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CAN WE REALLY MEASURE POVERTY AND IDENTIFY THE POOR WHEN POVERTY ENCOMPASSES MULTIPLE DEPRIVATIONS?

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The paper argues that both the income/expenditure and nutritional measures of poverty suffer with their own limitations. However, for both conceptual and practical considerations, the income/expenditure is not suitable for identification of the persons suffering from multiple deprivations. Hence, income poverty together with malnutrition can provide a better approximation of the multi-dimensional poverty than either of them individually.

Poverty reduction has become a top priority in the agenda of India's development planning and the country's planning processes have been very sensitive to the fulfilment of the basic needs of the poor. The development efforts have been directed towards creating adequate livelihoods and the provision of services for ensuring a better quality of life for the poor. Efforts have been made to achieve poverty reduction by sustaining higher economic growth, strengthening the channels through which economic growth affects poverty and encouraging public intervention for eliminating constraints that trap the poor. Pro-poor macro policies and public intervention programmes targeted at the poor to supplement a generic growth strategy are two complementary approaches that are popular for eliminating mass deprivation. These initiatives have inspired vast literature on the measurement of poverty and identification of the poor.

The measurement of poverty has largely dealt with economic deprivation in the income or expenditure space. The official estimates of poverty since the mid-1970s have been based on nationwide household consumption surveys conducted quinquennially, and adopting more or less common methods and procedures. There is by now a growing recognition that poverty is a matter of not simply inadequate income but also of low literacy, short life expectation and lack of basic needs such as adequate shelter, clothing and safe drinking water. The income poverty line may not make adequate provision for the fulfilment of some of these basic needs.

The distinction between the measurement of poverty and identification of the poor has often been obliterated by the debate on poverty. The measurement of poverty requires a distinct methodology and makes use of well-designed household surveys and reliable quantitative data. The methodology and data collection must ensure comparability of the poverty estimate over time and between regions and socio-economic groups. The data required for identification of the poor at the village level is multi-dimensional in nature and consists of both quantitative and qualitative information. On practical considerations, the methodology should be simple enough to be used by functionaries implementing the programmes, and

the data should serve the specific needs of various types of public intervention programmes designed to overcome multiple deprivations. The process of data collection should not have any scope for manipulation by vested interest groups. It is desirable that the process of identification facilitates the formation of sub-groups among the poor, namely the bottom poor, who mainly need subsidised programmes for employment and food security as well as access to health and education, among other things;; the middle category of the poor, who can absorb skills and assets, and have the potential to make use of schemes for the development of skills and distribution of assets; and the households just below the poverty line, who need not subsidies but help in accessing development agencies and institutions, and in managing risks. It needs to be recognised that even if the concept of poverty is broadened to include basic needs, sample surveys cannot identify all the poor at the village level while they may help in measuring the incidence of deprivations, their trends and the underlying causal factors. Identification of the poor necessitates census data on multiple deprivations at the household or individual level.

Both the measurement of poverty and identification of poor entail theoretical and practical problems. The debates concerning these issues are seldom conclusive. This paper also discusses the problems confronted by the official agencies involved in the measurement and identification of the poor. These problems are illustrated below with concrete data.

I. UNIDIMENSIONAL POVERTY MEASURES

1. Income Poverty

The determination of income poverty is based on the proposition that the living standard of a household depends on the commodities consumed by them. This, in turn, depends on the level of per capita total expenditure and the prices that the household faces. The basic step in the income poverty approach is to identify a critical value of expenditure that can serve as a poverty line. In the identification of the critical value, a series of measurement choices are inevitable and some of these choices are subjective. For example, what is the appropriate poverty line? Should the poverty line be based on the calorie norm or on a fixed commodity basket? If the poverty line has to be anchored to the calorie intake, what calorie norm should be used? What is an appropriate unit of analysis: household, family or individual? What equivalence scales should be used? Another factor that has not received adequate attention in empirical work is the impact of demographic compositional factors on the measurement of poverty (Wright, 1996). While comparisons are being made between time periods or between communities, demographic compositional factors need to be factored in.

The Task Force (TF, 1979) on 'Projection of Minimum Needs and Effective Consumption Demand', constituted by the Planning Commission in 1979, defined the poverty line as the per capita expenditure level at which the average per capita per day calorie intake was 2400 kcal for the rural population and 2100 kcal for the urban population. The calorie figures met the Indian Council of Medical Research (ICMR) norms. The non-food items contained in the poverty line expenditure were assumed to constitute the non-food requirement of the target population. The Expert Group (EG, 1993) constituted by the Planning Commission

recommended the continuation of the poverty line of the TF (1979) and adopted the rural/urban consumption basket at the rural/urban poverty line as the norm for all rural/urban households in all the states. It also suggested procedures for updating the poverty line to factor in changes in prices over time and for fixing state-specific poverty lines by using state-specific prices.

The consumption basket, identified separately for rural and urban areas, was evaluated at state-specific prices to arrive at state-specific poverty lines during the base year, 1973-74. The state-wise poverty lines computed for the base year 1973-74 were adjusted for prices for the subsequent years. For any year, the poverty levels were estimated for each state by using the state level consumer expenditure distribution. The all-India poverty ratio for rural/urban areas was arrived at by aggregating the state-wise poverty ratios with the state populations as weights. The final all _India official rural/urban poverty line for was estimated by using the consumer expenditure distribution. Since then a more or less similar procedure has been adopted, with minor changes for price adjustments, for arriving at the official poverty lines for both the states and the all-India level.

It may be noted that several parameters were used to derive the state level and all-India poverty lines as well as poverty ratios. Besides being contentious, these parameter values may change over time. Three important issues arise in the design of poverty estimates in this context.

The first issue concerns the poverty norm itself. The poverty line as defined by the TF (1979) and the EG (1993) is, in part, normative as it is anchored to a calorie norm in the base year and is, in part, behaviouristic, in that non-food expenditure is based on consumer behaviour. For compensating the rise in prices, the EG (1993) recommended the use of Laspeyer's price indices. The assumption is that given the income equivalent to the poverty line, the poor can afford the reference consumption basket (minimum needs). However, due to changing preferences, the poor may not choose the same consumption basket, even if they are compensated for inflation. Although the EG (2003) committee recommended periodic revision of the consumption basket, this has not been implemented so far. As a matter of fact, the consumption patterns have undergone significant changes over time in both the rural and urban areas, even among the poorer sections. Broadly, the shifts in consumption patterns have taken place in favour of non-cereal food and non-food items of consumption. These shifts have increased the average cost of calories across all the income groups. This, in turn, has undermined the calorie content concept of the poverty line. At the current consumption patterns, the consumption basket chosen by a consumer at the poverty line no longer provides the minimum calories to which the poverty line was anchored. As a result, the poverty line has lost its nutritional relevance over time.

The age-sex pyramid and occupational structure have been undergoing changes since the base year of the poverty line. Hence, the per capita calorie norm may have to be re-assessed. Similarly, in view of the technological changes that have reduced drudgery, the recommended dietary allowances for heavy work, moderate work, and sedentary jobs may have to be revised. If a single poverty line has to be defined for the country, and

separately for rural and urban India, it is not clear by how much and in what direction it may have to be revised.

The second issue is that the methodology of determining the poverty line does not take cognizance of non-food needs. The household expenditure on health and education has increased significantly over time even for the poor. The assumption made by the TF (1979) and EG (1993) that the provision of public health and educational services by the government would meet the basic needs of health and education of the poor is no longer valid. It is necessary to lay down some minimum norms (like the desirable expenditure for non-food needs such as clothing and shelter for different parts of the country) for these heads of expenditure as part of the minimum needs built into the poverty line.

The third issue relates to price adjustments. As mentioned earlier, the all- India rural/ urban poverty lines with 1973-74 as the base year were adjusted to reflect the observed differences in the rural/urban cost of living across states to arrive at state-specific rural/ urban poverty lines. For this, the EG used Fisher indices (which reflect inter-state price differentials), estimated for the year 1960-61. The 1960-61 Fisher Indices were projected to 1973-74, by using state-specific consumer price indices. The latter included state-specific re-weighted Consumer Price Indices for Agricultural Labour (CPIAL) for the rural areas and Consumer Price Indices for Industrial Workers (CPIIW) for the urban areas. These are Laspeyres price indices with 1960-61 as the base year. The use of outdated price indices has distorted the poverty measures to a large extent. The weights used in the construction of inter-state price indices with 1960-61 as the base year might have changed considerably.

Another issue on which there was no agreement relates to the use of an all-India consumption basket uniformly across all the states. Although the normative all-India rural/ urban consumption basket was valued at state-specific prices to arrive at state-specific poverty lines, the procedure was questioned because in many states, the consumption patterns and basic needs differ from the all-India average. Similarly, the use of the poverty lines of the neighbouring states for smaller states such as the use of the poverty line of Maharashtra for Goa, and that of Assam for the seven other states of the north-east was questioned.

There was a general consensus that the official estimates of rural poverty ratios grossly under-estimated the incidence of rural poverty and the basket underlying the poverty line was outdated and did not adequately represent the growing basic needs of education, healthcare, housing and transport. The Planning Commission set up an Expert Group (2009) to review the methodology for the estimation of poverty. The Expert Group (EG, 2009) recommended continuation of the measurement of poverty in the domain of private consumption expenditure and suggested several changes in the methodology for estimating the poverty lines . The EG (2009) accepted the official poverty ratio for all-India urban areas in 2004-05 and recommended that the consumption basket underlying the urban poverty line be adopted for both the rural and urban areas of all states and that the rural/urban basket should be valued at state-specific rural/urban prices to arrive at state-specific rural/urban poverty lines. The EG (2009) recommended the compilation of price indices from unit level prices of the NSS. The revised poverty lines would provide adequate provision not only for food but also for education and health.

(a) What do we know about the effects of alternative approaches on poverty ratios?

Unidimensional poverty: Table 1 provides alternative all-India estimates of income poverty in 2004-05. These estimates of income poverty ratios for 2004-05 include: official estimates; EG (2009) estimates; and estimates based on the poverty line being anchored to the calorie norm of 2400 kcal/day/person for rural- and 2100 kca/day/person for urban-based consumption patterns in 2004-05 as well as the Food and Agricultural Organisation (FAO) norm of 1800 kcal/day/person for both rural and urban areas. The estimates indicate their sensitivity to the method, norms and adjustments made while arriving them. For instance, the income poverty ratio varies from 28.3 to 85.4 per cent in rural areas and from 25.7 to 66.8 per cent in urban areas. There is no agreement among the scholars on the choices of the poverty ratios.

Table 1

Percentage of Poor below the Poverty Line under Alternative Assumptions in 2004/05: All-India

Sector	*Percentage of Poor*			
	Official Estimates	*Expert Group (2009) Estimates*	*Poverty Line anchored to*	
			2400 kcal/day/person	*1800 kcal/day/person*
Rural	*28.3*	*41.8*	*85.4*	*29.1*
Urban	*25.7*	*25.7*	*66.8**	*31.0*
Combined	*27.5*	*37.2*	*80.7**	*29.6*

Note: * 2100 kcal/day/person is a norm for urban areas.

Source: Authors' estimates from the NSS 61st Round Consumer Expenditure Household unit level data.

Not surprisingly, the poverty ratio based on the nutrition adequacy poverty line at the norm of 2400 kcal/day/person for rural areas and 2100 kcal/day/person for urban areas (see column 4 of Table 1) is closer to the food poverty ratio at the calorie norm of 2400 kcal/day/person for rural areas and 2100 kcal/day/person for urban areas presented in column 2 of Table 2. Both the estimates are high in rural and urban areas, and about three times higher than the official estimates. The official estimates are closer to those of the poverty line anchored to 1800 kcal/day/person based on consumption patterns in 2004-05, but lower than the food poverty ratio at the FAO norm of 1800 kcal/day/person. The official estimate of the rural poverty ratio is about two-thirds of the EG (2009) estimate and urban estimates do not differ by assumption. The Expert Group estimates of poverty ratios are comparatively closer to the malnutrition estimates presented in Table 3. Also, the EG (2009) poverty ratio estimate for rural areas is closer to the percentage of undernourished persons based on the FAO norm (Table 2).

(b) Can we anchor the poverty line to the calorie norm? The unit level 61st Round NSS data on consumer expenditure has been used to compute the percentage of malnourished persons (food-poverty ratio), taking into consideration the TF (1979) norms at the aggregate level separately for rural and urban areas (see column 2 of Table 2) as well as the FAO norm (see column 3 of Table 2). As expected, there are wide differences between the two sets of estimates: while the food- poverty ratio according to the TF (1979) norms is estimated to be 79.8 per cent for rural areas and 63.9 per cent for urban areas, on the basis of the

FAO norms, they are 36.7 and 38.1 per cent for rural and urban areas, respectively. The income poverty ratios based on poverty lines anchored to the TF (1979) and FAO norms show similar differences (see Table 1).

Table 2 provides alternative estimates of food poverty ratios taking into consideration the calorie norms at the household level by using age-sex-activity-specific ICMR calorie norms for individuals. If a household's consumption falls short of its calorie requirement, all its members are considered to be malnourished. Although ICMR provides norms for sedentary, moderate and heavy activity for adults by sex, the distribution of adults by activity is not readily available. Assuming the same activity for all adults, the proportion of malnourished persons has been estimated in the three alternative situations: sedentary, moderate and heavy activity. The actual situation may lie in between the lower and upper bounds. The percentage of malnourished persons as estimated by this method is presented in columns 4-6 of Table 2. This method has two limitations. First, it does not take into account individual specific shortfalls from requirements, that is, it ignores intra-household inequalities. The previous estimates also suffer from this limitation. Second, the ICMR norms are outdated. It is widely held that the reduction over time in hard work has reduced the calorie requirements of adults.

It can be seen from Table 2 that the percentage of malnourished persons based on the household level calorie requirements depends crucially on our assumption regarding their activity. For instance, in the rural areas, the percentage of malnourished persons works out to 55.1, if we assume that all adults are engaged in sedentary activities, but, on the other hand, it works out to be 90.3 per cent if we assume that all adults are engaged in heavy activities. In the urban areas, the corresponding figures are 61.1 and 94.3 per cent, respectively.

Table 2

Percentage of Undernourished Persons in 2004/05 - All India

Sector	Percentage of Undernourished Persons (Food-poverty Ratio)		Percentage of Undernourished Persons (Incorporating RDI for Household Age-sex Composition)		
	2400 kcal /day/ person	1800 kcal/ day/ person	Variant I	Variant II	Variant III
Rural	79.8	36.7	55.5	72.2	90.3
Urban	63.9*	38.1	61.1	78.6	94.3
Combined	75.8*	37.1	56.9	73.8	91.3

Note: * 2100 kcal/day/person is a norm for urban.

The ICMR's Recommended Dietary Allowances (RDAs) for Indians (1989) by age-sex composition are used in computing the required calorie intake (RDI) at the household level. The difference between the actual calorie intake of a household and the RDI of that household is computed. If the actual calorie intake of a household is less than the computed RDI, that household is considered to be undernourished and all the persons in that household are also considered to be undernourished. We have estimated undernourished persons at three levels: Variant I assumes that the adults were engaged in sedentary activity; Variant II does so for moderate activity; and Variant III for heavy activity. The ICMR recommended norms for sedentary, moderate and heavy activity of a man and a woman are 2425, 2875 and 3800, and 1875, 2225 and 2925 kcal/day, respectively.

Source: Authors' estimates are based on the unit level data of the 61st Round NSS Consumer Expenditure (2004-05).

Given the wide differences among the alternative estimates, it is difficult to arrive at the true figures. More importantly, the food-poverty ratio as well as the calorie adequacy poverty ratio show an increase between 1993-94 and 2004-05 in contrast to the improvements in economic well-being brought about by other well-being indicators. Hence, anchoring the income poverty line to calorie norms would be misleading unless data on the reliable age-sex-activity-specific norms and the actual distribution of population are available. Furthermore, in the case of the calorie adequacy poverty line, there is a need to take into account the implications of changing consumer preferences.

Table 3
Child Malnutrition among Children Aged Below Five Years and Chronic Energy Deficiency (CED) among Adults

Sector	Percentage of Children Aged below Five Years		Percentage of Chronic Energy Deficiency	
	Underweight	Stunting	Males	Females
Rural	45.7	50.7	38.3	42.2
Urban	32.8	39.9	25.8	26.7
Combined	42.5	48.0	33.9	34.9

Note: Percentage of child malnutrition is estimated by using median minus two times standard deviation of the World Health Organisation (WHO) classification. CED is the percentage of adults whose body mass index (BMI) is less than 18.5.

Source: Authors' estimates based on unit level data of the NFHS-3 (2005-06).

Multi-dimensional Poverty: Attempts have been made to measure multi-dimensional poverty in the spaces of income and nutrition by pooling two different sets of unit level data—NSS 61st Round consumer expenditure data and the NFHS-3 unit level data. Three types of deprivations of a household have been considered: income poverty, child malnutrition and female chronic energy deficiency. The empirical analysis undertaken here confirms that the changes in the poverty ratio between 1993-94 and 2004-05, as revealed by the Expert Group estimates, are in conformity with other well-being indicators, including those of child malnutrition and adults' chronic energy deficiency. Hence, the income poverty estimates of EG (2009), and child malnutrition and female chronic energy deficiency estimates of the NFHS would help in the approximate measurement of multi-dimensional poverty.

The proportion of poor households among the total rural/urban households with a woman aged between 15–49 years with at least one child aged below 5 years has been estimated from the NSS consumer expenditure household unit level data by using EG (2009) state-specific poverty lines. Assuming that these poverty ratios are valid for NFHS households, the new poverty lines in terms of the Standard of Living Index (SLI) of NFHS-3 have been estimated from the distribution of NFHS households for all states with the rural and urban break-ups. All those households, whose SLI is less than the SLI poverty line, are considered as poor. Three types of poverty measures, viz. union, intersection and FGT have been estimated at the all-India level with the rural and urban break-ups (see Table 4).

Table 4
Multi-dimensional Poverty

	Percentage of Poor Households				FGT (%)			
Sector	Union between Poverty and Child Mal-nutrition	Union between Poverty, Child Mal-nutrition and Adult Female Chronic Energy Defi-ciency	Inter-section between Poverty and Child Mal-nutrition	Inter-section between Poverty, Child Mal-nutrition and Adult Female Mal-nutrition	Income Poverty	Child Mal-nutrition	Adult Female Chronic Energy Defi-ciency	Adults (M+F) Chronic Energy Def-iciency
Rural	75.1	83.3	31.6	16.3	2.9	0.34	0.40	0.38
Urban	54.0	64.2	17.9	7.7	1.9	0.27	0.28	0.27
Combined	69.4	78.4	28.0	14.1	2.7	0.32	0.36	0.35

Note: Union represents all households that are either poor or have a stunted child or both. Intersection represents all poor households with a stunted child.

Source: Authors' estimates from unit level data of the 61st Round (2004-05) NSS Consumer expenditure and NFHS-3 (2005-06).

The proportion of households that are either poor or have at least a stunted child (union of income poverty and child malnutrition) is estimated to be 75.1 per cent in rural areas and 54.0 per cent in urban areas. These figures show that the incidence of multi-dimensional poverty is much higher than that of unidimensional poverty (either in the income or the nutrition space). The proportion of households that are either poor or have a stunted child or women suffering from chronic energy deficiency is still higher at 83.3 per cent in rural areas and 64.2 per cent in urban areas. It is clear that in unidimensional income space, about one-third of the households are income-poor, while in the multi-dimensional space, nearly three-fourths of the households suffered from poverty. Hence, overcoming income poverty does not ensure freedom from other forms of deprivations

The proportion of households that are poor as well as have a stunted child (intersection of poverty and child malnutrition) is estimated to be 31.6 per cent in rural areas and 17.9 per cent in urban areas, and those having in addition a chronic energy deficient women are estimated to be 16.3 per cent in rural areas and 7.7 per cent in urban areas. These figures show the approximate size of the hardcore poor in the multi-dimensional space, which necessitates priority attention in public intervention programmes. It is worth observing that all the poverty measures (including FGT) show that poverty in the multi-dimensional space is much higher in rural as compared to urban areas.

The state-wise poverty estimates show substantial differences between uni-dimensional and multi-dimensional poverty figures (see Appendix Tables). For instance, the income poverty ratio among households with at least a child below five years of age in the rural areas varies from 23.4 per cent in Jammu and Kashmir (J&K) and 24.0 per cent in Kerala to 69.5 per cent in Orissa and 68.9 per cent in Bihar, whereas the union of income poverty, child malnutrition and chronic energy deficiency varies from 48.0 per cent in Kerala and

63.4 per cent in Punjab to 92.5 per cent in Chhattisgarh, 90.8 per cent in Madhya Pradesh and 90.2 per cent in Bihar. It appears that in states such as Chhattisgarh, Bihar, Madhya Pradesh, Gujarat, Jharkhand, Orissa and Uttar Pradesh, the universal coverage of households under poverty alleviation programmes in rural areas seems to be desirable or that the dimension-specific identification of poor for programmes meant for eliminating specific dimensional deprivation is desirable. However, for the purpose of ranking of households for any assistance, a household census is necessary.

II. IDENTIFICATION OF RURAL POOR HOUSEHOLDS

1. BPL Census: Methodology

Identification of the poor for public intervention programmes has been in practice since 1992. Altogether three Below Poverty Line (BPL) censuses were conducted in 1992, 1997 and 2002, respectively. While the first two censuses used income/total expenditure for the identification of poor households, the third census made use of multiple indicators. There is much debate concerning the methodology adopted by the BPL census in 2002. These debates have been centred on the choice of indicators, weights and scores used to arrive at the aggregate index. The following discussion below deals primarily with the theoretical and practical issues concerning the BPL Census 2002. Alternative approaches suggested for identifying the poor are also discussed.

Empirical evidence indicates that there are wide differences between the Planning Commission's poverty ratios and those of the BPL Censuses conducted by the Ministry of Rural Development (MoRD). The number of identified BPL households in 1999-2000 was nearly thrice that of the poverty ratio in Andhra Pradesh, twice that in Karnataka, and 60 per cent higher in Gujarat and 35 per cent higher in Tamil Nadu; whereas it was less than the poverty ratio in the poorer states of Bihar, Rajasthan, Uttar Pradesh, Jharkand and Uttarakhand. In order to overcome this shortcoming, the Expert Group on Identification of Rural Poor Households (BPL Census), constituted by the Ministry of Rural Development (MoRD), (GoI, 2002), suggested an aggregate index based on 13 non-monetary indicators for identification of the rural poor. The Expert Group considered the following 13 indicators: i) size group of operational landholding; ii) type of house; iii) average availability of normal wear clothing (per person in pieces); iv) food security; v) sanitation; vi) ownership of consumer durables; vii) literacy status of the highest literate adult; viii) status of the household labour force; ix) means of livelihood; x) status of children (5–14 years); xi) type of indebtedness; xii) reasons for migration from the household; and xiii) preference of assistance. Each indicator was assigned a score between 0 and 4 ('0' was the lowest score for an indicator, while '4' was the highest) and the households were ranked according to their total scores. A household was considered to be poor if its total score was less than a cut-off point. The Expert Group recommended the cut-off score such that the percentage of households below the cut-off score did not exceed the official poverty ratios at the state and sub-state levels by more than 10 per cent. The Expert Group (2002) recommended the validation of the list of identified poor households by the gram sabha at the gram panchayat level. It also suggested mechanisms for resolving disputes.

2. BPL Census in Practice

The state governments of Gujarat and Kerala conducted BPL Censuses more or less on the lines of the recommendations of the Expert Group (2002), making some adjustments to suit their specific needs and prepared BPL lists. Their implementation of the BPL Census is described below.

The government of Gujarat surveyed 68.65 lakh households in 18,000-plus villages, utilizing the services of 20,000 trained field investigators. Data on the relative deprivations of each household was collected on the 0-4 score-based 13 indicators. Households having a total score of '16 or less' out of a total score of 52 were considered as 'very poor' and those having a score of '17-20' were considered as 'poor'. The identified 10.94 lakh 'very poor' households were eligible for Government of India schemes and the remaining 12.57 lakh other poor households were covered under the state government schemes. Households were arranged according to the degree of their poverty—the poorest households were at the top of the list, followed by the relatively less poor households. Assistance in the intervention programme was first given to those at the top of the list. In this design, programmes could be directed towards the poorest tier. The overall score of a household would change if a household benefited from a scheme. The list of BPL households was dynamic and the households would automatically exit from the list as and when their scores improved.

It appears, on the whole, that the government of Gujarat was able to target the poorest of the poor with less discretion by field functionaries in selecting beneficiaries. The website helped to choose the beneficiaries on the basis of their genuine needs. These automated lists were used by the field officials. Schemes were directly targeted at these families. Since the names of individual beneficiaries were known, it was possible to have wait-lists and inform the poor when they would receive benefits such as a house or income-generating assets. The new BPL lists along with the scores were displayed at the gram panchayat for one month each year. Provisions for a two-stage appeal were made for any objections to the list. Data was finalised after approval from the gram sabha.

Kerala has a long history of experimenting with identification of the poor even prior to the BPL census. The State Poverty Eradication Mission of Kerala, Kudumbashree, used the following nine indicators called 'risk factors' to identify the poor: i) kutcha house; ii) no access to safe drinking water; iii) no access to a sanitary latrine; iv) illiterate adult in the family; v) family having not more than one earning member; vi) family getting barely two meals a day or less; vii) presence of children below five years in the family; viii) alcoholic or drug addict in the family; and ix) Scheduled Caste (SC) or Scheduled Tribe (ST) family. If any four or more of the above risk factors were affirmative/positive in a family, it was identified as poor under the State Poverty Eradication Mission. A family with at least eight out of the above nine risk factors positive was identified as destitute. Obviously, equal weight was given for all the nine indicators considered, which attracted criticism. In view of this, the government of Kerala issued modified guidelines in 2007 adding some more indicators to the list and assigned weights/marks to each indicator. The indicators considered were broadly divided into two groups: a) indicators based on capabilities, and b) indicators based

on entitlements, and each indicator was given a weight/score between 5 and 20. All the surveyed households were ranked on basis of the total scores obtained by each household. The destitute households were given priority for assistance under the 'Asrya' programme that is being implemented by the Local Self- government Department in Kerala using the network of Neighbourhood Groups (Self-help Groups) of the Kudumbashree.

A positive aspect of the procedures adopted by Gujarat and Kerala is that their census design covered multi-dimensional poverty. Some of the indicators considered were qualitative in nature, and they could capture the degree of deprivations in the capabilities space. The methodology ensured transparency since the list of beneficiaries was approved by the gram sabha. The wealth of data collected in this BPL census would be useful in the governance of poverty alleviation programmes. The database would also be useful for a community-based monitoring system, which would eventually improve the delivery system of the poverty alleviation programmes.

Most of the other states and Union Territories (UTs) undertook a BPL Census without adhering to the guidelines of the MoRD, nor did they follow the recommendations of the Expert Group in the identification of BPL households. These shortcomings may be attributed to the lack of adequate training of the investigators and proper planning of the field operations meant for the use of public intervention programmes. The Census was also not free from the manipulation of data by the vested interests. Before any new approach of this type was introduced, it should have been tested on a pilot survey. Such an experiment would have helped in the choice of indicators suitable to the situation. Some flexibility should also have been given to the states in the choice of indicators.

(a) Criticism of the Indicators, Weighting and Aggregation

Many scholars commented on the methodology suggested by the Expert Group (2002). It is true that the selected indicators are not exhaustive enough to capture the multiple deprivations in the capabilities space. The aggregation method assigns equal weights to the indicators. All indicators do not deserve equal importance and some indicators (such as literacy status, status of children, etc.) may not be applicable to all rural households. Moreover, it would be very difficult to get the list approved from the gram sabha since the local situation varies from village to village. The census field operations are likely to be manipulated by vested interests that are strongly entrenched in the village level institutions. Most of the shortcomings pointed out are operational in nature and associated with the conduct of the BPL Census, which could have been taken care of at the time of implementation.

The implementation deficiencies can be avoided if: i) the personnel involved in the BPL Census field operations are trained, and due precautions are taken to insulate them from the manipulations by vested interests, ii) gram sabhas are made active in the scrutiny of the BPL list, and iii) appropriate grievance cells are put in place to redress the anomalies, if any. The deficiencies due to the fact that the method is attributable to the choice of indicators can be avoided by giving more flexibility to the state-level agencies in incorporating (deleting) a few indicators that are (not) suitable to the situation. For example, if literacy is well spread

in a state like Kerala, the indicator representing literacy could be dropped. In the case of the missing indicator for a few households, some adjustments are possible. For example, in the case of households without a child, for which the child status indicator would be meaningless, either pro-rata adjustments could be made or households without a child could be treated as a separate category.

Jalan and Murgai (2007) made a critical appraisal of the the BPL 2002 Census methodology by using unit level data on consumer expenditure of the NSS 55th Round (1999-2000) and 61st Round (2003-04). Proxy variables similar to those of the BPL Census (2002) indicators were identified and scores between 0 and 4 were assigned to each indicator. Jalan and Murgai estimated the errors of targeting and found that the estimated errors of the BPL Census were very high. The assumptions of equal weights and cardinality involved in the BPL 2002 Census were tested by using regression analysis and both the assumptions were found to be unacceptable.

The methodology adopted by Jalan and Murgai for identifying targeting errors in the BPL Census is faulty for the following reasons. First and foremost, the approach of Jalan and Murgai is unidimensional and is based on the assumption that income/total expenditure is the fundamental factor underlying human welfare and that income can be proxied by non-monetary indicators. What matters for identification of the poor in their approach is income deprivation, and other deprivations such as malnutrition, ill-health, and insecurity do not carry any weight. This may be appropriate for a unidimensional approach but not for a multi-dimensional approach, which is fundamental to the Expert Group (2002) recommendations. Another assumption implicit in their testing is that the difference between the identified poor based on the BPL Census methodology and those identified by the income poverty line is that the targeting errors are attributable to the BPL Census. This implies the contentious assumption that the identification of the poor in the income space is free from errors. This assumption is not valid for the reasons mentioned below.

The NSS survey design does not permit one to arrive at the extent of targeting errors, since the reference period used for many of the consumer items such as food is 30 days and not annual. The monthly reference period under the moving sampling method will exaggerate the size of the targeting errors due to seasonality in consumption. For instance, a non-poor household may be wrongly identified in a lean season as poor if its expenditure during the past 30 days prior to the day of investigation is less than the income poverty line. Similarly, a poor household may be wrongly identified as non-poor in a good season if its expenditure during the past 30 days prior to the day of interview exceeds the poverty line expenditure. Unlike in the case of the poverty ratio, these errors do not cancel out. Further, the NSS data used by the authors do not permit the construction of scores that are exactly identical to those of the BPL Census.

Jalan and Murgai suggested modifications to the score-based methodology in the identification of the poor. After reviewing various methods adopted in India and globally, Jalan and Murgai suggested the following measures: a) NSS data could be utilised to generate a set of indicators that can serve as proxies to the total expenditure with better

targeting power, which could be easily verifiable at a reasonable cost; b) the suggested indicators should have proper weights for which the NSS data can be used; and c) state or region-specific indicators sets could be generated and their power tested in the ranking of households. The suggested approach is also unidimensional and ignores other important dimensions. The method may not help in the identification of deprived families/households in various individual dimensions that are needed for deprivation-specific public intervention programmes. The much-debated issue pertaining to the 'cut-off' point on the ranking, that is, fixing the number of poor to be assisted, is left open.

Alkire and Seth (2008) proposed a method to measure multi-dimensional poverty and identify the poor. The method is broadly similar to the one practiced in the Kudumbashree programme discussed earlier. The new methodology was utilized to compare their method with the BPL Census method. The new method also has some deficiencies. First, it does not put forth any objective method to arrive at the weights required in aggregating the various indicators. Their method of aggregation gives equal weights to the indicators. Second, it does not address the issues involved in the qualitative analysis of quantitative data. All the existing schemes are arbitrary and subjective. In our view, cardinality or ordinality can provide only approximation to the qualitative aspects of poverty. Moreover, poverty analysis using binary type categorisation ignores the depth of poverty in its quantitative as well as qualitative dimensions. Third, the authors offer no justification for the choice of dimensional norms. The dimensional norms vary for social groups and across regions. There is seldom an agreement among scholars even on the norms for quantitative indicators. Fourth, the choice of the cut-off point on the aggregated index is quite arbitrary.

The approach adopted by Alkire and Seth in making an appraisal of the BPL Census method leaves much to be desired. It is inappropriate to attribute the differences in the identified poor between their method and the pseudo-BPL method to the misclassification of the BPL Census method. First, the indicators in their pseudo–BPL Census method are unlikely to represent those of the BPL Census. For instance, the chronic energy deficiency measure used in the pseudo-BPL Census is not a good approximation of the indicator of 'food insecurity' as defined in the BPL Census. There is ample empirical evidence to show that chronic energy deficiency depends on a host of factors such as health, environment and safe drinking water in addition to the food intake. Second, since there is no certainty that their method ensures error-free targeting, and it would be misleading to treat the differences in identifying the poor between their method and any other method as a misclassification of the other method.

Identification of the poor needs to go beyond quantitative indicators and incorporate qualitative indicators, and such an approach can only provide a closer approximation to multi-dimensional poverty. Unfortunately, there does not exist any fool-proof method to carry out a qualitative analysis of quantitative information. Subjectivity is inevitable even in the classification of persons on the basis of a non-quantifiable attribute. Moreover, any binary classification ignores the variation in the phenomenon.

With respect to weights and cardinality, there is no universally acceptable formula for aggregating the multiple dimensions into a unidimension since it involves normative

judgment; the equal weighing scheme is as normative as any other weighting scheme. In our view, the preference-based method for generating weights will be more acceptable to the public. Similarly, fixation of the size of the targeted group for assistance could also be normative. The score-based index of well-being can only help in ranking the households. The cut-off point needed to classify a household into the BPL category or not has to be given exogenously. Here again, there is no fixed formula. However, the official poverty estimates may serve as a benchmark for fixing the region-specific cut-off scores.

In view of the complications involved in identification of the rural poor households, the Ministry of Rural Development (MoRD) had constituted an Expert Group (EG) (see GoI, 2009) to recommend a simple and suitable methodology to identify the poor. The EG (2009) of the MoRD recommended a three-Fold approach in identification of the rural poor. This approach includes: 1) automatic exclusion of the visible rich; 2) automatic inclusion of all visible destitute households; and 3) assigning scores to the remaining households by conducting a household survey. In this proposed methodology, the collection of a huge amount of qualitative and quantitative information of all households is necessary. There is a scope for manipulation by the elites at the gram panchayat level in the automatic exclusion and inclusion criteria. The indicators suggested in the survey method are not exhaustive. No justification is given for their method of aggregation by the EG. Also, the suggested cut-off is quite arbitrary. Although none of the methods provides a 'magic bullet' for all the programmes, the efficiency of the suggested method depends on the nature of intervention programmes, which the Census is expected to provide their data needs, category of population to be covered, the quality of investigation staff, absence of vested interests, etc.

(b) Towards a Holistic Approach for Identification of the Poor

Different approaches are put forth for identification of the poor: these include the unidimensional and multi-dimensional approaches. In the unidimensional approach, there has been a general consensus among its proponents that the total expenditure would serve as a good indicator of welfare and in the identification of the poor, on a practical consideration, the use of proxies to the total expenditure is suggested (see Jalan and Murgai, 2007). Empirical analysis shows that it is possible to choose a set of proxies for the total expenditure from the unit level NSS data.

The above approach to identify the poor is, however, not preferred for a variety of reasons. It has been seen that the union of the set of income-poor households and the set of households having a stunted child is larger than the size of the income-poor households. If income poverty alone were to be considered as being poor, the nutritionally-deprived households among the non-income-poor households would be excluded from this category. On the other hand, if poverty is based on malnutrition, the households that are free from nutritional deprivation but are income-poor will be ignored. Moreover, the proxy indicators may not throw light on other deprivations, which is needed for public intervention programmes. Hence, for both conceptual and practical considerations, the income/expenditure poverty approach is not suitable for identification of the persons suffering from multiple deprivations.

Income poverty together with malnutrition would provide a better approximation of multi-dimensional poverty than either of them individually. It has been seen earlier that the union of both is larger than either individually. The question that arises is: what weights should be given to the individual dimensions? In the absence of either theoretical or empirical guidance, taking into consideration the importance of income poverty and malnutrition, equal weight may be preferred. Their intersection may be considered to represent hardcore poverty and their union, to represent overall poverty. In the identification of the poor based on a household census, on practical considerations, we suggest the use of proxies to the total expenditure. Alternatively, the standard of living index (SLI) used in the National Health and Family Surveys (NHFSs) can also be a proxy to the total expenditure. The census schedule should cover information on proxies as well as anthropometric measures of children and women. The ranking of poor households should be based on a combined index of income poverty and malnutrition. At the village level, an anganwadi worker with proper training can serve as an investigator. Institutions such as the National Institution of Nutrition (NIN), International Institute of Population Studies (IIPS) and Population Research Centres (PRCs) may be involved in the design and conduct of the census.

Both on theoretical and practical considerations, the multi-dimensional approach incorporating both quantitative and qualitative indicators is the most suitable for identification of the poor. The steps involved in the identification of the poor in this approach are: i) choice of dimensions, ii) accordance of relative weights for aggregating the dimensional deprivations, and iii) identification of norms for dimensional deprivations. The preceding discussion highlighted the problems of assigning scores and weights to the indicators in the process of aggregation. One approximate approach to handle this issue could be the conduction of a survey on preference indicators to arrive at weights and scores. We suggest a household survey on preferences for the choice of dimensions and weights for aggregation, and a census of households for ranking the household on the basis of well-being. It appears that perceptions are inevitable for accommodating normative value judgements in the choice of dimensions and weights. Since the Census would permit only the ranking of households on the aggregate well-being index, this cut-off has to be given exogenously. Poverty estimates of the Expert Group (2009) and malnutrition estimates of NFHS-3 may serve as benchmarks for arriving at an acceptable cut-off mark.

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Appendix

Table 1: Malnutrition Poverty in States—Rural

State	Percentage of Persons Below Poverty Line	Percentage of Poor HH among the HH with a Woman and a Child below 5 Years of Age	Percentage of HH with Stunted Child below 5 Years of Age	Chronic Energy Deficiency (CED) Females	Union of Households with		Intersection of Households with	
					Poverty and Child Malnutrition	Poverty, Child Malnutrition and CED Females	Poverty, Child Malnutrition	Poverty, Child Malnutrition and CED Females
Andhra Pradesh	32.3	42.8	44.0	47.7	65.7	78.3	21.1	11.1
Assam	36.4	46.5	47.2	42.7	68.4	80.2	25.3	13.4
Bihar	55.7	68.9	65.2	49.3	85.5	90.2	48.6	26.4
Chhattisgarh	55.1	62.5	62.6	50.3	86.7	92.5	38.3	22.1
Gujarat	39.1	50.9	58.9	50.0	77.8	86.0	32.0	16.2
Haryana	24.8	31.4	53.6	39.7	64.1	74.3	20.9	11.1
Himachal Pradesh	25.0	34.7	41.5	35.1	57.7	71.6	18.5	8.3
Jammu and Kashmir	14.1	23.4	40.2	33.0	51.9	66.3	11.8	4.3
Jharkhand	51.6	60.9	54.4	49.7	81.3	90.5	34.1	18.5
Karnataka	37.5	51.0	42.2	43.0	70.4	79.7	22.7	11.8
Kerala	20.2	24.4	27.1	18.0	40.6	48.0	10.9	3.6
Madhya Pradesh	53.6	64.5	59.1	46.6	85.0	90.8	38.6	18.9
Maharashtra	47.9	56.0	46.2	48.7	72.5	83.8	29.8	18.3
Orissa	60.8	69.5	49.3	46.3	79.9	86.1	38.9	20.5
Punjab	22.1	26.7	43.7	23.5	53.9	63.4	16.4	5.6
Rajasthan	35.8	46.0	53.2	40.0	73.4	83.3	25.8	11.0
Tamil Nadu	37.5	44.5	33.3	33.5	60.6	69.7	17.1	8.2
Uttar Pradesh	42.7	54.5	58.9	40.5	79.9	86.5	33.5	16.3
Uttarakhand	35.1	47.6	54.0	35.8	71.5	78.7	30.1	12.4
West Bengal	38.2	49.7	51.6	49.9	71.1	82.2	30.2	17.5
All India	41.8	53.4	53.3	43.7	75.1	83.3	31.6	16.3

Note: Appendix Table 1 provides poverty ratios of EG, 2009 and poverty ratios as estimated from NFHS-3. It may be noted that the coverage of households between the two estimates differs. Moreover, the poverty ratio of the EG refers to the proportion of poor persons, whereas authors

Source: As given in Tables 3 and 4.

Appendix

Table 2: Malnutrition Poverty in States—Urban

State	Percentage of Persons Below Poverty Line	Percentage of Poor HH among the HH with a Woman and a Child below 5 Years of Age	Percentage of HH with Stunted Child below 5 Years of Age	Chronic Energy Deficiency (CED) Females	Union of Households with		Intersection of Households with	
					Poverty and Child Malnutrition	Poverty, Child Malnutrition and CED Females	Poverty, Child Malnutrition	Poverty, Child Malnutrition and CED Females
Andhra Pradesh	23.4	32.2	37.4	22.4	53.5	61.9	16.1	5.0
Assam	21.8	29.7	30.5	27.9	44.9	58.6	15.2	6.6
Bihar	43.7	54.8	53.0	34.9	73.3	78.5	34.5	16.3
Chhattisgarh	28.4	40.6	41.0	36.0	60.8	70.2	20.9	11.0
Gujarat	20.1	24.1	48.0	26.3	57.1	66.2	15.0	5.1
Haryana	22.4	30.0	40.5	28.0	53.2	60.2	17.4	7.0
Himachal Pradesh	4.6	5.7	27.6	18.7	30.7	43.3	2.6	1.1
Jammu and Kashmir	10.4	16.3	27.7	12.6	33.7	40.1	10.4	2.7
Jharkhand	23.8	28.0	37.7	39.6	48.3	62.2	17.3	11.3
Karnataka	25.9	27.9	29.4	26.8	46.1	60.0	11.2	5.2
Kerala	18.4	21.3	23.8	10.5	39.7	45.1	5.4	.8
Madhya Pradesh	35.1	45.2	48.0	33.2	65.2	73.5	28.0	11.4
Maharashtra	25.6	37.8	36.6	30.2	56.2	69.5	18.2	8.2
Orissa	37.4	45.4	35.6	28.1	58.6	67.1	22.4	8.6
Punjab	18.7	25.8	38.4	17.8	49.7	54.9	14.6	6.7
Rajasthan	29.7	42.8	38.9	39.9	60.2	75.8	21.6	9.7
Tamil Nadu	19.7	22.7	30.5	20.2	42.8	53.4	10.5	2.0
Uttar Pradesh	34.1	39.3	45.2	28.3	60.4	70.0	24.1	11.1
Uttarakhand	26.2	32.1	28.5	14.9	48.0	53.0	12.7	4.2
West Bengal	24.4	34.4	29.5	31.1	48.2	56.2	15.7	9.0
All India	25.7	33.8	38.1	27.6	54.0	64.2	17.9	7.7

Note: estimates refer to percentage of poor households.

Source: As given in Appendix Table 1.