the level of poverty. The procedure followed is to define or fix a poverty line in terms of overall monthly per capita consumption expenditure, to update the same over time for price change employing price deflator and finally the dimension of poverty in absolute terms utilising the size distribution of Consumer Expenditure.

Several criteria may be used to define the Poverty Line. Important among them include:

- i. the proportion of expenditure taken up by specified essential items.
- ii. the Calorie value of food.
- iii. the cost of balanced diet.
- iv. the cost of essentials of a tolerable human existence.

The poverty line determined on the basis of first two criteria is independent of prices and hence comparable over time and space which is not the case with the last two ways of setting the poverty line. Again the monetary cut-off could be explicitly fixed in terms of calorie intake or in terms of balanced diet.

The available literature shows that the definition of poverty line has been viewed from two angles viz., the minimum level of living i.e. the cost of bundle of goods at the relevant prices and the inadequacy in food consumption expressed as the shortage of necessary energy intake in terms of nutritional requirement for healthy living. Given a “balanced” or “minimum” diet, the poverty line may be defined as that expenditure level at which households, on an average seem to have the specified diet which is not easy in practice to follow item by item. Further the cost of the specified diet as poverty line based on value judgement may not necessarily confirm to its prescribed composition. However, it only ensures amount of spending enough to provide balanced diet and it is by no means certain that balanced diet are purchased and consumed.

Poverty needs to be identified with deficiency in the total level of living which not only includes energy requirement but also balanced diet needed for health and the other basic needs essential for human existence at a tolerable level which would be difficult to define in terms of specified quantities and services.

In India, the derivation of the minimum normative absolute living standard in terms of per capita total expenditure (PCTE) or the absolute poverty line has also been focused from two alternative approaches viz., different descriptions of the minimum normative food basket and the calorie norm. However, there is no optimal diet and there is very little correlation between prices and calorie content of different food items as food habits of different individuals differ considerably.

Statistical Dimensions

The statistical dimension of poverty measured in terms of both absolute and relative employing expenditure approach have been focused from time to time by the national and international organisations, government bodies, social scientists, economists and researchers in their individual capacities. But these studies are based on different concepts of poverty line, different methods of estimation and measurement indicators. There has been a difference of opinion on the conceptualisation and measurement of poverty and in turn on the ways of setting the poverty line. The variations in conceptualisation and measurement approaches in defining the poverty line for a geographical area affects the spatial and inter

temporal comparison in regard to incidence of poverty. One should therefore be very careful while presenting data on incidence of poverty as the methodology and data used by different agencies/organisations are diverse.

The concepts, measurement and methodological issues relating to estimating of poverty in the Indian Context have been debated by a number of distinguished groups on the subject viz., Working Group (1962), Task Force (1979), Study Group (1984), Expert Group (1993) set up by the Government and also individual researchers. We, therefore present the changes in methodology of poverty estimates employing Head Count Ratio (HCR) and its implication under official and individual approaches. The sensitivity analysis on different measures of poverty has been presented in Joshi (1997).

Official Source

Concepts, methodologies and dimensions

Officially, the estimates of poverty are worked out by Planning Commission (PC), an official agency of the Government of India. Accordingly, the first attempt for ensuring a minimum standard of living was made in 1962 through a Seminar on “Some Aspects of Planning and a Study Group” on the subject. The group recommended:

“(i) The national minimum for each household of five persons (4 adult consumption units) should be not less than Rs.100 per month in terms of 1960-61 prices or Rs.20 per capita per month. For urban areas, this figure will have to be raised to Rs.125 per month per household or Rs.25 per capita to cover the higher prices of the physical volume of commodities on which the national minimum is calculated.

(ii) This national minimum excludes expenditure on health and education both of which are expected to be provided by the state according to the Constitution and in the light of the commitment.

(iii) An element of subsidy in urban housing will have to be included after taking Rs.10 per month or 10 percent as the rent element payable from the proposed national minimum of Rs.100 per month.

(iv) As a first exercise the target period by which the national minimum should be attained may be taken as fifteen years from 1960-61 to 1975-76”.

The basis of arriving at the monetary norms and the definition of minimum level of living is not available in published form. However a note from Planning Commission (1978) and Pant (1978) point out that the Working Group took into account the recommendations of a balanced diet made by the Nutrition Advisory Committee (NAC) of the Indian Council of Medical Research (ICMR) in 1958 and came to hold the above view. Later, the concept of poverty line was introduced on the recommendation of Task Force on “Minimum Needs and Effective Consumption Demands” as may be seen in Planning Commission (1979). The

contribution of the task force was to estimate daily per capita calorie requirement separately for rural and urban areas on the basis of age, sex and activity specific calorie allowance recommended by the Nutrition Expert Group (1968). Accordingly, norms of nutritional requirement for the rural and urban sectors were obtained as 2435 K-cal and 2095 K-cal respectively. These norms were derived by first deriving the age-sex activity specific composition of the rural and urban population by super imposing the census based activity pattern according to the age and sex on the projected rural and urban population.

The official approach to measurement of poverty therefore started by fixing a standard of calorie intake and observing the level of per capita consumption expenditure with which on the average, this calorie intake level is associated. Thus, an allowance for non food consumption also exist in the construction of poverty line through not on normative basis but on a behavioural basis. The poverty line at 1973-74 (base year) prices for the rural and urban sectors were worked out as Rs.49.09 and Rs.56.64 respectively utilising National Sample Survey data on consumer expenditure and using inverse interpolation method. This is incidentally in line with Bhattacharya, Roy Chaudhary and Joshi's (1980) estimate on the sectoral difference to the order of 16.5%, 15.2% in cost of living with Laspeyres, Paasche's and Fisher type indices respectively.

The poverty line so defined was updated over time by taking care of change in the price levels. Initially, the Wholesale price index was used to reflect the price changes for updating the poverty line over time and later shifted to implicit private consumption deflator from National Accounts Statistics for the year 1977-78 and onwards on the basis of the recommendation of a study group on "The Concept and Estimation of Poverty Line" set up by the Planning Commission (1984). In fact the recommendation of the Study Group was for the use of a price index approximately weighted by the consumption basket of the poor as an index for reflecting price changes relevant to the poor which was found, at that time to be very close to implicit private consumption deflator. Further for estimation of incidence of poverty in term of head count ration the use of National Sample Survey (NSS) data on size distribution of consumer expenditure with adjustment for differences in the two sets of estimate as available from National Accounts Statistics (NAS) and NSS was followed. The reason behind this was to have compatibility between the two sets of data in order to ensure consistency between the two important components of the plan model i.e. input - output table (based on NAS) and consumption sub model (based on NSS data). The procedure followed has been to adjust the expenditure level reported by the NSS uniformly across all expenditure classes by a factor equal to the ratio of the total private consumption expenditure obtained from the NAS to that obtained from the NSS. The old NAS series was used for deriving the adjustment factor for the estimate up to year 1983 and the new NAS series has been used for the year 1987-88. The population below poverty line was thus estimated by applying the updated poverty line to the corresponding adjusted NSS distribution of population by levels of consumption expenditure. To estimate the incidence of poverty at the state level all India poverty line and the adjustment factor were used on the state specific NSS distribution of population by level of consumption expenditure uniformly across the state. Planning Commission (1981) has also used the NSS 32nd round (July 1972-June 1978) data on consumer expenditure and applied a similar procedure resulting in rural poverty line of

Rs.76 per capita per month and urban poverty line of Rs.88 per capita per month. Table 1 provides poverty line (in Rs) and Head Count Ratio in per cent under different scenarios.

Table 1: Implications of adjustment of NSS distribution on poverty estimates

Place of residence	Poverty Line	Proportion of poor	Poverty Line	Proportion of poor	Poverty Line	Proportion of poor
	1977-78		1983-84		1987-88	
Unadjusted NSS distribution						
Rural	62.10	60.19	101.70	56.33	131.60	50.87
Urban	71.65	46.55	117.34	41.94	151.83	33.25
Adjusted NSS distribution						
A. Using New Series of NAS						
Rural	62.10	45.74	101.70	32.62	131.60	30.02
Urban	71.65	33.42	117.34	21.75	151.83	17.8
Adjustment factor	1.20			1.33		1.2
B. Using Old Series of NAS						
Rural	60.60	51.20	101.80	40.40	131.80	33.40
Urban	69.90	38.20	117.50	28.10	152.10	20.10
Adjustment factor	1.09			1.21		1.22
Adjusted distribution (using commodity specific adjustment factors)						
Rural	62.10	46.70	101.70	37.90	131.60	35.60
Adjustment factor	(1.18)		(1.25)		(1.19)	
Urban	71.70	32.00	117.30	22.80	151.80	20.00
Adjustment factor	(1.22)		(1.31)		(1.22)	

Note: Within brackets are commodity specific adjustment factors. Figures in bracket are adjustment factors.

Source: BANSIL, PC (1996): A Profile of the Visibly Poor, Techno Economic Research Institute, New Delhi.

However, the official method has been examined by several scholars including Sen Gupta and Joshi (1981), Minhas et al (1988, 89, 90, 91), Expert Group (1993) and Dandekar (1996). The grounds of difference include:

1. Derivation of calorific norms.
2. The procedure of adjustment of consumption expenditure generated by the National Sample Survey with the aggregate private consumption expenditure.
3. The choice of price deflators to represent changes in the poverty line.
4. The ignorance of between state price differences.
5. The uniformity of consumption basket over time.
6. The uniformity of consumption basket among the state.
7. Estimate based on the all India poverty line and the all India size distribution of per capita total expenditure (PCTE) vis-a-vis the population weighted average of state specific head count ratio using state specific poverty lines and state specific size distribution of PCTE.

The Planning Commission constituted an Expert Group in 1989 for looking the methodology of poverty estimation at national and state level and also to go in to the question of re-defining the poverty line. The group in their report submitted in 1993 recommended

- (i) Abandonment of NSS-NAS adjustment procedure.
- (ii) Derivation and application of state specific poverty lines as against an all India poverty line for rural and urban areas for working out state specific poverty estimates and its aggregation to derive national level poverty estimate.
- (iii) Use of state specific cost of living indices for updating the poverty line separately for rural and urban areas.

The recommendation was for the use of consumer price index number for Agricultural Labour (CPIAL) for updating the rural poverty line and a simple average of weighted commodity indices of consumer price index for industrial workers (CPIIW) and urban non manual employees (CPIUNME) for updating the urban poverty line. Recently, the Planning Commission (1997) has accepted the recommendations and the methodology adopted by the Expert Group with a slight modification in adopting the price deflator for updating the poverty line in the urban sector. Accordingly, the most recent official methodology (Modified Expert Group) uses (CPIIW) instead of weighted average of CPIIW and CPIUNM along with the other recommendations made by the Expert Group in working out the poverty estimates for the rural and urban areas at the state level and it's aggregation for national level. We have, therefore, presented the trends in incidence of poverty as measured by Head Count Ratio under the aforesaid scenario in table 2.

Table 2: Poverty line (in Rs.0.00) per person per month as available from Planning Commission, Expert Group, and Planning Commission modified recently

Year	Item	EG		PC		PCM	
		R	U	R	U	R	U
1973-74	PL	49.63	56.96	49.10	56.60	-	-
	HCR	56.44	49.23	56.44	49.23	56.64	49.01
1977-78	PL	56.84	72.50	62.10	71.65	-	-
	HCR	53.07	47.40	51.20	38.20	53.07	45.24
1983	PL	89.45	117.64	101.70	117.34	-	-
	HCR						
1987-88	PL	115.43	165.68	131.80	152.10	-	-
	HCR	39.06	40.12	33.40	20.10	39.09	38.20
1993-94	PL	-	-	-	-	-	-
	HCR	37.27	33.66	19.24	10.11	37.27	32.36

Source:

GOVERNMENT OF INDIA, PLANNING COMMISSION (1993) Report of the Expert Group on Estimation of Proportion AND NUMBER OF POOR.

GOVERNMENT OF INDIA PLANNING COMMISSION (1997): Press release on Estimate of Poverty, perspective Planning Division, New Delhi, 11th March.

Alternative source

Several studies on conceptual and measurement aspects pointing dimensional differences in incidence of poverty have been reported as may be seen in Sen Gupta and Joshi (1981) and Joshi (1997). Important among them include Dandekar and Rath (1971), Minhas (1970, 1971), Bardhan (1970, 1973, 1974), Ojha (1970), Bhatta (1974), Rudra (1974), Ahluwalia (1978), Rao (1977), Sen (1973), Srinivasan (1977), Sen Gupta and Joshi (1981).

Minhas (1970, 71) assumed the minimum level of consumption i.e. the cut-off point at Rs.200 and Rs.240 per capita per annum for the base year 1960-1961 and obtained the estimated number of poor persons. Bardhan (1970) considered Rs.15 per person per month as the minimum at 1960-61 prices. Dandekar and Rath (1971) utilised nutritional norm of 2250 K.Cal for defining poverty line and the population lying below this level of expenditure was estimated for 1960-61. Sukhatme (1977, 78) criticised the use of average nutritional requirement in defining the poverty line and thereby deriving the extent of poverty. He argued for considering the minimum requirement for accounting intra individual variation in calorie requirement in defining the poverty line which has not been supported for working out poverty estimates utilising NSS Consumer expenditure data as may be seen in Sen Gupta and Joshi (1981), Dandekar (1981, 82, 1996).

Minhas et al (1987, 89, 90, 91) constructed the cost of living indices for the middle range of the rural (CPIMR) and urban population (CPIMU) and applied for updating the poverty line for obtaining the Head Count Ratio. The indices relate to the periods of National Sample Survey for the year 1970-71 to 1987-88 and are based on retail price data for two alternative weighting diagram relating to the base year or 1970-71 and 1983. Table 3 presents poverty line per person per month and head count ratio under alternative estimation procedure.

Table 3: Poverty line (in Rs.0.00) per month per person and Head Count Ratio (in percent) for selected rounds of NSS based on Minhas and alternative methodology: All India

Year	Rural	Urban
	Poverty line*	
1970-71	33.01	39.04
1983	93.16	111.25
1987-88	122.63	158.31
	Head Count Ratio: Minhas procedure	
1970-71	57.33	45.89
	(58.75)	(46.17)
1983	49.02	38.33
	(50.77)	(39.74)
1987-88	44.88	36.52
	(48.69)	(37.76)
	Head Count Ratio: Alternative procedure	
1983	40.40*	28.10
	(40.50)*	(26.70)*
	(56.50)**	(42.30)**
1987-88	32.70	19.40
	(29.33)*	(17.57)*
	(51.00)**	(33.47)**

Data source: Minhas, Jain and Tendulkar (1991): Declining incidence of poverty in the 1980s, Evidence Versus Artefacts; EPW July 6-13, pp

- These are based on the Planning Commission poverty lines of monthly per capita total expenditure PCTE of Rs.49.09 and Rs.56.64 for all India rural and urban population at 1973-74 prices.

NB:

1. Figures in bracket are the estimate aggregated for 20 states.
2. Figures with an asterisk mark relate to HCR as officially reported.
3. Figures in bracket with an asterisk mark and double asterisk relate to HCR using official price adjustment with an without prorata adjustment factor.

Sen Gupta and Joshi (1981) estimated the incidence of poverty for the rural and urban sectors of India at the regional level with uniform norm of calorie requirement (2200 k-cal) utilising NSS 27th round (Oct. 1972 - Sept. 1973) data. The choice of 27th round data was on the ground of large sample size (72270 rural households and 52820 urban households) and availability of data for one full year for standardising the Consumer basket at the all India level and to estimate state specific/region specific poverty lines.

Estimates of poverty line over time can be made in two ways: (i) the poverty line as estimated for the base year (1972-73) can be adjusted for changes in prices over time and differences in prices across states; (ii) fresh poverty lines, all India and state specific can be calculated from the latest available consumer expenditure survey data. Method (i) allows only for change in prices which the consumption basket is kept as it was in the base year (1972-73). This makes the poverty line comparable over time and across states in the sense in which price index numbers are comparable over time. On the other hand, method (ii) allows for changes in the consumption basket keeping the calorie norm unchanged.

Table 4 and 5 presents the poverty line and incidence of poverty with varying calorie norms (as nutrition recommendations are tentative and subject to variation over time) under the scenario of (a) fixed basket of commodities and (b) varying basket of commodities for inter temporal changes utilising National Sample Survey data of different rounds on consumption expenditure. Consumer price index for Agricultural Labourer and Consumer price index for Industrial Workers have been used as price deflators for updating the poverty lines.

Table 4: Poverty line (in Rs.0.00) at different levels of calorie requirement in the rural and urban sector for selected rounds of NSS under the scenario of (a) fixed basket of commodities and (b) varying basket of commodities: All India

Norm of calorie requirement	Basket of Commodities	Round (year)				
		27 (Oct72-Sept73)	32 (July77-June78)	38 (Jan-Dec83)	43 (July83-June84)	50 (July93-June94)
Rural						
2400	fixed	44.58	61.25	96.92	123.31	217.59
	varying	44.58	60.64	74.27*		324.26
2200	fixed	38.21	52.50	83.07	105.69	186.50
	varying	38.21	51.36	62.57		262.78
2000	fixed	32.57	44.75	70.81	90.09	158.97
	varying	32.57	43.29	52.48		209.00
1800	fixed	27.41	37.66	59.59	75.82	133.79
	varying	27.41	36.02	43.52		191.28
Urban						
2200	fixed	61.31	89.21	145.61	204.71	356.64
	varying	61.31	75.27	99.33	na	462.30
2100	fixed	55.71	81.06	132.31	186.02	324.06
	varying	55.71	68.31	88.38		399.96
2000	fixed	50.12	72.92	119.04	167.35	291.55
	varying	50.12	62.32	79.24		339.55
1800	fixed	38.42	55.90	91.24	128.28	223.49
	varying	38.42	51.10	62.45		252.55

Data Source:

GOVERNMENT OF INDIA, NATIONAL SAMPLE SURVEY ORGANISATION (1983): Survey results on per capita per diem intake of calories, protein and fat based on NSS 27th round (Oct. 1972-Sept 1973) data.

GOVERNMENT OF INDIA, NATIONAL SAMPLE SURVEY ORGANISATION (1986): Per consumer unit per diem intake of nutrients. Thirty second Round (1977-78), NSS Report N° 329, Department of Statistics, New Delhi.

GOVERNMENT OF INDIA, NATIONAL SAMPLE SURVEY ORGANISATION (1988a): Per capita and per consumer unit per diem intake of calorie, protein and fat and perception of people on adequacy of food - Thirty Eighth Round (1983), NSS Report N°348, Department of Statistics, New Delhi.

GOVERNMENT OF INDIA, NATIONAL SAMPLE SURVEY ORGANISATION (1996b): Survey Results on Nutrition Intake in India based on NSS 50th Round (July 1993 - June 1994) Report N° 405 April.

Table 5: Incidence of Poverty (in per cent) in terms of Head Count Ratio for the poverty line defined at different levels of calorie requirement in the rural and urban sector for selected rounds of NSS under the scenario of (a) fixed basket of commodities and (b) varying basket of commodities: All India

Norm of calorie requirement	Basket of Commodities	27 (Oct72-Sept73)	32 (July77-June78)	38 (Jan-Dec83)	43 (July83-June84)	50 (July93-June94)
Rural						
2400	fixed	64.78	59.21	51.44	45.30	42.17
	varying	64.78	58.51	30.43	na	74.72
2200	fixed	52.50	46.61	39.37	31.51	28.53
	varying	52.50	44.92	18.89	na	59.01
2000	fixed	39.88	33.83	26.91	19.26	15.88
	varying	39.88	31.31	10.46	na	38.66
1800	fixed	26.52	19.53	16.08	10.53	6.95
	varying	26.52	19.01	5.19	na	30.86
Urban						
2200	fixed	63.75	61.70	58.12	54.27	49.49
	varying	63.75	50.16	29.65	na	66.53
2100	fixed	58.70	55.75	51.14	48.04	42.42
	varying	58.70	42.99	32.45	na	57.72
2000	fixed	50.71	47.93	43.21	40.36	34.83
	varying	50.71	36.18	15.83	na	45.87
1800	fixed	31.71	28.60	23.92	21.78	17.87
	varying	31.31	22.66	6.26	na	25.84

Data Source:

GOVERNMENT OF INDIA, NATIONAL SAMPLE SURVEY ORGANISATION (1979): Survey results on consumer expenditure based on NSS 27th round (Oct. 1972-Sept. 1973) data, Sarvekshana. The Jour. of NSSO, Vol.II, N°3, issue N°7, January.

GOVERNMENT OF INDIA, NATIONAL SAMPLE SURVEY ORGANISATION (1986a): Survey results on consumer expenditure based on NSS 32nd round (July 1977-June 1978) data, Sarvekshana, The Jour. of NSSO Vol.IX, N°3, N°26, January.

GOVERNMENT OF INDIA, NATIONAL SAMPLE SURVEY ORGANISATIONS (1986c): Survey results on Consumer expenditure based on NSS 38th round (January-December 1983) Sarvekshana, The Jour. of NSSO, Vol. IX, N°4, Issue N°27, April.

GOVERNMENT OF INDIA, NATIONAL SAMPLE SURVEY ORGANISATION (1990): Survey results on consumer expenditure based on NSS 43rd round (July 1987 - June 1988) Sarvekshana, The Jour. of NSSO, Vol.XVII, N°2 Issue N°57, October-December, 1993.

GOVERNMENT OF INDIA, NATIONAL SAMPLE SURVEY ORGANISATION (1996a): Survey Results on Level and Pattern of Consumer Expenditure, NSS 50th Round, July.

Relative Poverty

Attempts have been made in the past by researchers to study the sectoral, spatial and inter-temporal changes in the pattern of consumer expenditure distribution as available from different rounds of National Sample Survey employing different inequality measures.

However, it is being felt that the inequality is widening because of the feelings of relative deprivation of persons in a society arising out of the comparison of his situation with those of better off persons. The undoubted existence of wide spread poverty in the country is constantly forcing for its watch in terms of both absolute and relative dimension as well, for its remedial measures. In the context of poverty alleviation, the conceptual and measurement problems for poverty measurement in absolute terms had brought the concept of relative poverty closure to the concept of inequality. As the concept of relative poverty is closely related to the concept of economic inequality, an idea of relative poverty for its inter-temporal changes may be obtained from the share of decile groups of population in total consumer expenditure and through inequality measures applied to NSS consumer expenditure data of different rounds which may be seen in tables 6 and 7 respectively.

Table 6: Percentage share in total consumer expenditure of decile groups of population by place of residence

Deciles of population	place of residence	Percentage share in total consumer expenditure				
		1972-73	1977-78	1983	1987-88	1993-94
0 - 10	Rural	3.8	3.5	3.8	4.0	4.1
	Urban	3.5	3.2	3.4	3.4	3.4
10 - 20	Rural	5.3	4.9	5.2	5.3	5.4
	Urban	4.7	4.5	4.6	4.6	4.6
20 - 30	Rural	6.3	5.9	6.2	6.2	6.4
	Urban	5.7	5.4	5.5	5.4	5.4
30 - 40	Rural	7.0	6.5	6.9	6.9	7.1
	Urban	6.0	6.3	6.7	6.1	6.4
40 - 50	Rural	8.0	7.5	8.0	7.8	8.0
	Urban	7.7	7.1	7.1	7.1	7.3
50 - 60	Rural	8.5	8.3	9.0	8.8	8.9
	Urban	8.1	8.4	8.2	8.3	8.4
60 - 70	Rural	9.6	9.6	9.9	9.8	10.0
	Urban	10.1	9.4	10.3	9.6	9.8
70 - 80	Rural	11.8	11.4	11.7	11.6	11.6
	Urban	11.4	12.5	11.4	11.6	11.8
80 - 90	Rural	14.3	14.1	14.4	14.2	14.0
	Urban	15.2	14.2	15.0	15.1	15.2
90 - 100	Rural	23.4	28.4	24.7	25.3	24.3
	Urban	27.6	29.0	27.9	28.9	27.7

Data source:

1. GOVERNMENT OF INDIA, PLANNING COMMISSION (1993): Report of the Expert Group on Estimation of Poverty and number of poor.
2. GOVERNMENT OF INDIA, NATIONAL SAMPLE SURVEY ORGANISATION, (1996): Level and pattern of consumer expenditure, NSS 50th round (July 1993 - June 1994), Report N°402.

Table 7: Trends in inequality in size distribution of consumption expenditure by place of residence for different rounds of NSS: All India

Inequality measure	Place of residence	period (round)					
		1972-73 (27 th)	1977-78 (32 nd)	1983 (38 th)	1987-88 (43 rd)	1993-94 (50 th)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
1. Coefficient of variation	Rural	0.74	0.93	0.64	0.63	0.59	
	Urban	0.78	0.81	0.66	0.81	0.72	
2. Standard deviation of logarithms	Rural	0.53	0.57	0.52	0.27	0.41	
	Urban	0.46	0.61	0.57	0.27	0.54	
3. Relative mean deviation (Kuznet's measure)	Rural	0.42	0.48	0.42	0.22	0.40	
	Urban	0.49	0.50	0.47	0.25	0.49	
4. Gini Coefficient	Rural	0.31	0.32	0.34	0.29	0.28	
	Urban	0.34	0.34	0.33	0.35	0.34	
5. Aitkinson's measure	(i) e=0.5	Rural	0.0772	.1023	.0730	.0863	.0660
		Urban	0.0958	.0962	.0852	.1040	.0933
	(ii) e=2.0	Rural	0.2448	.2910	.2385	.2342	.2109
		Urban	0.2901	.3080	.2792	.2993	.2890
	(iii) e=3.0	Rural	0.3295	.4051	.3222	.3035	.2799
		Urban	.3756	.4446	.3696	.2995	.3733
6. Share of consumption	(i) bottom 10% pop.	Rural	3.8	3.5	3.8	4.0	4.1
		Urban	3.5	3.3	6.5	3.4	3.4
	(ii) bottom half pop.	Rural	30.4	9.6	30.2	30.2	31.0
		Urban	27.6	27.5	27.9	26.8	27.1
	(iii) top 10% pop.	Rural	23.4	28.5	24.5	25.3	24.3
		Urban	27.5	28.2	26.8	28.9	27.7

Data source:

GOVERNMENT OF INDIA, NATIONAL SAMPLE SURVEY ORGANISATION: Tables with notes on Consumer expenditure, 27th round Oct. 1972-Sept. 1973), Report N°284.

GOVERNMENT OF INDIA, NATIONAL SAMPLE SURVEY ORGANISATION: Report on the second quinquennial survey on Consumer expenditure, 32nd round (July 1977 - June 1978), Report N° 311.

GOVERNMENT OF INDIA, NATIONAL SAMPLE SURVEY ORGANISATION: Report on third quinquennial survey on Consumer expenditure, 38th round (Jan - Dec. 1983).

GOVERNMENT OF INDIA, NATIONAL SAMPLE SURVEY ORGANISATION: Report on the Fourth quinquennial survey on Consumer expenditure, 43rd round (July 1987 - June 1988), Report N° 373.

GOVERNMENT OF INDIA, NATIONAL SAMPLE SURVEY ORGANISATION: (1996): Level and Pattern of Consumer Expenditure, 50th round (July 1983 - June 1984), Report N° 402.

There has been a debate on the relationship between poverty, living standards and under nutrition mainly because the concept of poverty has its linkage with “expenditure” and the “purchasing power” of that expenditure. However, the phenomenon of poverty and

phenomenon of under nutrition are not the same. Depending upon the consumer behaviour of different households, some households even with relatively low income are able to provide themselves with adequate nutrition while the some had income but do not do so because of ignorance and improvidence. The definition of calorie based poverty line rests on the argument that consumer behaviour varies from household to household and therefore an expenditure level at which actual data show that on an average a household with that level of consumption expenditure providing adequate nutrition to its members may be chosen as adequate calorie intake. Usually adequate calorie intake also insures adequate supply of other nutrients. It is being argued that the concept of poverty needs to be broadened and delinked with the concept of food poverty from poverty in general. This is possible by observable characteristics and may be checked through socio-economic parameters as many of the parameters are not dependent on the individual viz. social group, principal occupation of the household etc. Further the cash out flows incurred by the household on health, education and housing gets birth to some extent in the concept of poverty line but the concept of free and subsidised goods and services such as water, sanitation, health and education provided by the Government and/or charitable institutions do not get reflected in the concept of poverty line. The reason being that the elements of living environment such as health services, education, drinking water, access to transportation, communication and information, which contribute significantly to social and human development, cannot be quantified.

Expectation of a society changes with the passage of time and therefore inter temporal comparison or comparison between different societies will not be valid if poverty is thought of in terms of relative deprivation defined with reference to some average expectation of society.

Let us now look in to the problem. The first question is why should there be an attempt to determine a poverty line and to estimate the population below the poverty line? In a welfare state, it is always and should always be a matter of great concern if a large chunk of the population remains under nourished. The population of a country is not only a consuming mass but it is also a productive asset. Hence there should be a continuous watch with a view to maintain the quality of the population. We have seen that the population estimate below the poverty line is quite high in India. so the question naturally arises whether any further sophistication is immediately needed for relatively more precise and objective definition of poverty line compared to the on going concept which has several advantages:

1. It is a well defined indicator and can be determined on more or less objective basis.
2. Nutrition is the basic need which has to be met by the household itself, hence facilities are needed to identify the households or the population not being able to meet that requirement.
3. The specific advantage with the method is that the estimate are based directly on the quantity of various food articles, hence the inter regional variations can be directly measured (in money terms however the poverty line may differ in different regions because of the existence of price differential).

4. It takes into account the money value required to purchase the food items for meeting the recommended energy level with the experience on other non food items.
5. Moreover, in a consumer expenditure survey, the expenditure on food and non food items are collected and hence it is possible to determine the total household expenditure and also the expenditure on non food items at the critical level of nutritional intakes defining the poverty line. Thus, there is a built in provision to get a dimensional idea about the consumption expenditure incurred on non food items.
6. Whereas there is scientific basis for deriving the minimum basic need for food, there is hardly any method to determine the norms for the non food items. Clothing is a basic need but what should be the minimum requirement of clothing is anybody's guess. It depends upon the quality of the cloth, climatic condition of the place of living, working status of the person, the society in which the person lives and so on. All these factors complicate the situation making it all the more difficult for evaluation of the minimum requirement of the basic need.

Thus, in the absence of any other suitable life index and looking towards the limitations of NSS data on consumer expenditure, the poverty line approach using available NSS data for determining the extent of poverty may be considered as the best one.

Identification of Poor

Official Approach

In the context of poverty alleviation programme in India, the official approach for identification of poor and the allocation of funds to the state Government under social sector development scheme, rests on Below Poverty Line (BPL) Surveys (actually census) in the rural sector and the official estimate of poverty. BPL census is being conducted by the state as per guidelines given by the centre which involves a cut-off point of an annual household income equivalent to expenditure per family for segregating the families (a) above poverty line and (b) below poverty line classified in to four categories viz., destitute; very very poor, very poor and poor.

The procedure adopted is as under:

- i. The priority list of poor families is prepared by Block Development Officer (BDO) giving special emphasis to outlying hamlets, women headed households and nomadic families.
- ii. The said list is then placed for approval in the meeting of the village assembly (Gram Sabha). This meeting is convened by BDO giving sufficient publicity through local means.
- iii. The village assembly is attended by local people, non officials, Blocks Officers and Bank Officers. Prominent voluntary action groups etc. are also associated with these meetings.
- iv. The list of beneficiaries selected at this village assembly is displayed on the notice board of the village Panchayat and Block office. Sufficient time is given for filling objections. In case of any dispute regarding any name in the list it is decided by the Project Director in consultation with BDO.

- v. The list of beneficiaries finally selected (master list) is got printed block wise by the Programme Implementation authorities and copies are made available to the field staff, block officials, bank and other concerned authorities.

This approach has posed serious questions in the identification of poor from the point of problems associated with the ascertainment of annual income of household which is known to be extremely difficult for many types of (rural) households. Even today, the NSS organisation has not evolved a satisfactory methodology for conducting household income survey in the country as may be seen in Joshi (1996a). Further the approach followed suffer from the point of widely varying household size and inherent bias of the respondents in giving information which would enable them to obtain the prescribed benefit. Much of the such classification of households are likely therefore, to arrive through a neglect of prescribed procedure, perception of the methodology used for estimation purposes, survey design and nature of data collected resulting in favour of non poor households for assistance under the programme. Attempts are therefore being made for including information on several identification variables for inclusion/exclusion criterion and also on consumption expenditure for launching a fresh BPL census in the rural sector.

Another approach for identification of poor households followed on pilot basis in the state of West Bengal as reported in Rudra et al (1994) included canvassing of two sets of schedules, one on "Household Expenditure" and the other on "Fulfilment of Basic Needs". The survey was conducted in the rural areas or 5 districts (19 villages) covering four regions during June 1990 - May 1991. Out of 4 regions covered in the surveys, the two regions were comprised of mainly non tribal cultivation based communities. The other two regions were comprised of partly hilly with some tribals and many tribals dependent on the forest. Good representation of households belonging to different social groups was ensured. The sample was drawn with a view to take in to account the various environmental, socio-economic and cultural factors. The Complete list of all households residing in each sample village was prepared and the non poor households were eliminated using several criteria viz., the possession of a pucca (well built) residential house, more than one set of plough, electricity in the house, etc. Finally, the sample households were chosen from the remaining households - the relatively poor households - separately for each village by circular systematic sampling in the form of two independent and interpenetrating sub samples. The total number of households, the number of relatively poor households and the number of households selected were 2598; 987 and 632 respectively.

Information through questionnaire approach in the forms of Yes/No were obtained from the basic needs enquiry viz.,

1. Consumption of meat, fish and egg during last month.
2. N° of bedrooms (<1) per family.
3. Room height (<1.68 meters).
4. Adequacy of dwelling for protection against room shows.
5. Woolen garments in the household.
6. N° of woolen garments (<1) per person.

7. Number of saris or similar garments (<2) per adult female.
8. Mattresses in the bedding.
9. Lack of blankets, quilts in the households.
10. N° of dining plates (<1) per adult member.
11. School education for child of age group 6-14.
12. Availability of two squares meals a day through out the last year and if not, whether the number of months when they did not get this was >2.
13. Availability of milk every day for children in the age group (0-4).
14. Member of household engaged in begging.
15. Availability of special food before and after delivery for female member who conceived during last three years.
16. Whether or not the household procured food items as gift or loan from some other household during last month.
17. Whether or not the household usually obtained food items by free collection from months or from land belonging to other.

The above 17 poverty indicators were closely related. The households were assigned by the deprivation score and simple criteria based on pragmatic consideration was followed for the 1st, 2nd and 3rd level of poverty.

The first level of poverty was defined as ultra poor on the basis of non meeting of at least one of the following three criteria.

1. Availability of two squares meals a day for more than two months during the last 365 days.
2. Availability of saris or similar garments per adult female in the housing falling short of 2.
3. Member of household reporting begging.

The second level of poverty was arrived by classifying few indicators and deprivation score of identified indicators were obtained for households which did not have two square meals a day by number of months. The second level of poverty included the households with deprivation score 4 or more and the number of months without two square meals a day was 2. The third level of poverty was defined by deprivation score of 1-3 and the number of months without two square meals a day was 0 or 1.

Other Approaches

Recently Bansil (1996) has made a study sponsored by Planning Commission, an official agency of the Government of India, on "Profile of the Visibly Poor" utilising the information on characteristics of households as available from the Household Consumption Expenditure Survey (HCES) conducted by National Sample Survey Organisation (NSSO) in its 43rd round (July 1987 - June 1988) for the purpose of identification of poor in formulating appropriate policies in the context of poverty alleviation.

The study has been carried out at the regional level for the rural and urban areas in three states viz., Bihar, Maharashtra and Himachal Pradesh. These states were chosen on the ground of varying levels of development and poverty. The study is based on 24 characteristics viz., Caste, Religion, Activity, Sex, Family Size, House, type of dwelling, type of house, floor type, condition of house, source of energy, source of high living, milk animals, draught animals, land, land possessed categories, crops grown, income source, member working on public work, assistance during the last 5 years under IRDP, household purchases from rationshop, consumption of alcoholic beverages, consumption of fruits and journey undertaken in last 30 days. In all 17 items in the rural sector and 12 items in the urban sector were identified.

The available items of information was analysed for bottom and top 20 percent of households ranked by monthly per capita household total expenditure and the contrast has been measured in terms of ratio and the difference from the mean. Accordingly, two indices viz., Indicator Ratio (IR) and Distance Index (DI) were computed. Indicator Ratio (IR) was defined as the ratio for the indicator of the bottom two deciles and top two deciles expressed in percent. Distance Index was defined as the ratio of the distance of the value of two top and bottom deciles from the mean value expressed in percent. The higher value of these indices have been attributed for higher prevalence of that attribute among the poor as compared to the non poor and vice versa. For the state studied, the values of (i) IR greater than 130 and less than 70 (ii) DR greater than 150 and less than 75 were considered criterion for inclusion and exclusion of indicator respectively.

Bibliography

- AHLUWALIA, M.S. (1976): Inequality, poverty and Development. Journal of Development Economics. Vol.3. N°3.
- AHLUWALIA, M.S. (1978a): Rural Poverty in India: 1756-57 to 1973-74 in India: Occasional Papers. Staff Working Paper. Washington, D.C., World Bank, pp 1-92.
- AHLUWALIA, M.S. (1978b): Rural poverty and Agricultural Performance in India. Journal of Development Studies, 14, 298-323.
- AHLUWALIA, M.S., CARTER N.G. AND CHENERY, H.B. (1979): Growth and Poverty in developing countries. Journal of Development Economics vol. 6. pp 349-361.
- AITKINSON, A.B. (1970): On the Measurement of Inequality. Journal of Economic Theory. Vol. 2. pp 244-263.
- AITKINSON, A.B. (1975): The Economics of Inequality, Oxford University Press.
- AITKINSON, A.B. (1991): Comparing poverty rates internationally: lesson from recent studies in developed countries. World Bank Economic Review, 5: 3-22.
- AITKINSON, A.B. (1992): Measuring Poverty and Differences in Family, Economic Research Institute, New Delhi.
- BANSIL, P.C. (1996): A Profile of the Visibly Poor, Techno Economic Research Institute, New Delhi.
- BARDHAN, P.K. AND SRINIVASAN, T.N. (1971): Income Distribution. Pattern Trends and Policies, E.P.W. April 24. Vol. VI.
- BARDHAN P.K. (1970): On The Minimum Level of Living and The Rural Poor Indian Economic Review. Vol. 5. N° 1.
- BARDHAN, P.K. (1973): "On the Incidence of Rural Poverty in Rural India in the Sixties", Economic and Political WEEKLY, ANNUAL N° 8, 245-255.
- BARDHAN, P.K. (1974), "Pattern of Income Distribution in India, a Review", Sankhya, Series-C. 36. 103-138.
- BARDHAN, P.K. (1976): Poverty and trickle down in Rural India - A Quantitative Analysis in J.W. Mellor and M. Desai (eds) Agricultural Change and rural poverty variations on a theme by Dharam Narayan. Oxford University press.

- BHATTACHARYA, S.S., A.B. ROY CHOUDHURY AND P.D. JOSHI (1980): Regional Consumer price indices based on NSS Household Expenditure Data, Sarvekshana Vol. 3, N°4: pp 107-12.
- BHATTY, I.Z. (1974): Inequality and poverty in rural India in Poverty and Income Distribution in India (eds.) T.N. Srinivasan and P.K. Bardhan. Statistical Publishing Society. Calcutta.
- CHATTORPADHYAY. M., BHATTACHARYA, N. AND RUDRA, A. (1988): Changes in level of Living in Rural West Bengal: Variations Across Socio-Economic Groups. Economic and Political Weekly.
- DANDEKAR, V.M. AND N. RATH, 1971: Poverty in India, Indian School of Political Economy. Pune. First published in Economic and Political Weekly. Vol. 6 Nos. 1 & 2 and 9. January 1971. Bombay.
- DANDEKAR, V.M. (1981): On Measurement of Poverty, EPW, Vol. XVI. N°30 July 25. pp 1241-1250.
- DANDEKAR, V.M. (1982): On Measurement of Under-nutrition. EPW. Feb. 6.
- DANDEKAR, V.M. (1996): The Indian Economy. 1947-1992. Population, Poverty and Employment. Sage publications, New Delhi.
- GOVERNMENT OF INDIA. PLANNING COMMISSION (1962): Perspectives of Development. India 1960-61 to 1975-76: Implications of Planning for a minimum level of living. Also in Poverty and Income Distribution in India eds. T.N. Srinivasan and P.K. Bardhan, Statistical Publishing Society. Calcutta.
- GOVERNMENT OF INDIA. PLANNING COMMISSION (1979): Report of the Task Force on Projections of Minimum Needs and Effective Consumption Demand.
- GOVERNMENT OF INDIA. PLANNING COMMISSION (1981): A Technical Note on the Sixth Plan of India (1980-1985) Annexe-III. pp 81-84.
- GOVERNMENT OF INDIA. PLANNING COMMISSION (1982): Report of the Expert Group on programme for alleviation of Poverty. Government of India. New Delhi.
- GOVERNMENT OF INDIA. PLANNING COMMISSION (1984): The concept and estimation of Poverty Line. Perspective Planning Division. Government of India. New Delhi.
- GOVERNMENT OF INDIA. PLANNING COMMISSION (1993): Report of the Expert Group on Estimation of Proportion and number of Poor.

GOVERNMENT OF INDIA. PLANNING COMMISSION (1997): Press release on Estimate of Poverty. Perspective Planning Division. New Delhi, 11th March.

GOVERNMENT OF INDIA. NATIONAL SAMPLE SURVEY ORGANISATION (1978): Calorie and Protein Values of Food items consumed per diem per consumer unit - Twenty sixth Round (1971-72). NSS Report N° 238. Vol I & II. Department of Statistics. New Delhi.

GOVERNMENT OF INDIA. NATIONAL SAMPLE SURVEY ORGANISATION (1979): Survey results on consumer expenditure based on NSS 27th round (Oct. 1972-Sept. 1973) data. Sarvekshana. The Jour. of NSSO Vol. I N° 3, N° 7, January.

GOVERNMENT OF INDIA. NATIONAL SAMPLE SURVEY ORGANISATION (1983): Survey results on per capita per diem intake of calorie, protein and fat based on NSS 27th round (Oct. 1972-Sept. 1973) data. Sarvekshana. The Jour. of NSSO Vol. 6. N° 3 - 4. N° 18.

GOVERNMENT OF INDIA. NATIONAL SAMPLE SURVEY ORGANISATION (1986a): Survey results on consumer expenditure based on NSS 32nd round (July 1977-June 1978) data. Sarvekshana. The Jour. of NSSO Vol. IX. N° 3. N° 26 January.

GOVERNMENT OF INDIA. NATIONAL SAMPLE SURVEY ORGANISATION (1986b): Per consumer unit per diem intake of nutrients - Thirty second Round (1977-78). NSS Report N° 329. Department of Statistics. New Delhi.

GOVERNMENT OF INDIA. NATIONAL SAMPLE SURVEY ORGANISATION (1986c): Survey results on Consumer expenditure based on NSS 38th round (January-December 1983) Sarvekshana. The Jour. of NSSO. Vol. IX. N° 4. Issue N° 27, April.

GOVERNMENT OF INDIA. NATIONAL SAMPLE SURVEY ORGANISATION (1988a): Per capita and per consumer unit per diem intake of calorie, protein and fat and perception of people on adequacy of food - Thirty Eighth Round (1983). NSS Report N° 348. Department of Statistics. New Delhi.

GOVERNMENT OF INDIA. NATIONAL SAMPLE SURVEY ORGANISATION (1988b): Level of Nutritional Intake of Population distributed over different expenditure classes - Thirty Eighth Round (1983). NSS Report N° 353. Department of Statistics. New Delhi.

- GOVERNMENT OF INDIA. NATIONAL SAMPLE SURVEY ORGANISATION (1989): Survey Results on per capita and per consumer unit per diem intake of calorie, protein and fat and perception of the people on adequacy of food based on NSS 38th round (January-December 1983). Sarvekshana. The Jour. of NSSO. Vol.XIII. N° 2. Issue N° 41 Oct.-Dec.
- GOVERNMENT OF INDIA. NATIONAL SAMPLE SURVEY ORGANISATION (1990): Survey results on consumer expenditure based on NSS 43rd round (July 1987-June 1988) Sarvekshana. The Jour. of NSSO.
- GOVERNMENT OF INDIA. NATIONAL SAMPLE SURVEY ORGANISATION (1996a): Survey Results on Level and Pattern of consumer Expenditure. NSS 50th Round (July 1993-June 1994) Report N° 402, May.
- GOVERNMENT OF INDIA. NATIONAL SAMPLE SURVEY ORGANISATION (1996b): Survey Results on Nutrition Intake in India based on NSS 50th Round (July 1993-June 1994) Report N° 405. April.
- JOSHI, P.D. (1979): On the Suitability of Displaced Log-normal Distribution In Graduating the Size Distribution of Total Consumer Expenditure. Sarvekshana. The Jour. of NSSO. Vol. 3. N° 1. pp 4-8.
- JOSHI, P.D. (1996a): Household Expenditure and Income Survey: Indian Experience. Paper presented at the first meeting of the U.N. Expert Group on Household Income Statistics. Canberra. December.
- JOSHI, P.D. (1996b): A bibliography of the literature on measurement of poverty (Unpublished).
- JOSHI, P.D. (1997a): Statistical Dimensions of Poverty in India. Invited lecture in first P.V. Sukhatme Memorial Session in the XVII Annual Conference of the Indian Society for Probability and Statistics held in B.H.U. Varanasi during 10-13 February.
- JOSHI, P.D. (1997b): Sensitivity Analysis on Measures of Poverty (Unpublished).
- MINHAS, B.S. (1970): "Rural Poverty. Land Redistribution and Development Strategy. *Indian Economic Review*. Vol. 5, N° 1. Also Sankhya Series C. Vol. 36 (1974), pp 252-263.
- MINHAS, B.S. (1971a): Rural Poverty and Minimum Level of Living - A Reply. *Indian Economic Review*. April.
- MINHAS, B.S. (1971b): More on Rural Poverty. A Glimmer of Progress. *Indian Economic Review*. N° 6.

- MINHAS, B.S. (1971c): The poor, the weak and the Fourth Plan in A.J. Fonseca (Ed.), *Challenge of Poverty in India*. New Delhi. *Vikas Publishing*.
- MINHAS, B.S. (1974): *Planning and the Rural Poor*. S. Chand & Co., Delhi 9.
- MINHAS, B.S., KANSAL, S.M., KUMAR, J. AND JOSHI, P.D. (1986): On the Reliability of the Available Estimates of Private Consumption Expenditure in India. *Journal of Income and Wealth*. Vol. 9 N° 2. pp 71-93.
- MINHAS, B.S., JAIN, L.R., KANSAL, S.M. AND SALUJA, M.R. (1987): On the Choice of appropriate Consumer Price Indices and Data Sets for Estimating the Incidence of Poverty in India. *Indian Economic Review*. Vol. XXII. N° 7, pp 19-50.
- MINHAS, B.S., JAIN, L.R., KANSAL, S.M. AND SALUJA, M.R. (1988): "Measurement of general cost of living for urban India, all-India and different states", Sarvekshana. The Jour. of NSSO XII. I. 1-23.
- MINHAS, B.S. (1988): "Validation of Large Scale Sample Survey Data-Case of NSS Estimates of Household Consumption Expenditure". *Sankhya*. Series B. Vol. 50. Part 3. Supplement. pp 1-63.
- MINHAS, B.S., JAIN, L.R., KANSAL, S.M. AND SALUJA, M.R. (1989a): Cost of living in rural India: 1970-71 to 1983: State-wise and All India. Technical Report N° 8904, ISI, New Delhi.
- MINHAS, B.S., KANSAL, S.M. (1989b): "Comparison of the NSS and the CSO Estimates of Private Consumption: Some Observations Based on 1983 Data". *The Journal of Income and Wealth*. Vol. II. N° 1. January, 1989, pp 7-24.
- MINHAS, B.S., KANSAL, S.M. AND JAIN, L.R. (1989c): "Incidence of Urban Poverty in Different States (1970-71 to 1983)". Indian Statistical Institute. Technical Report N° 8902. January.
- MINHAS, B.S., JAIN, L.R. (1990): Incidence of Rural Poverty in Different States and All India 1970-71 to 1983". *Agricultural Development Policy: Adjustments and Reorientation* (Golden Jubilee Volume of Indian Society of Agricultural Economics), Oxford and IBH Publishing Co. New Delhi, pp. 342-81.
- MINHAS, B.S., JAIN, L.R. AND TENDULKAR, S.D. (1991a): Declining Incidence of Poverty in the 1980s: Evidence from Artefacts. *Economic and Political Weekly* (6-13 July 1991). Table 3, p. 1675.
- MINHAS, B.S., JAIN, L.R. AND TENDULKAR, S.D. (1991b): "Rural and Urban cost of living: 1983 to 1987-88. Statewise and All India". *Journal of Indian School of Political Economy*. Vol. 3. N° 3. July-Sept 1991. 420-442.

- OJHA, P.D. (1970): "A Configuration of Indian Poverty: Inequality and Levels of Living". Reserve Bank of India Bulletin, January.
- RUDRA, A. (1974): Minimum Level of Living - A Statistical Examination in Poverty and Income Distribution (ed). P.K. Bardhan and T.N. Srinivasan. Statistical Publishing Society. Calcutta.
- RUDRA, A., CHAKRABORTY, S., MAZUMDAR, K. AND BHATTACHARYA, N. (1995): Criterion for identification of rural poor-Preliminary Results based on a survey in West Bengal in Foreign Capital-Welfare implications of growth (ed) M. Chattopadhyay.
- SEN, A.K. (1973): "Poverty, Inequality and Unemployment". Economic and Political Weekly. Special Number. Reprinted in Bardhan and Srinivasan: Poverty and Income Distribution in India. Statistical Publishing Society, 1974. p. 67.
- SENGUPTA, S. AND JOSHI, P.D. (1978): Consumption of Cereals and Energy Content of Food Consumed. *Sarvekshana* - The Jour. of NSSO Vol. 2. N° 1 July.
- SENGUPTA, S. AND JOSHI, P.D. (1979): A Note on Determination of Poverty Line Based on NSS 27th Round Data, *Sarvekshana* - The Jour. of NSSO, Vol. 3, N° 1, July.
- SENGUPTA, S. AND JOSHI, P.D. (1981): Concept of Poverty line and estimate of Poverty at the regional level in India. Paper presented in the first National Conference on Social Science Research and problem of poverty organised by Indian Association of Social Science Institution. New Delhi. Also Social Science Research and Problem of Poverty (ed) Tarlok Singh. Concept Publishing Company. New Delhi. 1990.
- SRINIVASAN. T.N. (1977): Poverty: Some measurement problems, Bull, Int. Stat. Institute 47 (4).
- SUKHATME, P.V. (1961): The World's Hunger and Future Needs in Food Supply. *Jour. Roy. Stat. Soc. Series A*. Vol 124. pp 463-525.
- SUKHATME, P.V. (1965): Feeding India's Growing Millions. Asia Publishing House. Bombay.
- SUKHATME, P.V. (1977a): Incidence of Under-nutrition in India. *Journal of Economics*. Vol. XXXVIII. N° 3. July-Sept. 1977.
- SUKHATME, P.V. (1977b): Measurement of Poverty Based on Nutritional Needs. Bull. Int. Stat. Inst. 47(4) pp 553-56.

- SUKHATME, P.V. (1978): Assessment of Adequacy of Diets at Different Income Level. *EPW*. Vol. XIII. pp 1373-1384.
- SUKHATME, P.V. (1980): Nutrition Policy - Need for Re-orientation. *EPW*. Vol. XV. N° 26, pp 1101-1105 and Its Implication for Social Policy - Report on the Summer Institute. M.A.C.S. Pune.
- SUKHATME, P.V. (1981a): On Measurement of poverty. *EPW* Vol. XVI. N° 32. Aug. 8. pp 1311-1324.
- SUKHATME, P.V. (1981b): Measuring the Incidences of Under Nutrition - A comment. *EPW*. Vol. XVI. pp 1034-1036.
- SUKHATME, P.V. (1989): Nutrition Adoption and Variability. *European journal of Clinical Nutrition* Vol. 43. pp 75-87 and three commentaries on the paper of Prof. P.V. Sukhatme by J.C. Waterlow. WPT James and Mrs. Healy in the same issue pp 203-10.
- TENDULKAR, S. (1993): Social Welfare. Social Deprivation and Economic Growth. Some reflections on the Indian Experience; paper presented at the P.C. Mahalanobis birth Centenary Conference on "Planning and Economic Policy in India" held at I.S.I. Calcutta on June 29-31.