REPORT OF THE EXPERT GROUP TO REVIEW THE METHODOLOGY FOR ESTIMATION OF POVERTY

Government of India
Planning Commission
November, 2009

November 27, 2009

Dear Mr. Ahluwalia,

The Expert Group is submitting herewith the Report on the Methodology for Estimation of Poverty.

Prof. T.J. Rao and Prof. A.K. Adhikary deserve our thanks for undertaking a study for examining the comparability of 50th, 55th and 61st rounds of the National Sample Surveys on household consumer expenditure.

We would like to thank Dr. Abhijit Sen and Dr. Kirit Parikh for the continued interest they took in the deliberations of the group. The group also had the benefit of consultations with Prof. Angus Deaton and Dr. Martin Ravallion. We are particularly grateful to Dr. Himanshu and Dr. C. Ravi for assisting the group in the deliberations as well as in computations. Mr. M.R. Saluja and Mr. Bhupesh of the India Development Foundation deserve our thanks for processing the Labour Bureau data on prices underlying the existing consumer price indices.

The Expert Group benefitted immensely from the deliberations of the workshop on poverty estimation methods.

(Suresh D. Tendulkar)   **(R. Radhakrishna)**

(Suranjan Sengupta)

Summary

There has been a growing concern on the official estimates of poverty released by the Planning commission. The official poverty estimates have been severely criticised on various counts. In view of this, Planning Commission set up an expert group under the chairmanship of Professor Suresh Tendulkar to examine the issue and suggest a new poverty line and estimates. The expert group has considered this issue in detail and has suggested new methodology to arrive at state wise and all-India rural and urban poverty lines for 2004-05, the latest available major National Sample Survey (NSS) round on household consumer expenditure which provides the data base for the calculation of poverty estimates by the Planning Commission.

Following are the salient features of the proposed poverty lines:

1. While acknowledging the multi-dimensional nature of poverty, the estimates of poverty will continue to be based on private household consumer expenditure of Indian households as collected by the National Sample Survey (NSS) Organization (NSSO).

2. The expert group has also taken a conscious decision to move away from anchoring the poverty lines to a calorie *intake* norm in view of the fact that calorie consumption calculated by converting the consumed quantities in the last 30 days as collected by NSS has not been found to be well correlated with the *nutritional outcomes* observed from other specialized surveys either over time or across space (i.e. between states or rural and urban areas).

3. The quinquennial National Sample Surveys of household consumer expenditure surveys carried out by the NSSO provide the basic data set for official poverty calculations. For canvassing household expenditure on a recall basis, the NSSO has decided to shift to Mixed Reference Period (MRP) for all its consumption surveys in future, namely, 365-days for low frequency items (clothing, footwear, durables, education and institutional health expenditure) and 30-days for all the remaining items. This change captures the household consumption expenditure of the poor households on low-frequency items of purchase more satisfactorily than the earlier 30-day recall period. The Expert Group decided to adopt the MRP-based estimates of consumption expenditure as the basis for future poverty lines as against the previous practice of using Uniform reference period estimates of consumption expenditure.

4. Underlying consumption poverty line is the reference poverty line basket (PLB) of household goods and services consumed by those households at the borderline separating the poor from the non-poor. Given an inescapable element of arbitrariness in specifying the numerical nominal level of PLB, the Expert Group considered it desirable to situate recommended reference PLB in some generally acceptable aspect of the present practice. The estimated urban share of the poor population (described as headcount ratio or poverty ratio) in 2004-05, namely, 25.7 per cent at the all-India level, is generally accepted as being less controversial than its rural counterpart at 28.3 per cent that has been heavily criticized as being too low. In the interest of continuity as well as in view of the consistency with broad external validity checks with respect to nutritional, educational and health outcomes,

it was decided to recommend MRP-equivalent of urban PLB corresponding to 25.7 per cent urban headcount ratio as the new reference PLB to be provided to rural as well as urban population in all the states after adjusting it for within-state urban-relative-to-rural and rural and urban state-relative-to-all-India price differentials.

5. Even while moving away from the calorie norms, the proposed poverty lines have been validated by checking the adequacy of actual private expenditure per capita near the poverty lines on food, education and health by comparing them with normative expenditures consistent with nutritional, educational and health outcomes. Actual private expenditures reported by households near the new poverty lines on these items were found to be adequate at the all-India level in both the rural and the urban areas and for most of the states. It may be noted that while the new poverty lines have been arrived at after assessing the adequacy of private household expenditure on education and health, the earlier calorie-anchored poverty lines did not explicitly account for these. The proposed poverty lines are in that sense broader in scope.

6. It may be noted that although those near the poverty line in urban areas continue to afford the original calorie norm of 2100 per capita per day, their actual observed calorie intake from 61st Round of NSS of is 1776 calories per capita. This actual intake is very close to the revised calorie intake norm of 1770 per capita per day currently recommended for India by the Food and Agriculture Organization (FAO). Actual observed calorie intake of those near the new poverty line in rural areas (1999 calories per capita) is higher than the FAO norm.

7. The proposed reference PLB is situated also in the latest available data on the observed consumption patterns from the household consumer expenditure survey of NSS for the year 2004-05 and takes into account all items of consumption (except transport and conveyance) for construction of price indices. Separate allowance for private expenditure on transport and conveyance has been made in the recommended poverty lines.

8. The proposed price indices are based on the household-level unit values (approximated price data) obtained from the 61st round (July 2004 to June 2005) of NSS on household consumer expenditure survey for food, fuel and light, clothing and footwear at the most detailed level of disaggregation and hence much closer to the actual prices paid by the consumers in rural and urban areas. Price indices for health and education were also obtained from unit level data from related National Sample Surveys. The proposed price indices (Fisher Ideal indices in technical terms) incorporate both the observed all-India and the state level consumption patterns in the weighting structure of the price indices. For rent and conveyance, actual expenditure share for these items were used to adjust the poverty line for each state. The recommended price indices take care of most of the criticisms of the earlier population-segment-specific consumer price indices with outdated base used for updating poverty lines. An added and a significant advantage is that the recommended procedure permits the derivation of new poverty lines and the corresponding headcount ratios for all the states including the north-eastern states. In the judgment of the Expert Group, these advantages outweigh the problem of ignoring the quality differences in consumption of commodities across households that is involved in equating unit values with approximated prices.

9. The new poverty lines seek to enable rural as well as urban population in all the states to afford the recommended all-India urban PLB after taking due account of within-state rural-urban and inter-state differentials (rural and urban) incorporating observed consumer behaviour both at the all-India and state levels.

10. The new poverty lines have been generated for all the states including the north-eastern states. However, in the absence of adequate data, the expert group has suggested use of poverty line of the neighbouring states for union territories.

The new poverty lines and poverty estimates are given in the appendix. **It is important to underline that except for the urban all-India headcount ratio for 2004-05 which was used to derive the all-India reference poverty line basket, all other headcount ratios – rural all-India and for rural and urban populations of the states for 2004-05 given in the Appendix are based on the new reference basket and new price indices, and hence are not comparable and must not be compared to the earlier announced official headcount ratios using the earlier official poverty lines and out-dated price indices.**

The all-India rural headcount ratio using the recommended procedure is 41.8 per cent in comparison with 28.3 per cent. The expert group has re-estimated poverty for states and all India for 2004-05. the methodology of carrying it foreword is also being suggested. In light of the new methodology, it will be necessary to re-estimate poverty for previous years. A preliminary exercise for 1993-94 has been carried out to facilitate a broad two-point comparison of changes in headcount ratios. By this exercise, poverty at all India level in 1993-94 was 50.1% in rural areas, 31.8% in urban areas and 45.3% in the country as a whole as compared to the 1993-94 official estimates of 37.2 per cent rural, 32.6 per cent urban and 36.0 per cent combined. That is, **even though the suggested new methodology gives a higher estimate of rural headcount ratio at the all-India level for 2004-05, the extent of poverty reduction in comparable percentage point decline between 1993-94 and 2004-05 is not different from that inferred using the old methodology.**

REPORT OF THE EXPERT GROUP TO REVIEW THE METHODOLOGY FOR ESTIMATION OF POVERTY

I. Introduction

This Expert Group was set up to review the methodology for estimation of poverty and had the following terms of reference:

1. To examine the issues relating to the comparability of the 50th, 55th and 61st round, and to suggest methodologies for deriving such comparability with past and future surveys.

2. To review alternative conceptualizations of poverty, and the associated technical aspects of procedures of measurement and data base for empirical estimation including procedures for updating over time and across states.

3. In the light of (2), to recommend any changes in the existing procedures of official estimates of poverty.

As far as the terms of reference 1 is concerned, to consider the matter in detail, the Expert Group commissioned a study by Prof. T.J. Rao and Prof. A.K. Adhikari who retired from the Indian Statistical Institute and who have had long association with the technical design as well as survey practices of the National Sample surveys. A summary of the conclusions of the study is placed at Annexure-D. The broad conclusion was that NSS rounds 50th and 61st are comparable, whereas NSS round 55 is not comparable to either the 50th or 61st round. The remaining part of this report deals with TOR 2 and 3, taking into account this conclusion regarding comparability of the various NSS rounds. The Expert Group had also commissioned a study of price data underlying the available Consumer Price Index for Industrial Workers (CPIIW) and Consumer Price Index for Agricultural Labourers (CPIAL) by Dr. M.R. Saluja of India Development Foundation

1

and also a number of working papers on various aspects of poverty. These were discussed at detail in the meetings of the Expert Group and at a workshop held at the Planning Commission on 20th May, 2009.

One member of the Expert Group, Professor Raghav Gaiha, could not attend any meeting of the Expert Group due to his more pressing commitments. He communicated by e-mail his comments on the final draft of this report to the chairman of the Expert Group with a covering letter dated November 24, 2009 stating his inability to attend the final meeting held on November 26, 2009 and leaving it to chairman to use his "comments in any appropriate way". The comments were noted by the Expert Group.

II. Conceptual Scope

Fundamentally, the concept of poverty is associated with socially perceived deprivation with respect to basic human needs. As a result, social perceptions are taken to play a dominant role in ascertaining deprivation although self-perceptions cannot be ignored altogether and aggregated individual preferences may have to be respected in satisfying any given need in most cases as we argue below in the context of consumption poverty. These basic human needs are usually listed in the material dimension as the need to be adequately nourished, the need to be decently clothed, the need to be reasonably sheltered, the need to escape avoidable diseases, the need to be (at least) minimally educated and the need to be mobile for purposes of social interaction and participation in economic activity. Although we limit the scope of poverty in this report to material dimension only amongst the wider set of basic needs, we recognize that deprivation may indeed exist in non-material dimensions as well, for instance, gender-based or caste-based discrimination. Even in the material dimension, the composition of the minimal basket of basic human needs that the society would expect every citizen to satisfy may be expected to keep expanding with economic and social progress of the society.

Socially perceived deprivation can be considered with respect to each individual basic human need separately, leading to the corresponding concepts of poverty in that domain. However, it should also be obvious that not all the basic human needs are independent of each other. Inability to escape avoidable diseases, for example, may be related to shelter environment with implications for nourishment and clothing as well. Apart from interdependence, there is no one-to-one correspondence between any given basic human need and the commodities and services that satisfy that need. The same commodity or service may serve different basic needs as much as any given need may be satisfied by different goods and services.

Any given basic need may be satisfied either through the market by an individual or household out of earned income from participation in economic activity or unearned income from owned assets or may be directly supplied by the government or some mix of the two including government subsidy. Although social norms are indeed important in perceiving deprivation in terms of observable outcomes, individual preferences have to be given weight within limits in the choice of inputs used for overcoming deprivation as, for example, in the case of overcoming malnutrition. This would be the case with most basic human needs requiring differentiated inputs permitting the play of individual preferences within limits. Such differentiated basic needs had better be left to be satisfied through the market purchases for which the government may provide income supplements of various kinds including the subsidized supply of certain commodities. Adequacy of purchasing power with the individual or household becomes relevant in tackling consumption poverty in such cases.

The concept of poverty is thus admittedly multi-dimensional. The Expert Group decided to confine the study of poverty in private consumption dimension only. Other dimensions of poverty are discussed in the 1993 Expert Group Report headed by Professor D. T. Lakdawala.

The Indian Planning Commission has been measuring absolute poverty in the consumption dimension. Following from our earlier discussion of the concept of poverty,

absolute (private) consumption poverty line is taken to convey the inability of an individual or a household to afford a socially perceived normative minimal basket of basic human needs that is expected to be reflected in some normative minimal standard of living that should be assured to every individual/household. It should be obvious that social perceptions in respect of normative minimum living standard are not precisely numerically specifiable in quantitative terms. However, for policy purposes, a uniquely specified numerical poverty line separating the poor from non-poor has been in use. This numerical poverty line has to be regarded only as an approximation to the socially acceptable minimum living standard. Consequently, an inevitable element of arbitrariness in defining it is inescapable. In the Indian context, it is measured in terms of a certain exogenously given and privately purchased basket of goods and services (poverty line basket [PLB] hereafter) evaluated at market prices. Following our discussion in the beginning, underlying the reference PLB is a certain socially acceptable minimal basket of inter-dependent basic human needs that are satisfied through the market purchases. In other words, it is expected to represent some low enough but (socially acceptable) reasonable living standard. It is specified in terms of some minimum required per capita total household consumer expenditure.

III. Problems with Existing Official Poverty Lines

The existing all-India rural and urban official poverty lines were originally defined in terms of per capita total consumer expenditure (PCTE) at 1973-74 market prices and adjusted over time and across states for changes in prices keeping unchanged the original 1973-74 rural and urban underlying all-India reference poverty line baskets (PLB) of goods and services. These all-India rural and urban PLBs were derived for rural and urban areas separately, anchored in the per capita calorie norms of 2400 (rural) and 2100 (urban) per day. However, they covered the consumption of all the goods and services incorporated in the rural and urban reference poverty line baskets. Three major criticisms of these poverty lines have been commonly aired. One, the consumption patterns underlying the rural and urban PLBs remained tied down to those observed more than three decades ago in 1973-74 and hence had become outdated. Given the rise in the

4

living standards resulting from accelerated economic growth since the nineteen-eighties, the consumption pattern of the poor has also been changing but is not reflected in the poverty lines. Two, crude price adjustment for prices was leading to implausible results such as proportion of total urban population below poverty line being higher than its rural counterpart in certain major states. In particular, it was shown by Deaton that Consumer Price Index for Agricultural Labourers that was used for the rural population understated the price rise for the rural population and hence understated the extent of rural poverty. Three, the earlier poverty lines assumed that basic social services of health and education would be supplied by the state and hence, although private expenditure on education and health was covered in the base year 1973-74, no account was taken of either the increase in the proportion of these in total expenditure over time or of their proper representation in available price indices.

IV. The New Poverty Line Basket: Specification and Validation Checks

Given an inevitable element of arbitrariness in numerically specifying the poverty line (Section II), the Expert Group found it desirable in the interest of continuity to situate it in some generally acceptable aspect of the present practice. The latest official estimates of poverty following broadly the Expert Group (1993) method and using the uniform reference period (URP) of 30 days indicate that below poverty line (BPL for short) population was 28.3 per cent of the rural population (described as headcount ratio or poverty ratio) and 25.7 per cent of the urban population in 2004-05. These official estimates released by the Planning Commission are based on (a) the 1973-74 rural and urban poverty line baskets originally at 1973-74 prices adjusted for price changes between 1973-74 and 2004-05 (b) a uniform reference period (URP for short) of 30-days for canvassing consumption of all items of current household consumption in NSS and (c) rural and urban size distributions of per capita total consumer expenditure (PCTE for short) data collected during the 61st (quinquennial large sample) round (July 2004 to June 2005) on household consumer expenditure of the National Sample Surveys (NSS).

In comparison with the procedure suggested by the 1993 Expert Group and used in the official poverty estimates, very briefly, our approach makes four major departures (elaborated below) which, in our view, constitute significant improvements over the existing official poverty estimation procedure. One, for reasons explained below, we consciously move away from calorie anchor but test for the adequacy of actual food expenditure near the poverty line to ensure certain aggregate nutritional outcomes. Two, we do not discriminate between the rural and the urban population and recommend to provide a uniform PLB based in the latest available observed household consumption data to both the rural and the urban populations. This corrects for the outdated PLBs. Three, we suggest a price adjustment procedure that is predominantly based in the same data set that underlies the poverty estimation and hence corrects for the problems associated with externally generated and population-segment-specific price indices with out-dated price and weight base used so far in the official poverty estimation. Four, we incorporate an explicit provision in price indices for private expenditure on health and education which has been rising over time and test for their adequacy to ensure certain desirable educational and health outcomes.

We start with the observation that the latest available official estimate of rural poverty ratio of 28.3 per cent for 2004-05 is widely perceived to be too low mainly because of under-stated price adjustment (mentioned earlier) and its basis of a very old and out-dated 1973-74 poverty line basket (PLB) while the corresponding urban proportion 25.7 per cent of the BPL population is less controversial in terms of the broad order of magnitude of extent of urban poverty. Given that the NSS Organization has taken the decision to shift from URP to a mixed reference period (MRP)[1], the PLB was taken to be MRP

---

[1] Until 1993-94, information on consumption expenditure collected by National Sample Survey Organisation was based on a uniform 30-day recall period for all items of consumption. Since 1999-00, NSSO has used a mixed recall period for collecting information on consumption expenditure from households. Under Mixed Recall Period (MRP), information on five broad item groups of household consumer expenditure with low frequency of purchase (low frequency items for short) namely, clothing, footwear, education, institutional medical care and durables is collected on a year-long recall basis while information on consumption expenditure on all other items is collected on the basis of a month-long recall period. In the case of URP, all information on consumption expenditure is collected on a month-long recall period basis.

equivalent[2] of PCTE corresponding to 25.7 per cent of the urban BPL population variously described as poverty ratio (PR for short) or headcount ratio (HCR for short). As urban living standard is generally regarded as better than and preferable to its rural counterpart, the Expert Group recommends that the purchasing power represented by the MRP-equivalent PCTE underlying the all-India urban HCR of 25.7 per cent be taken as the new reference PLB for measuring poverty and made available to both the rural and the urban population in all the states after correcting for urban-rural price differentials as well as urban and rural state-relative-to-all-India price differentials. The essential features of the procedure of deriving price indices for price adjustment are described briefly below while the detailed procedure can be found on website http://planningcommission.gov.in/eg_poverty.htm. These price indices enable us to derive state-specific and rural/urban poverty lines from which the corresponding rural all-India poverty line can be derived from the population-weighted state/rural/urban headcount ratios. The all-India rural headcount ratio using the recommended PLB is estimated to be 41.8 per cent for 2004-05.

We note several points in support of the new recommended poverty line basket. To start with, the new poverty line basket (PLB) recommended by the present Expert Group is in terms of MRP that is regarded as better than earlier URP and is going to be adopted by the NSSO in its future consumer expenditure surveys. The choice of MRP over URP is based on the observation that 365-day recall captures better than 30-day recall, the per capita expenditures on low frequency items especially of those at the lower end of PCTE. Two, as mentioned earlier, it corresponds to the urban All India HCR of 25.7 per cent that is widely accepted as being reasonable. Three, it incorporates the latest available data on observed pattern of consumer behavior in 2004-05. Four, it covers all the items of privately purchased household consumption of goods and services. Five, a conscious decision was taken by the Expert Group to move away from anchoring the PL in calorie

---

[2] Information on low frequency items of household consumer expenditure was collected on two alternative recall periods (last 365 days and last 30 days) in the 61st round (2004-05). This was also done for a subset of low frequency items in the three quinquennial rounds prior to the 55th round for 1999-00. The poverty estimate of 25.7% for urban areas is based on size distribution of households in ascending order of per capita total (consumer) expenditure (PCTE for short) on the basis of URP. MRP equivalent poverty line is that level of PCTE which is obtained when (i) population is ranked in ascending order of size of MRP-based PCTE and (ii) the percentage of poor equals 25.7 per cent.

norm as in the past because (a) there is overwhelming evidence of downward shift in calorie Engel curves over time and (b) calorie consumption intake calculated by converting the consumed quantities in the last 30 days as collected by NSS has not been found to be well correlated either over time or across States with the nutritional outcomes observed in other specialized nutrition outcome surveys such as the National Family Health Surveys (NFHS). Six, the revised minimum calorie norm for India recommended by FAO is currently around 1800 calories per capita per day which is very close to the average calorie intake of those near the new poverty lines in urban areas (1776 calories per capita) and higher than the revised FAO norm (1999 calories per capita) in rural areas in the 61st round of NSS. Seven, the new poverty line happens to be close to, but less than, the 2005 PPP $1.25 per day poverty norm used by the World Bank in its latest world poverty estimates.

Additional external validation checks were carried out for the consistency of the new all India and state-level poverty lines derived from the recommended PLB and recommended price adjustment procedure with regard to nutritional, educational and health outcomes derived from the related specialized outcome-oriented surveys.

Combining the information on food expenditure from the 61st round of NSS for 2004-05 and aggregate nutrition outcome indicator[3] based on the information from the National Family Health Survey III – NFHS-III hereafter - for 2005-06, a normative level of food expenditure per capita was derived For both rural and urban population, actual reported per capita expenditure on food at the recommended all-India poverty lines was found to be 6 per cent higher than normative food expenditure. As far as state-wise

---

[3] NFHS-III supplies three outcome indicators of malnutrition for three important segments of the population : (i) proportion of underweight children below 5 years of age with underweight defined as those whose weight-for-age was below twice the standard deviation; (ii) proportion of men aged 15-49 years with low body mass index – norm of low BMI being lower than 18.5; and (iii) proportion women (excluding pregnant women and those who gave birth in the last two months) aged 15-49 years with low BMI. In the absence of objective criteria for assigning unequal weights to the three population segments, equal weights were assigned to derive an aggregate index of malnutrition outcome. Consequently, a simple average of the three proportions above is taken to be an aggregate outcome indicator of malnutrition. When estimated (state/rural/urban) population from NSS is ranked according to ascending size of food expenditure per capita, normative food expenditure per capita is defined by that level of food expenditure per capita that corresponds to cumulative share of population from NSS that equals the index of malnutrition derived from NFHS- III for that state.

pattern is concerned, for rural population of 17 and urban population of 19 out of 20 major states, actual reported per capita food expenditures near the derived poverty lines were at least 95 per cent of the corresponding state-specific normative levels.

For private household expenditure per capita on educational and health services together, actual reported expenditure on these items was found to be 14 per cent (rural) and 22 per cent higher at the all-India poverty lines than the combined normative level of expenditure on education and health services. For most states, actual reported expenditure on these services was found to be at least 90 per cent of the normative level. The shortfall in almost all cases was on account of hospitalization, not on education or non-institutional health treatment[4].

These external validation checks provide additional grounds about the reasonableness of the newly suggested poverty lines which remain rooted in the presently accepted order of magnitude of the extent of all-India urban poverty and are derived quite independently of these norms themselves. It is important to note that any change from the existing poverty lines is bound to bring about changes in the state-specific headcount ratios. The Expert Group recommends that the new sets of poverty calculations be started with the base year 2004-05 and suggests the procedure for taking them forward in time to be noted subsequently.

---

[4] Normative (level of) consumer expenditure on education (NCEE for short) is defined by the expenditure required at state-specific median cost (derived from the 61st round employment-unemployment survey) for sending *all* school-going (in 5-15 year age-group) children in the household at the poverty level of PCTE to school by state/rural/urban population. For normative consumer expenditure on health (NCEH for short), two components are distinguished, namely, (i) that on non-institutional health care (NCEH-N), that is, on treatments not requiring hospitalization in 15 days preceding date of interview and (ii) that on institutional health care (NCEH-I) requiring hospitalization during 365 days preceding date of interview. Median cost per treatment and per case of hospitalization has been derived from the 60th round (January-June 2005) NSS by state/rural/urban population. Age-specific incidence of treatment/hospitalization reported in the same survey has been multiplied by age-distribution of the population to derive average incidence of treatment/hospitalization. Since onset of illness and hospitalization are contingent events, the average incidence of treatment/hospitalization can be regarded as probability of onset of illness requiring treatment/hospitalization. When we multiply the average incidence by the median cost of treatment/hospitalization, we get expected normative expenditures to get treated/hospitalized which provide us with NCEH-N and NECH-I respectively sum of which gives us NCEH by state/rural/urban population.

V. Derivation of Rural-relative-to urban and State-relative-to-all-India Price Indices

It was explained above that the new poverty lines seek to provide the uniform yardstick of recommended (all-India urban) poverty line basket (PLB) for measuring the extent of poverty of both the rural and the urban populations in all the states in the Indian Union. As prices differ between rural and urban areas of the same state as well as across states in a continental country like India, it is necessary to derive within state rural-relative-to-urban and state-relative-to-all-India price indices for rural and urban areas separately for each state in order to evaluate the PLB.

In the absence of general consumer price indices for the rural and urban population, let alone those for the population near the poverty line, the 1993 Expert Group had to rely on the available price indices for two major segments of the rural and urban population, namely, Consumer Price Index for Agricultural Labourers (CPIAL) for the rural population and Consumer Price Index for Industrial Workers (CPIIW) for the urban population. These were reweighted using observed 1973-74 consumption shares near the poverty lines. The deficiencies in these two population-segment-specific indices for the purpose of evaluating the calorie-anchored but independently derived rural and urban PLBs had been noted by the critics. In particular, as noted earlier, glaring gaps had been observed especially in CPIAL in understating the extent of price rise for the rural population and thereby understating the extent of rural poverty in the official estimates. It is pertinent to note these gaps before discussing the Expert Group's approach that sought to correct the gaps with the available data. The major problem has been the outdated poverty line basket -- PLB -- implicit in the 1973-74 based official rural poverty line. Thus, while share of food in the consumption basket of persons around the poverty line has fallen to less than 65 per cent in 2004-05, the poverty line deflators still use 80 per cent food share implicit in the 1973-74 distribution that formed the basis of the official poverty line. Rural food consumption pattern also has shifted away from cereals whose prices have risen more slowly than those of non-cereal food items. Similarly, only around 40 per cent of the rural school-age children (5-14 years) went to school in 1973-74, this share rose to 75 per cent in the rural poverty line PCTE class in 2004-05. Private

household expenditure on health and education has increased over time but it was assumed to be provided by the state in the 1973-74 based poverty lines and hence was not explicitly accounted for in the poverty line.

In the approach suggested by the Expert Group, rural-relative-urban price differentials and rural and urban state-relative-to-all-India price differentials needed to evaluate the recommended all-India (urban) PLB are based on the following data sources : (i) the household-level unit values (or prices hereafter, defined by dividing reported value of consumer expenditure by reported quantity consumed for each sample household) for the most detailed level of commodity disaggregation (subject to the availability of some pre-specified minimum number of observations) derived from the latest available 61st round NSS data (2004-05) on Consumer Expenditure Survey (CES) for food, beverages and tobacco, fuel and light, clothing and footwear for which quantities consumed/used are reported in the survey; (ii) private expenditure incurred per school-attending child derived from the 61st round NSS on employment-unemployment; and (iii) non-institutional household expenditure on health incurred per treatment not requiring hospitalization and institutional expenditure per reported case of hospitalization from the 60th round (January-June 2004) of NSS on Morbidity and Health Care. These three sources together account for 90 per cent of the urban PLB excluding taxes, rent and conveyance for which no appropriate deflator was available and this combined item has been adjusted separately at current prices on the basis of the observed state/rural/urban specific consumption share of these items. (iv) For the remaining five item groups (entertainment, personal care items, miscellaneous goods, miscellaneous services and durables) accounting for 10 per cent of the urban PLB excluding rent and conveyance, recourse has been taken to the Labour Bureau data underlying CPIAL and CPIIW.

While unit values from CES under (i) above have been derived at the state/rural/urban level median values at the most disaggregated level (176 items after excluding 11 for inadequate number of sample observations), they are aggregated into fifteen commodity group indices, namely, cereals, pulses, milk, oil, egg-fish-meat, vegetables, fresh fruit, dry fruit, sugar, salt-spices, other-food, beverages and tobacco, fuel-light, clothing,

footwear. We get one index from data source (ii) above and two indices from data source (iii) for institutional and non-institutional health care separately and five indices under (iv) so that we have twenty three indices in all for PLB excluding rent and conveyance. Each of these indices is a Fisher Ideal Index, namely, a geometric mean of Laspyres (L) and Paasche (P) indices (where L uses the all-India bundle as weights and P uses the state-level bundle as weights in weighting rural-relative-to urban, or state-relative-to-all-India (rural and urban separately) price-ratios. These 23 indices are aggregated for each state and sector into a single index using budget shares of these commodity groups around the poverty line MPCE class. The urban state-relative-to-all-India indices are applied to the All-India urban PLB (excluding rent and conveyance) to arrive at urban poverty lines (excluding rent and conveyance) to which state-specific actual expenditure on rent and conveyance of those around the poverty line class has been added to the derive the final urban poverty lines. The within state rural-relative-to-urban indices are applied to state-level urban poverty lines (excluding rent and conveyance) to get the rural state-level poverty lines after adding the actual expenditure on rent and conveyance of those around the poverty line class.

It is important to note that the starting point for the calculation of (rural-relative-to-urban and rural/urban state-relative-to-all-India) price index is the state-level median price[5] at the disaggregated level. For the calculation of rural/urban state-relative-to-all-India price indices, the state-level median prices are aggregated to their all-India counterparts by weighting them by state-level value of aggregate consumption at median prices for commodities in (i) above and by state-level aggregate census population in the case of (ii) and (iii) above. Population used in the aggregation of 176 items in (i) into 15 commodity groups at the state-level is internally generated by using NSS-based sampling multipliers. However, population figures used in aggregating 15 state-level commodity groups to all-India level are also census as supplied by the Planning Commission[6]. NSS

---

[5] Median price level is preferred to mean level because the latter is and former is not affected by extreme observations in the sample.

[6] Population of each state was obtained from the Planning Commission press note on poverty estimates for 2004-05, released in March 2007. The note is available at http://planningcommission.gov.in/news/prmar07.pdf . This is different from the state-wise population estimates implicit in the posted multipliers in the 61st round CES.

are known to under-estimate the size of the aggregate population and the consistency between the two sets of population estimates requires a scaling adjustment explained in the detailed procedure of calculations.

The major advantages of the price index numbers outlined in brief above by omitting several details for the sake of exposition may be noted. One, they are based on the same data base from which poverty calculations are made so that these two get integrally linked and, despite possible problems that unit values may have in disregarding the quality differences, avoid the criticism of outdated base in the existing population-segment-specific consumer price indices. Secondly, another criticism of the existing procedure of calculating the official poverty figures was its inability to make allowance for state-specific patterns of consumption in price adjustment. The use of Fisher indices corrects for this deficiency. Thirdly, the new poverty lines have been derived for all the states including the North-Eastern states for which the earlier official procedure had to use the poverty ratio of one of the states, namely Assam for which CPIAL and CPIIW were available. However, for the union territories, it is necessary to use the poverty line of the neighbouring states in the absence of adequate data. In the process of gaining these advantages, the procedure has undoubtedly become more complex but with easy availability of high speed computers and enhanced capacity-generation at the state level as well as by private researchers to handle large volumes of data, the Expert Group decided in favour of the suggested procedure.

The final set of new state-wise poverty lines and poverty estimates for the suggested new base year 2004-05 are given in annexure A.   Since the recommended reference poverty line basket – PLB – underlying the new poverty lines corresponds to the official urban headcount ratio for 2004-05, the derived state-level urban headcount ratios using the recommended price indices were adjusted pro-rata so as to make state-population-weighted urban average equal to 25.7 per cent. However, with a change in the recommended within-state rural-relative-to-urban and rural and urban state-relative-to-all-India price adjustment procedure, the new state-level headcount ratios are bound to

differ from those using the existing official poverty lines – they are higher for some states and lower for others. The rural all-India headcount ratio derived as a population-weighted average of state-level headcount ratios using the new poverty lines is 41.8 per cent compared to 28.3 per cent using the old poverty lines. All the state-level rural headcount ratios are higher using the new poverty lines than those in the earlier official estimates.

It is important to underline that except for the urban all-India headcount ratio for 2004-05 which was used to derive the new all-India reference poverty line basket, all other headcount ratios for 2004-05 – rural all-India and rural and urban state-wise – are based on the new reference poverty line basket and new price indices, and hence are not comparable to and must not be compared with the earlier headcount ratios using the old-out-dated 1973-74 PLB and unsatisfactory price indices.

Using the suggested methodology, a preliminary exercise has been carried out for the 50th round of NSS for the year 1993-94 to facilitate two-time-point comparison of changes in headcount ratios. The detailed state-wise results appear in http://planningcommission.gov.in\eg_poverty.htm . From this exercise we find that at the all-India level, the revised headcount ratios in 1993-94 are 50.1 per cent in rural areas, 31.8 per cent in urban areas and 45.3 per cent in the country as a whole. This is against existing official 1993-94 poverty estimates of 37.2, 32.6 and 36.0 respectively. In other words, even though the level of 2004-05 All-India headcount ratios using the new poverty line basket appears higher at 41.8 per cent (rural) and 37.2 per cent (combined rural-urban) than the existing official poverty estimates of 28.3 and 27.5 per cent, the comparable extent of poverty reduction between 1993-94 and 2004-05 is not very different from that inferred from using the old methodology.

VI. Procedure for updating the poverty line for 2009-10 and beyond

Once we have the detailed results of the quinquennial 66th round for the year 2009-10, we can calculate the within-state rural-relative-to-urban and rural and urban state-

relative-to-all-India Fisher indices. We can also calculate Fisher index of changes in state-level urban prices between 2004-05 and 2009-10 which can be applied to urban poverty lines for the base year 2004-05 to derive updated state-level urban poverty lines for 2009-10. Using the within-state rural-relative-to-urban Fisher indices for 2009-10 and applying them to updated urban poverty lines for 2009-10, we can get updated state-level rural poverty lines for 2009-10. Applying these updated poverty lines to the rural and urban MRP-based size distributions of PCTE for 2009-10, we can get rural and urban headcount ratios from which all-India rural and urban headcount ratios can be derived as state-population-weighted averages. The same procedure can be repeated in future beyond 2009-10.

In this context, the Expert Group notes that the suggested procedure for updating the poverty line is computationally more demanding than the present method of using indices derived from CPIAL and CPIIW. Therefore, the Expert Group recommends:

a. That the NSSO publish by state and rural and urban population, the median levels of unit values for all the items for which quantities are available.

b. That the Planning Commission set up either in-house or in some suitable institution a unit that can perform the required computations whenever necessary and support the state governments to do their own calculations, if necessary.

The Expert Group also notes that the ongoing NSS 66th round (July 2009 to June 2010) of household consumer expenditure survey which will provide the basis of the next set of poverty calculations, will involve a choice between the existing MRP used in the calculations of this Report and MRP* involving 7-day recall period for some food items in addition to 365-day recall for low-frequency items and 30-day for the rest (see Annexure D for details). Depending on this choice, it may be necessary to shift from MRP-equivalent PCTE as used in this report to MRP*-equivalent PCTE in future. In that case, the Expert Group recommends that the method followed should be the same as used in this Report for shifting from URP to MRP. In this context, the Expert Group strongly

recommends that the NSSO publish the size distributions of PCTE (and other details including median prices) for both MRP and MRP* in the proposed reports of the 66th round.

References:

Deaton (2003), "Prices and Poverty in India, 1987-2000", *Economic and Political Weekly*, January 25

Deaton (2008), "Price Trends in India and Their Implications for Measuring Poverty", *Economic and Political Weekly*, 9 February

Deaton and Tarrozi (2000), "Prices and Poverty in India" Research Programme in Development Studies, Princeton University, Processed

FAO (2008), "The State of Food Insecurity in the World", Food and Agriculture Organisation, Rome

Government of India (1993), "Report of the Expert Group on Estimation of Proportion and Number of Poor", Perspective Planning Division, Planning Commission

International Institute for Population Sciences (IIPS) and Macro International (2007), "National Family Health Survey (NFHS-3), 2005–06" Mumbai: IIPS.

Annexure A

Final Poverty Lines and Poverty Head Count Ratio for 2004-05

State	Poverty Line (Rs)		Poverty Headcount Ratio (%)		
	Rural	Urban	Rural	Urban	Total
Andhra Pradesh	433.43	563.16	32.3	23.4	29.9
Arunachal Pradesh	547.14	618.45	33.6	23.5	31.1
Assam	478.00	600.03	36.4	21.8	34.4
Bihar	433.43	526.18	55.7	43.7	54.4
Chhatisgarh	398.92	513.70	55.1	28.4	49.4
Delhi	541.39	642.47	15.6	12.9	13.1
Goa	608.76	671.15	28.1	22.2	25.0
Gujarat	501.58	659.18	39.1	20.1	31.8
Haryana	529.42	626.41	24.8	22.4	24.1
Himachal Pradesh	520.40	605.74	25.0	4.6	22.9
Jammu & Kashmir	522.30	602.89	14.1	10.4	13.2
Jharkhand	404.79	531.35	51.6	23.8	45.3
Karnataka	417.84	588.06	37.5	25.9	33.4
Kerala	537.31	584.70	20.2	18.4	19.7
Madhya Pradesh	408.41	532.26	53.6	35.1	48.6
Maharashtra	484.89	631.85	47.9	25.6	38.1
Manipur	578.11	641.13	39.3	34.5	38.0
Meghalaya	503.32	745.73	14.0	24.7	16.1
Mizoram	639.27	699.75	23.0	7.9	15.3
Nagaland	687.30	782.93	10.0	4.3	9.0
Orissa	407.78	497.31	60.8	37.6	57.2
Pondicherry	385.45	506.17	22.9	9.9	14.1
Punjab	543.51	642.51	22.1	18.7	20.9
Rajasthan	478.00	568.15	35.8	29.7	34.4
Sikkim	531.50	741.68	31.8	25.9	31.1
Tamilnadu	441.69	559.77	37.5	19.7	28.9
Tripura	450.49	555.79	44.5	22.5	40.6
Uttar Pradesh	435.14	532.12	42.7	34.1	40.9
Uttaranchal	486.24	602.39	35.1	26.2	32.7
West Bengal	445.38	572.51	38.2	24.4	34.3
All India	446.68	578.8	41.8	25.7	37.2

Annexure B
Poverty Estimates and Poverty Lines for 1993-94

	Poverty Line (Rs)		Poverty HCR		
	Rural	Urban	Rural	Urban	Total
Andhra Pradesh	244.1	282.0	48.1	35.2	44.6
Arunachal Pradesh	285.1	297.1	60.0	22.6	54.5
Assam	266.3	306.8	54.9	27.7	51.8
Bihar	236.1	266.9	62.3	44.7	60.5
Chhatisgarh	229.1	283.5	55.9	28.1	50.9
Delhi	315.4	320.3	16.2	15.7	15.7
Goa	316.2	306.0	25.5	14.6	20.8
Gujarat	279.4	320.7	43.1	28.0	37.8
Haryana	294.1	312.1	40.0	24.2	35.9
Himachal Pradesh	272.7	316.0	36.7	13.6	34.6
Jammu & Kashmir	289.1	281.1	32.5	6.9	26.3
Jharkhand	227.7	304.1	65.9	41.8	60.7
Karnataka	266.9	294.8	56.6	34.2	49.5
Kerala	286.5	289.2	33.9	23.9	31.3
Madhya Pradesh	232.5	274.5	49.0	31.8	44.6
Maharashtra	268.6	329.0	59.3	30.3	47.8
Manipur	322.3	366.3	64.4	67.2	65.1
Meghalaya	284.1	393.4	38.0	23.0	35.2
Mizoram	316.5	355.7	16.6	6.3	11.8
Nagaland	381.7	409.6	20.1	21.8	20.4
Orissa	224.2	279.3	63.0	34.5	59.1
Pondicherry	220.3	264.3	28.1	32.4	30.9
Punjab	286.9	342.3	20.3	27.2	22.4
Rajasthan	271.9	300.5	40.8	29.9	38.3
Sikkim	266.6	362.2	33.0	20.4	31.8
Tamilnadu	252.6	288.2	51.0	33.7	44.6
Tripura	275.8	316.6	34.3	25.4	32.9
Uttar Pradesh	244.3	281.3	50.9	38.3	48.4
Uttaranchal	249.5	306.7	36.7	18.7	32.0
West Bengal	235.5	295.2	42.5	31.2	39.4
All India			50.1	31.8	45.3

Note: The estimates for Chhatisgarh, Madhya Pradesh, Bihar, Jharkhand, Uttar Pradesh and Uttaranchal are for states as they exist after bifurcation in 2001. The estimates for 1993-94 have been calculated from the unit data using district and state boundaries of the divided states in 1993-94.

Annexure -C
Procedure for constructing poverty lines in 2004-05

Construction of Price Indexes

For food, intoxicants, fuel, clothing and footwear

A. Data preparation

1. Compute <u>median "price"</u> (*prices refer to unit values obtained from the NSS consumption expenditure surveys. Prices are obtained as value divided by quantity for each item of consumption*) for each item in each state using population weight (*population weights are the NSS population weights: multiply the multiplier given in the NSS data files with household size to obtain population multipliers*) separately for sectors (rural and urban areas).

   - For PDS items, aggregate total value and total quantity with relevant non-PDS item for each household before calculating prices. These items are Rice, wheat, kerosene and Sugar.
   - For clothing, bedding, and footwear, use the 365 day estimates of consumption.
   - Drop items for which the CES does not collect quantity information. Also drop items which are subtotals.
   - Count the number of non-zero observations in each state and sector for each commodity. Replace median price in sector and state as missing if less than 6 observations of prices reported for the item.
   - Median prices should be estimated only for the consumers. That is, those households for which there is no price should be treated as missing.

2. Compute <u>average per capita quantity consumed</u> of the population (using NSS population weights), separately for each sector and state.
   - Note that average per capita quantity should be estimated over entire population, including the zeros (non-consumers).

3. Compute <u>value of consumption</u> for each item, separately for each sector and state as the product of median price and average per capita quantity consumed.

4. Check for outliers using the following protocol:
   - Identify price outliers by comparing median prices across states such that {max price across states>100*min price across states}. Do this for each item, separately for rural and urban areas.
   - Identify high value of consumption by comparing values across states such that {max value of consumption per capita >max(10*mean value of consumption, 75)} for 30 day consumption items; and {max value of consumption per capita >max(10*mean value of consumption,12*75)} for

365 day consumption items. Do this for each item, separately for rural and urban areas.

5. Based on above two checks:
    - Fix outliers if they are obvious shifts in a decimal point. Otherwise, set outlier prices and high values as missing. Based on these two checks make the following corrections.
    - For urban areas, correction for Coal (347): Gujarat (divide by 10), and knitting wool (372): Sikkim (unit values divided by 1000. correction for Biscuits (300): HP qty converted to kg. correction for Milk powder (162) in Mizoram: treat as missing. Fix for green chillies (216) in Arunachal: treat as missing. In rural areas, correction for Milk powder (162) and other vegetables (224) in Mizoram: treat as missing
    - No items are dropped at this level, only corrections at individual states and commodities are done as mentioned above.
    - *Recalculate value of consumption of item in the state if any outlier values are fixed.*

6. Check for insignificant values;
    - Items of insignificant consumption identified as follows: classify each item as insignificant consumption if {value of consumption per capita in the state<0.15 Rs} for 30 day consumption items, and if {value of consumption per capita in the state<1.8 Rs} for 365 day consumption items
    - Drop items from both rural and urban areas if an item is found to be significant in only 5 or fewer states and sectors. Note that there are 70 possible combinations that we are checking across: 35 states*2 sectors
    - 11 Items out of the total number of 187 items for which value and quantity were specified are dropped based on test of insignificant value. These items are khoi, barley, singara, berries, misri, ice, katha, snuff, cheroot, ganja, and cotton.

7. Finally, drop Union Territories (Chandigarh, Daman & Diu, Dadar & Nagar Haveli, Lakshwadeep, and Andaman & Nicobar Islands) after data preparation complete.

B. Calculation of Indexes

We compute three types of *Fisher* price indexes: (i) States relative to All-India rural prices; (ii) States relative to All-India urban prices; and (iii) Within state, rural relative to urban prices. In each case, the price indexes are calculated for 15 commodity groups (grouped in order that they appear in the NSS Consumption Expenditure Survey): cereals, pulses, milk, oil, egg-fish-meat, vegetables, fresh-fruit, dry-fruit, sugar, salt-spices, other-food, intoxicants, fuel-light, clothing, footwear. **At this stage all population figures used for states and sectors are census populations as given by planning commission** and given at the end of the note:

Steps for calculating the "States relative to All-India urban" and "States relative to All-India rural" indexes are as follows:

1. Calculate <u>value of state bundle at state median level prices</u>, separately for rural and urban areas:
   - Value of state consumption for each item is (median state price*average quantity consumed per capita in the state). Aggregate across items to commodity group level.

2. Calculate <u>value of state bundle at All-India prices</u>, separately for rural and urban areas:
   - For this, first calculate *All-India prices* for each item. These are estimated as { sum across states(quantity per capita consumed in state*population of state*median price in state) divided by sum across states(quantity per capita consumed in state*population of state)}
   - Value of state consumption at All-India prices for each item is then (All-India price* average quantity consumed per capita in the state). Aggregate across items to commodity group level.

3. Calculate <u>value of All-India bundle at All-India prices</u>, separately for rural and urban areas:
   - For this, first calculate *All-India quantity consumed per capita* for each item. These are estimated as {(sum across states(quantity per capita consumed in state*population of state))/all-India population}
   - **All India population used here is excluding the union territories**.
   - Value of All-India bundle at All-India prices for each item is then (All-India price*average quantity consumed per capita at the All-India level).
   - Note that in each state, before aggregating to the commodity group level, set value of All-India bundle for an item to be missing if consumption of the item in the state is zero or missing. Then aggregate across items to commodity group level in each state. Thus, **the value of this bundle will vary from state to state**.

4. Calculate <u>value of All-India bundle at state prices</u>, separately for rural and urban areas:
   - This is calculated for each item as (State price*average quantity consumed per capita at the All-India level). Aggregate across items to commodity group level.

5. Now calculate the price indexes for each commodity group as well as for total of the above commodity groups above as follows:
   - Paasche index=value of state bundle at state prices/value of state bundle at All-India prices
   - Laspeyres index=value of All-India bundle at state prices/value of All-India bundle at All-India prices
   - Fisher index=geometric mean of Paasche and Laspeyres index

21

These indexes are computed separately for rural and urban areas, and separately for the 15 commodity groups and a consolidated index for all the commodity groups taken together. The consolidated index is an aggregate index based only on items from the CES.

6. Repeat similar exercise to calculate "within state, rural relative to urban fisher price index" for each commodity group:

- For this, in addition to the calculations already done above, calculate (i) the value of rural bundle at urban median prices, and (ii) the value of urban bundle at rural median prices.
- Note that in each state, retain an item only if the **item is consumed in both rural and urban areas**. Otherwise, set prices for the item to missing in both sectors before estimating value of bundles.
- Paasche index=value of rural bundle at urban prices/value of rural bundle at rural prices
- Laaspeyres index=value of urban bundle at urban prices/value of urban bundle at rural prices
- Fisher index=geometric mean of Paasche and Laspeyres index

C. Index of Cost of education per school attending child

This Index is obtained from the Employment-Unemployment survey (EUS) of NSS for 2004-05.

- Use the individual file to obtain the number of children in the age group of 5-15 in each household. For each person, the EUS also gives the status of current attendance. Use this to obtain the number of children going to school in the relevant age-group for each household.
- Use the abridged consumption schedule of EUS to get the expenditure **per household** on tuition fee and stationary given separately. Add the two items to get the total expenditure on education
- Divide the total expenditure on education by each household by the number of school going children in the age-group 5-15 to obtain the cost incurred per school going child for each household.
- Compute the median cost of education across households using NSS weights by state and sector.
- Calculate all India median cost as population weighted average of the states in each sector. {sum of (population*median cost in each state)/sum of population of states} using Planning Commission's estimates of population
- Divide the median cost of each state by all India cost to obtain the index number for each state relative to all India. This will give the index for education for each state relative to all India for each sector.
- Divide the median cost in urban area by the median cost in rural area to obtain the urban to rural index in each state.

D. Index of cost of Health Expenditure

Index of cost of health expenditure is calculated separately for two items, namely, institutional medical care (hospitalisation cost per reported case of hospitalization) and non-institutional medical care (cost incurred per reported case of out-patient medical treatment). The data base used for obtaining median expenditure for health expenditure is the survey on Morbidity and Health Care (Schedule 25.0) of the 60th round corresponding to January-June 2004.

- Obtain median cost per treatment for non-institutional medical care across households, using NSS weights, for each state and sector.
- Similarly obtain median cost per case of hospitalisation.
- Obtain all India cost per treatment and all India cost per hospitalisation as population weighted average of states using the method suggested above in the case of education. {using Planning Commission's estimates of population}
- Dividing state median cost by all India cost will give the index of respective state with respect to all India. Do this for both sectors.
- Similarly obtain urban to rural price index by dividing the urban median cost by rural median cost in each state.

E. Construction of aggregate Index

For construction of aggregate index, we use the indices prepared by **Saluja-Yadav** based on data collected from Labour Bureau for the expert group for the following **five** items, entertainment, personal goods and toiletries, durables, miscellaneous goods and miscellaneous services along with the **fifteen** indices obtained above for food, fuel, clothing, footwear (section B above based on NSS quinquennial Consumer Expenditure Survey for the 61st round), **one index** for cost of education per school-going child (section C above based on the NSS 61st round Employment-Unemployment Survey) and **two indices** of cost of health (in terms of cost of hospitalization per reported case and cost per reported out-patient treatment based on NSS 60th round). Although there are some problems with the Saluja-Yadav Indices for some states, these are the only available indices for items other than food, fuel, clothing, footwear, education and health. Moreover, the Saluja-Yadav indices are not available for all states hence the indices have been adjusted using CPI price data and median values from the CES. Note that no indices are available for rent and conveyance. **Total 23 indices** are used for aggregating the indices. These are cereal, pulses, milk, edible oil, non-vegetarian items, vegetables, fresh fruits, dry fruits, sugar, salt & spices, other food, intoxicants, fuel, clothing, footwear, education, medical (non-institutional), medical (Institutional), entertainment, personal & toilet goods, other goods, other services and durables.

1. For the urban state relative to all India index by commodity groups, obtain the all India index (AII) as the census population weighted index of the state indices. Check for each of the commodity groups if the all India census population index is 1 or not. If not, divide the state-wise indices for each state by the AII. After this scaling of index numbers for the state relative to all India index numbers, the census population weighted index number should be equal to one.

23

2. Use the published MPCE classes in rural and urban areas of each state for arriving at the poverty line class in each state. For each state and sector use the per capita expenditure for the same commodity groups identified above to arrive at budget shares. Note that **the budget share is excluding rent and conveyance and taxes**. For consumption expenditure per capita, do not use estimates based on uniform reference period of 30-days (given in report 508). Instead use the published report of NSS based on mixed reference period. This is available in a separate report by the NSSO for 61st round. This report provides consumer expenditure by the same commodity group classification that is used in construction of index numbers.

3. To aggregate the indices, use budget shares of the same commodity groups as mentioned above around the poverty line class. That is budget share of each of these commodity groups in the monthly consumption expenditure excluding rent and conveyance. **Hereafter, budget share refers to share excluding rent and conveyance**.

4. Start with all India urban MRP poverty line of Rs 579 and using the consolidated NSS CES index number [only CES indices based for 15 groups] for states relative to all India, obtain the state urban poverty line. Using NSS published MPCE classes find out the MPCE class to which this poverty line belongs. Use this MPCE class for obtaining the budget shares around poverty line class (excluding rent and conveyance). Note that for clothing, footwear, durable, education and institutional medical care, the budget share are 365 day estimates. Similarly use the MPCE class corresponding to Rs 579 in urban India to get all India budget shares.

5. Use the urban state poverty lines obtained above and the NSS consolidated index [only CES indices based for 15 groups] for rural relative to urban in each state to obtain rural state wise poverty lines. Find corresponding MPCE classes and budget shares excluding rent and conveyance for each state.

6. To obtain aggregate indices for urban areas for each state relative to all India, calculate the Laspeyre index using All India budget shares using all 23 commodity indices. Similarly obtain Paasche index using state budget shares. Take geometric mean of these two to get Fisher index for each state relative to all India in urban areas.

7. To obtain urban relative to rural aggregate index, get Laspeyre index using urban state budget shares and Paasche using rural budget shares [using all 23 commodity indices]. Take geometric mean to get Fisher index for each state for urban relative to rural areas.

F. Poverty lines
This step describes the construction of Final poverty lines to be used on MRP distribution

1. For final poverty lines, use the aggregate index obtained above for state relative to All India and All India poverty line of Rs 548 {Excluding the share of rent and conveyance from Rs 578.80} to obtain state urban poverty lines P1^{U}.

2. Note that these poverty lines are excluding rent and conveyance. Use the actual share of rent and conveyance around the poverty line class to adjust the poverty line obtained above to arrive at urban state poverty lines $P2^U$.

3. Use the urban relative to rural index in each state and the urban poverty line $P1^U$ to obtain rural state poverty lines $P1^R$. Get the actual share of rent and conveyance around the poverty line class to adjust rural poverty lines including rent and conveyance for each state in rural area to obtain $P2^R$.

4. Check if $P2^U$ and $P2^R$ are indeed in the same MPCE class that was used in step E.4 and E.5. If not change the MPCE class corresponding to this poverty line. This is an iterative process. Do these till you find the right MPCE classes.

5. Once you have identified the right MPCE class, repeat step F.1 to F.3.

6. $P2^U$ and $P2^R$ are the final state poverty lines for urban and rural areas separately.

7. The all India poverty line is the poverty line which gives the same poverty headcount ratio (state-population weighted average headcount ratio)as would be obtained using the state poverty lines from step F.6

8. Final poverty lines and HCR are given at the end of this note.

For Updating the Poverty Lines

This part of the note describes the procedure of updating the 2004-05 poverty lines to next quinquennial (2009-10).

G. Index number for 2009-10

1. Repeat the steps A and B outlined above to obtain state wise indices for the 15 commodity groups for which CES unit values are available. These are available for food, fuel, clothing and footwear.

2. For 2004-05, create a miscellaneous Fisher index aggregating the education, health and all other items except rent and conveyance from the 2004-05 commodity group wise indexes of these following the same procedure as in step E.

3. From miscellaneous sub-group index CPIU and CPIAL (CPIR, if available), calculate the rate of inflation for this group between 2004-05 and 2009-10. Dividing the inflation rate in the state by the all India inflation rate will give the relative rate of inflation in that state with respect to all India.

4. Use this relative rate of inflation to adjust the state relative to all india urban miscellaneous group index of 2004-05 to arrive at state relative to all India indices for this group for 2009-10. {state relative to all india index number of each state*relative rate of inflation}

5. Similarly, dividing the urban rate of inflation for miscellaneous group by the rural rate of inflation will give the relative rate of inflation in urban areas with respect to rural india in each state.

6. Use this relative rate of inflation across sectors at state level to obtain the urban to rural index for miscellaneous group in each state for 2009-10.

7. For those states where the miscellaneous index is not available in CPIU or CPIAL, use the index of neighbouring state.

8. Including the 15 indices available from NSS CES and the miscellaneous index as obtained above, the total number of commodity groups for which index numbers will be used are 16.

H. State Urban Poverty Line for 2009-10

1. Use the median prices (unit values) and per capita quantities for each item in 2004-05 and 2009-10 for each state in urban areas to obtain Fisher indices by commodity groups for 2009-10 relative to 2004-05.

2. These can be calculated for the 15 item groups mentioned above. For other items use the miscellaneous index of CPIU.

3. Use the 15 item group indices and miscellaneous index of CPIU to create aggregate index of each state for urban areas for 2009-10 relative to 2004-05.

4. To obtain the aggregate indices, Get the corresponding budget shares in both years excluding rent and conveyance. The budget shares will be for the 15 commodity groups which use NSS unit values as well as for miscellaneous. The index for miscellaneous is the ratio of miscellaneous index of CPIU in 2009-10 and 2004-05. Use 2004-05 budget shares to arrive at Laspeyre index and 2009-10 budget shares to arrive at Paasche index. Add the share of rent of conveyance in the poverty line class to obtain All India poverty line for 2009-10. Check if it falls in the same poverty line class or not. If not, do it again till you find the right all India poverty line class in 2009-10.

5. Use the MPCE without rent and conveyance obtained in the earlier step to obtain state wise urban poverty lines using the aggregate indices.

6. Use the urban state poverty lines obtained in the previous step and the rural to urban aggregate index of each state to arrive at the rural poverty lines.

7. Adjust the urban and rural poverty lines by inflating them with the actual share of rent and conveyance around the poverty line class in each state and sector.

8. These will be the final state wise poverty lines for rural and urban areas.

9. Obtain the population weighted poverty estimate for rural and urban areas for all India.

10. The poverty line that corresponds to these poverty estimates is all India poverty line.

Notes: Population of each state was obtained from the Planning Commission press note on poverty estimates for 2004-05, released in March 2007. The note is available at http://planningcommission.gov.in/news/prmar07.pdf . This is different from the state-wise population estimates implicit in the posted multipliers in the 61st round CES.

Population in Lakhs (2004-05)		
State	Rural	Urban
Jammu & Kashmir	80.22	27.61
Himachal Pradesh	57.27	6.56
Punjab	165.26	91.98
Chandigarh	1.07	9.43
Uttaranchal	66.48	24.25
Haryana	158.44	70.39
Delhi	9.05	146.64
Rajasthan	467.13	144.23
Uttar Pradesh	1416.26	381.98
Bihar	799.05	93.59
Sikkim	5.01	0.68
Arunachal Pradesh	8.68	2.87
Nagaland	17.33	3.61
Manipur	16.82	5.98
Mizoram	4.58	4.77
Tripura	27.67	5.99
Meghalaya	19.52	4.88
Assam	244.02	38.71
West Bengal	605.33	237.44
Jharkhand	223.1	65.36
Orissa	324.55	60.35
Chhatisgarh	175.22	47.29
Madhya Pradesh	476.35	175.67
Gujarat	332.76	208.64
Daman & Diu	1.39	0.66
Dadra & Nagar Haveli	1.71	0.81
Maharashtra	578.59	453.59
Andhra Pradesh	579.17	219.35
Karnataka	359.98	195.99
Goa	6.78	7.74
Lakshdweep	0.42	0.28
Kerala	244.81	85.08
Tamilnadu	334.83	311.4
Pondicherry	3.43	7.14
Andaman & Nicobar	2.63	1.42
All India	7814.91	3142.36

2. Final poverty lines and poverty Head count ratio by state and sector.

State	Poverty Line		Poverty Head Count Ratio	
	Rural	Urban	Rural	Urban
Jammu & Kashmir	522.30	602.89	14.1	10.4
Himachal Pradesh	520.40	605.74	25.0	4.6
Punjab	543.51	642.51	22.1	18.7
Uttaranchal	486.24	602.39	35.1	26.2
Haryana	529.42	626.41	24.8	22.4
Delhi	541.39	642.47	15.6	12.9
Rajasthan	478.00	568.15	35.8	29.7
Uttar Pradesh	435.14	532.12	42.7	34.1
Bihar	433.43	526.18	55.7	43.7
Sikkim	531.50	741.68	31.8	25.9
Arunachal Pradesh	547.14	618.45	33.6	23.5
Nagaland	687.30	782.93	10.0	4.3
Manipur	578.11	641.13	39.3	34.5
Mizoram	639.27	699.75	23.0	7.9
Tripura	450.49	555.79	44.5	22.5
Meghalaya	503.32	745.73	14.0	24.7
Assam	478.00	600.03	36.4	21.8
West Bengal	445.38	572.51	38.2	24.4
Jharkhand	404.79	531.35	51.6	23.8
Orissa	407.78	497.31	60.8	37.6
Chhatisgarh	398.92	513.70	55.1	28.4
Madhya Pradesh	408.41	532.26	53.6	35.1
Gujarat	501.58	659.18	39.1	20.1
Maharashtra	484.89	631.85	47.9	25.6
Andhra Pradesh	433.43	563.16	32.3	23.4
Karnataka	417.84	588.06	37.5	25.9
Goa	608.76	671.15	28.1	22.2
Kerala	537.31	584.70	20.2	18.4
Tamilnadu	441.69	559.77	37.5	19.7
Pondicherry	385.45	506.17	22.9	9.9
All India	446.68	578.8	41.8	25.7

Annexure –D

On comparability of the 50th, 55th and 61st rounds of the National Sample Survey :

On the basis of the study by Professors T.J.Rao and A.K.Adhikary commissioned for the Expert Group, it was concluded that

(a) the three NSS rounds under consideration are comparable in terms of sampling design but non-comparability arose due to non-sampling errors, in particular changes in the reference periods introduced in the 55th round for 1999-2000;

(b) the published results of the 50th and the 61st rounds based on the uniform reference period (URP) of 30 days for all items are comparable;

(c) The results of the 50th and the 61st rounds, though not published, based on the mixed reference period (MRP) are also comparable. Mixed reference period, it may be recalled, refers to 365-days reference period for items with low frequency of purchase (clothing, footwear, durables, education, and institutional health care) and 30-day reference period for all the remaining items of household consumption. In both the rounds, the information was collected for the low frequency items on 365-day reference period but was not used in the published tabulations.

(d) The published results of the 55th round cannot be made comparable with either the 50th or the 61st rounds mainly due to non-sampling errors introduced by the two recall periods of 7-days and 30-days for certain food items having been canvassed from the same households in the 55th round. It may also be mentioned that while the 50th round had collected information on the low-frequency items of purchase on *both* 30-days and 365-day recall periods, the 55th round collected the same information *only* on 365-days reference period.

(e) Going forward, the National Sample Survey Organization has taken a decision which impinges on the poverty estimation and which we endorse, namely, to switch to a new and better version of the Mixed reference period (MRP*), namely, 365-day reference period for the items of low frequency of purchase (see © above), 7-day reference period for certain specified food items and 30-days for all the remaining items. We endorse the change because it aims at capturing in a more satisfactory manner (than the prevalent uniform reference period (URP) of 30-days for all items of consumption which has been in use) the consumption bundle of the poorer sections of the population, that is, those at the lower end of the scale of per capita total (household consumer) expenditure (PCTE). We are informed that the ongoing quinquennial round, namely the 66th round, has been designed to provide MRP-based as well as MRP*-based PCTE estimates. This would also imply that given the three alternative reference periods, namely, URP that has been in use till the 61st round, MRP which is preferred by the Expert Group to URP and the upcoming MRP*, the *levels* of headcount ratios would not be comparable over time but the design of the surveys permits calculation of the *comparable rate of change* in the headcount ratios.

Annexure E

Consumption Share of various Commodity Groups around Poverty Line class for Urban Areas in All India

Commodity Groups	Consumption at the Poverty Line Class (Rs)	Budget Shares around Poverty Line Class (%)
Cereal	96.5	16.7
Pulses	19.2	3.3
Milk	43.6	7.5
Edible oil	29.0	5.0
Egg, Fish and Meat	20.8	3.6
Vegetables	36.5	6.3
Fresh fruits	8.2	1.4
Dry fruits	2.2	0.4
Sugar	13.1	2.3
Salt & Spices	14.6	2.5
Other food	28.4	4.9
Intoxicants	12.6	2.2
Fuel	70.4	12.2
Clothing	38.3	6.6
Footwear	6.0	1.0
Education	18.5	3.2
Medical: Institutional	4.3	0.7
Medical: Non-institutional	20.5	3.5
Entertainment	6.6	1.1
Personal items	18.0	3.1
Other goods	14.2	2.5
Other services	18.2	3.1
Durable goods	8.6	1.5
Sum of above item groups	548.12	94.7
Rent and Conveyance	30.68	5.3
Urban PLB	578.8	100.0

No. M-11019/10/2005-PP
Planning Commission
(Perspective Planning Division)

Yojana Bhavan, Sansad Marg,
New Delhi, 2nd December, 2005

ORDER

Subject: Expert Group to Review the Methodology for Estimation of   Poverty.

It is proposed to set up a Expert Group to Review the Methodology for Estimation of Poverty.

II.   The composition of the committee will be as under:

1.	Prof. Suresh D. Tendulkar Delhi School of Economics University of Delhi Delhi.	Chairman
2.	Dr. R. Radhakrishna Director Indira Gandhi Instt. of Development Research Mumbai	Member
3.	Prof. Raghav Ghaia Faculty of Management Science University of Delhi	Member
4.	Dr. Suranjan Sengupta AE-710, Sector-1 Salt Lake Kolkata-700064	Member

III.   The terms of reference for the committee are as follows:

1. To examine the issues relating to the comparability of the 50th , 55th and 61st round, and to suggest methodologies for deriving such comparability with past and future surveys.
2. To review alternative conceptualizations of poverty, and the associated technical aspects of procedures of measurement and data base for empirical estimation including procedures for updating over time and across states.
3. In the light of (2), to recommend any changes in the existing procedures of official estimates of poverty.

IV. The Chairman of the Expert Group may set up sub-committees if necessary for undertaking in-depth studies.

V. The Group may co-opt and consult non-official experts/representatives of other agencies if required.

VI. The expenditure on T.A./D.A. for the Members in connection with the meetings of the committee will be borne by the parent Department/ Ministry/ Organisation. The expenditure, if any, in respect of non-official Members will be borne by the Planning Commission as per rules & regulations of T.A./D.A. applicable to Grade-I officers of Govt. of India.

VII. Secretarial Assistance will be provided to the Group by the Planning Commission.

VIII. The Technical Committee will submit an interim report by February, 2006 and its final report to the Planning Commission within a year.
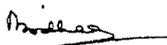
R.Sridharan
Joint Secretary
(Admn.)

Copy to:

All members of the Expert Group.