

Growth and Poverty in India – Myth and Reality

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Introduction

India has grown at an average rate of 5.7 % for the last 20 years. In per-capita terms, income growth has accelerated from the Hindu rate of less than 1 % prior to the eighties, to 3.7 % per annum since 1980-81. These National Account estimates have been provided by the Central Statistical Organization and are accepted as the approximate ¹ truth by all government bodies, domestic and international, non-government bodies and researchers and analysts around the world.

However, the acceptance is considerably different on the flip side of growth – poverty levels, and changes, in levels of poverty. The definition is itself a complicated issue, and not the subject of this paper. The accepted, and official, definition of poverty in India is consumption of goods worth Rs. 49 (per person per month) in the rural areas and Rs. 57 in the urban areas, 1973-74 prices. The government of India conducts, via the National Sample Survey (NSS), annual surveys of the consumption expenditure of Indian households. Every five-years, a five times larger sample size (approximately 125,000 households) is used. In addition to the NSS, the National Council of Applied Economic Research runs occasional surveys of consumption and income on Indian households. Thus, there is no dearth of data on the poverty and income levels of Indian households.

Yet there is a raging controversy about whether poverty levels in India have increased in the nineties, a period co-incident with the ushering in of major economic reforms. India, containing the largest amount of poor in the world, is an obvious test case for whether economic liberalization works, whether reforms have a human face, etc. Hence, the debate on Indian reforms, and Indian poverty levels, is not just academic.

The ideological stakes are high, and India is the centerpiece, the jewel, in the assertion that poverty in the world has gone up in the nineties. (World Bank (1999). This major conclusion is examined in detail in this paper, while a companion paper, Bhalla(2000b), explores the relationship between research and ideology. This nexus seems to be particularly strong in the study of data on income distribution and poverty.

¹ Approximate is the key word here; it is understood by all that inaccuracies are present in National Accounts data. However, in terms of central tendencies (mean levels and growth in mean levels) the numbers are deemed to be accurate.

The primary goal of major lending institutions like the World Bank (and now it appears, even the International Monetary Fund ²) is poverty reduction. Research results, and policy prescriptions, therefore, may be *endogenous* to the goals of international organizations. The same may be equally true about the different states in India, who receive subsidies on the basis of how many poor they have – and therefore have an interest in stating higher than actual poverty figures.

The debate is about what has happened to poverty during a period of unprecedented growth in the Indian economy. The highly influential NSS reports, with the unofficial official stamp of government of India (the NSS surveys are conducted under the direction of the Planning Commission), state that absolute poverty in India, declined from 54 percent in 1973-74 to 43 percent in 1983-84, and declined further to 36 percent in 1993-94. (Table 1) However, for 1998, the last year for which data are available, poverty is reported (estimated) to have increased by about 6 percentage points to around 42 percent. This in spite of per-capita consumption and income having grown by about 4.5 percent per annum or about 20 percent during the 4 year intervening period. Thus, the NSS data for the last decade suggests that there is an inverse relationship between income growth and poverty reduction – as growth accelerates upward, poverty reduction hurtles downward.

The NSS “findings” assume significance because post reforms (initiated in 1991), the country has witnessed accelerated economic growth. From 3% growth in the seventies, the record on growth improved significantly in the eighties when the economy grew at an average rate of 5.5%. Further momentum was provided by the reforms and the economy grew at more than 6% in the post-reform nineties. What is more relevant for the measurement of poverty point is the growth in per-capita income (and/or consumption). Per capita income growth has gone up from 3.6% in the eighties to 4.2% in the nineties. Thus, collating the national accounts (NA) and NSS data, one is confronted with a

² The IMF has recently started recruiting staff for a large poverty division. The East Asian crisis is behind us, the developed world is on automatic pilot, and most of the developing countries are graduating in terms of policies, if not per capita income. And the IMF, it appears, has precious little to do, except work on poverty reduction. An alternate view is that competition between international organisations cannot hurt, especially since Bhalla(2000b) suggests misuse of monopoly powers on the part of the World Bank !

bizarre situation of accelerated growth, higher per-capita income and an increase in absolute poverty to levels observed in the early eighties.

These results call for an explanation. Datt(1999), who along with Martin Ravallion has studied extensively the phenomenon of NSS poverty in India (World Bank (1997) is mostly based on their joint work) suggests two possibilities – first, an increase in the household saving rate, and second an under-estimation of the consumption of households at the upper-end of the income distribution. The first explanation does not (empirically) apply – *both* consumption and income show an increase of about 20 percent during the period 1993-94 to 1998 (and 41 percent increase from 1983-84 when poverty levels were close to those reportedly observed by the NSS in 1998). The veracity of the second explanation is explored in Section 3.

Can the NSS data be believed? Is the NSS messenger wrong ? This is not just an academic issue, since policies, both domestic and international, are based on what happens in India, and what is communicated by the NSS surveys. The NSS started nationwide surveys before most developing countries achieved independence; these surveys have, till date, a monopolistic brand of authority.

From both a research and policy point of view, it is imperative that the NSS data be scrutinized. But what alternative is there than to accept the NSS results? There are the National Accounts data on income and consumption. But these data, can, at best, give indications about trends in the level of consumption; absolute poverty, measured by the Head Count Ratio (HCR) is about the magnitude of the population consuming *below* a certain absolute level of income. The NA data cannot yield information on HCR's; only surveys can.

National accounts data yield estimates of mean consumption; the NSS data yield estimates of the *distribution* of consumption. Together, the two sets of data can yield “reliable” estimates of trends in poverty. Indeed, until 1993, this was precisely the approach taken by the government of India. For reasons that are not entirely clear³,

³ The officially stated position is as follows: “A number of methodological issues have been raised in respect of the estimates of poverty released by the Planning Commission. In view of the importance of poverty eradication as a social objective, wide ranging references to the incidence of poverty in discussions relating to social problems as also their use in allocation of funds for

the government of India set up an Expert Group under the chairmanship of the late eminent scholar, Mr. Lakdavala. In 1993, the Group came out with its report entitled “*Report of the Expert Group on Estimation of Proportion and Number of Poor*”, (EG-GOI (1993)). One of the most significant policy conclusions contained in this report was the recommendation that national accounts data no longer be used for adjusting mean survey estimates i.e. the National Sample Survey be used, *in toto*, to generate results on poverty trends. One of the major conclusions of this paper is that this single decision has been responsible for the considerable amount of noise, and ideological misinformation, that now exists about poverty in India.

The plan of the paper is as follows. Section 2 documents the trends in poverty in India since 1973. The next section outlines a methodology to assess the relative accuracy, in terms of mean consumption, of the two major sets of data – surveys and national accounts. Section 4 contains alternative estimates of the poor in India. These estimates are based on other surveys (NCAER) and data on important elements of food consumption. Section 5 contains a discussion of ideology and how it impinges on research. Section 6 concludes.

poverty alleviation programmes, it was thought that all the issues relating to the estimation of poverty could be considered afresh by an expert group”. (Page 1, first paragraph, EG-GOI(1993).

Section 2: Trends in Poverty in India

There are several components to any study about the level, and change, in poverty. First, there is a simple matter of definition e.g. is the poverty line to be based on caloric consumption, or food share, or simply a judgmental absolute poverty level?⁴ Second, should poverty be measured at the household or individual (per capita) level, or a further refinement, that poverty be measured on the basis of adult equivalence scales? Third, should poverty be measured in terms of consumption, or income? Fourth, what consumption deflators should be used – clearly the consumer price index (CPI), but in the Indian context, the CPI data are notorious for being “wrong” based as they are on old weights and old consumption items.

Researchers have done detailed studies on each of the above, and several related subjects. A major purpose of this paper is to assess *changes* in poverty. The “official” poverty line of Rs. 49 (rural) and Rs. 57 (urban), per capita per month, 1973-74, is used. This poverty line follows the recommendation of the Expert Group set up by the Government of India, Planning Commission, 1993; this new poverty line was set about 14 percent higher, in real terms, than a previous official poverty line.

Note that poverty lines are in terms of consumption, not income. Often, survey data are available for income, although consumption, because it better reflects “permanent income”, is preferred. An alternative, reliable, and reasonable definition of poverty is one that states that the poverty line is one below which the long run (permanent) household savings rate is negative. Thus, income surveys which use the consumption poverty line as the cut-off point can yield reasonably good *upper bounds* to a consumption based poverty level.

⁴ The study of poverty, as other subjects, is not immune to changing fashions. A caloric consumption basis of poverty was fashionable in the late seventies, and this fashion was primarily led by the World Bank. See Reutlinger-Selowsky (1976) for an entire book devoted to this subject. The fashion lost its trendiness with Sukhatme's (1977) pioneering work on inter-individual variations in metabolism; Bhalla (1980), in a paper prepared for the World Bank Development Report, 1980, but certainly not endorsed by it, showed that acceptance of FAO data on caloric norms would mean that 67 of the American males, and 80 percent of American females, had a caloric consumption level below the FAO requirement – and hence were malnourished. Certainly, visual wisdom would suggest that the percentages pertain to the over-nourished.

The NSS reports detailed nominal consumption data at the rural and urban level, with, as per the recommendations of EG-GOI, separate consumer price indices being used to update real consumption levels. Macro data are available at only the national level. Since a major policy objective, and debate, is to relate poverty to growth, only national level data are reported in this paper; survey data on rural and urban consumption, poverty etc. are aggregated to the national level by using a changing composition of the population – from 78 percent, rural, in 1970-71 census, to 76 percent in 1980-81 and 73 percent in 1990-91. The rural population is estimated to be 70 percent in 2000-01.

Table 1 reports on the poverty level, and change, for different NSS survey years starting with the Oct. 1973-June 1974 survey and ending with the 1998 survey for which preliminary results have been published. Also reported are the long run (5 year) changes in growth and poverty. The results suggest the following: during the ten year period, 1973-1983, per capita GDP grew at an average rate of only 2 percent per annum, but absolute poverty declined by a large 10.1 percentage points. Indeed, this decline is the largest on record for any ten-year period since NSS started collecting data in 1951-52. (See World Bank(1997)).

From 1983 to 1993, per capita income grew at an accelerated and high rate of 3 percent per annum, and poverty declined by almost an identical amount – 9.9 percentage points. Note that the growth rate is almost 50 % higher, but results in a similar decline in NSS estimates of absolute poverty. And it seems that that was the last of the declines. For 1998, poverty seems to have gone up to 42 percent, with per capita income growth further accelerating to a pace of 4.5 percent per annum i.e. annual per capita income and consumption growth rate more than doubles to a high absolute level of 4.5 percent, for almost six years, and NSS based absolute poverty goes up.

Heuristically, and intuitively, there is supposed to be a positive relationship between economic growth and poverty reduction. Growth is supposed to matter, even if trickle-down is not always complete. Using data for over seventy developing countries for the period, 1975-1997, Bhalla(2000b) estimates the elasticity of the change in the head count ratio with respect to change in consumption expenditure. The elasticity is observed to be -0.38 . Somewhat different elasticities are obtained for India depending on whether the international poverty line of \$ 1 per capita per day, PPP 1985 prices is used (along

with PPP consumption data) or Indian poverty line (lower by about 20 percent). The former elasticity is close to the international experience; the latter is as high as -.75.

Though differences in growth at constant domestic and international differences may account for some difference in the result, it is likely that the growth-poverty relationship is affected by “initial conditions”. If expenditure distributions are lognormally distributed (which they are), then it is highly important whether the expenditure change occurs from an *initial* level which is in the flat portion of the curve, the steep portion of the curve, or the fat portion of the curve. The large difference in the elasticities observed for India is most likely due to this simple “statistical artifact”.⁵

Regardless of the elasticity chosen, the fact remains that they are significantly positive and mega-significantly different than the negative -0.1 elasticity yielded by the NSS data from 1987 to 1998. The sudden drop in the elasticity from 0.7 (or 0.4) to -0.1 is unprecedented, and defies explanation. The findings of the NSS data deserve an explanation, before any acceptance.

One theoretical explanation for the seemingly counter-intuitive NSS results is that last decade’s high growth was accompanied by a worsening in income distribution. However, just a worsening of income distribution won’t be able to do the NSS “trick”; indeed, worsening of income distribution is neither necessary nor sufficient for an observation that poverty has gone up. The poor can be considerably absolutely better off even if their share of the pie goes to miniscule levels, if during the period under observation their real consumption has increased. The only necessary, and sufficient, condition for the result that absolute poverty has increased in India is that the incomes of the poor have *declined* despite the economy growing at more than 6 percent per annum for an entire decade.

Regarding income distribution, NSS data itself does not suggest that income distribution has worsened. In the mid-seventies, the share of the bottom 20 % (per capita

⁵ This point was first made in World Bank’s report on Malaysian income distribution, (World Bank 1990), and estimates of the head count-expenditure elasticity controlling for such initial conditions are available in Bhalla(2000b).

consumption) was reported to be 9 percent, and that of the bottom 40 % as 22.1. Twenty two years later, in 1997, the shares are reported as 9.2 and 22.2, respectively.

The National Council of Applied Economic Research (NCAER), a government funded research organization, also conducts consumption and income distribution surveys. Household income distribution data are available for 1975-76 and 1994-95. The shares of the bottom 20 % (bottom 40 %) for 1975-76 are 5.8 and 15.8 percent in 1975-76; for 1994-1995, the shares are no different, at 5.9 and 15.9 percent, respectively.(Table 2)

Economic growth has occurred, distribution of per capita consumption has not changed and nor has the distribution of household income. By definition, therefore, the absolute levels of income of the poor have increased and therefore, the poverty level must have declined, and declined by an enormous amount.⁶ But that is not what the NSS data suggests, as reported in Table 1. So what gives ?

Some inferences about what happened to consumption in India can be gleaned from data on items of food consumption. Table 3 reports on consumption (actually availability) data for four important items of food consumption – cereals, pulses , edible oils and sugar. These items together account for almost two-thirds of food consumption and are low elasticity items. Data from NSS surveys of 1977-1978 to 1987-88 (and reported in EG-GOI(1993), and Appendix I) suggest that cereals and pulses have a low income elasticity (about 0.2) and edible oils and sugar somewhat higher (about 0.6). Thus, if food items show a large consumption growth, then that is indirect evidence that overall consumption has gone up significantly.

Table 3 supports the notion that something drastically went wrong in the NSS surveys, especially in the nineties. From 1983 to 1998 (two end points where poverty levels are deemed to be the same at around 42 percent), cereal consumption (three year averages centered on the middle year) went up from 449 to 494 grams per capita per day, or an increase of 10 percent.

⁶ Throughout the text, the terms consumption and income are used interchangeably though it is understood that the poverty line is defined in terms of per capita consumption. Further, the discussion is implicitly (or explicitly) in per capita terms; thus, population growth has been accounted for.

Table 3 also reports on a comparison between the average consumption levels as reported by NSS and the average consumption level as reported in the National Accounts. Also reported is the ratio of the two; when this ratio is close to 100, it means that the survey is capturing the same magnitude as the NA. This ratio explains the divergence between NSS survey data, and all other evidence. From being at a stable 82 to 86 percent level through most of the seventies and the early eighties, this ratio begins a structural decline towards the 56 percent level observed in 1998.⁷

The decline is first observed for the period 1987 to 1993, when the ratio fell from 84 to 76 percent, or a decline of approximately 10 percentage points. What this increase in the measurement error means is that the real consumption of the poor (and the rest of the population) should increase by at least 10 percent (or 2 percent per capita per year) for NSS to avoid recording an increase in absolute poverty from 1987 to 1993.⁸

Measurement error *per se* affects the calculation of poverty levels at a point in time. Surveys, by definition, cannot match NA estimates even if definitions and coverage is the same. Bhalla(2000b) documents that the median measurement error for surveys in developing countries is 90 percent i.e. 50 percent of the surveys have a measurement error (ratio of survey to NA estimates) less than 10 percent. With about a 10 percent error, poverty in any given year will be overestimated by approximately 5 to 7 percent, a tolerable error.

Even if measurement error is large (around 20 percent as with the NSS), there is no problem with inferences about *trends*, as long as the magnitude of the proportionate error stays relatively constant. This was the case with the NSS data from 1973 to 1983, and hence NSS conclusions about changes in poverty for this period are likely to be accurate. It is when the measurement error changes (in either direction) that assessment of trends becomes a hazardous, and ideologically and politically charged, exercise.

⁷ The 1998 data refer to the survey in the first six months of the data. It is rumoured that for the whole of 1998, the ratio has fallen to a historic low of 45 percent!

⁸ One “explanation” for the “bad” NSS data is that the post 1993 data refers to a “thin” sample of only 25,000 households rather than the large sample of 125,000 households. While plausible, one needs the extra explanation that something is different about the thin samples from 1987 onwards, and this phenomenon of significant underestimation did not happen before.

Section 3: Alternative (to NSS) Estimates of Poverty in India

The result that poverty has not declined in India in the nineties, despite per capita income growth of 55 percent (1987 to 1998), is due to one simple “result” – the NSS survey data is now able to capture only 56 percent of officially reported consumption versus about 82 to 86 percent through most of the seventies and eighties. Two possibilities are present – either the NSS is wrong, or the NA is wrong, at least as far as trends in per capita income are concerned. Is there a method by which this NSS “result” (or NA result) can be cross-checked ?

Yes, and there are at least two such methods, and both methods rely on use of data that are not from either the NSS or the National Accounts. First, other survey data e.g. NCAER, can be used to establish the veracity of the NSS data. In 1994-95, NCAER conducted an income and savings survey of households. Three results emerge: First, there is little change in the distribution of household income, 1994-95 compared to 1975-76. (see Table 2). Second, when the data are ordered by savings, it is observed that the first two deciles had negative savings, while the third decile had an average savings rate of only 1 percent. Third, the survey data suggest that poverty in India in 1994-95 was actually close to 28 percent.

The 28 percent estimate is obtained from the NCAER data via two different methods and for both the official poverty line, and what I would like to recommend as a “new” poverty line. The *recommended poverty line is that level of income at which the long run savings rate is likely to be close to zero*. According to Table 2, this level occurs at a level somewhere between 25 and 30 percent - the first two deciles show a negative savings rate and the third decile shows a mildly positive rate of 0.2 percent.

Using the “traditional” method of measuring poverty as consumption below the official poverty line (Rs. 228 per capita for the rural areas and Rs. 305 for the urban areas or Rs. 249 for all-India⁹ in 1994-95) a NSS comparable estimate can be obtained. Given the data on household income and savings distribution (Table 4), and converting the per-capita poverty line to a household line (average family size of 5.5) of Rs. 16,434 per year, an average poverty level of 28 percent is obtained.

⁹ The average family size for rural areas is 5.6 and for urban areas, 5.1. The urban share of the population in 1994-1995 is assumed to be 26 percent.

The calculation is as follows. All 12.4 percent of the households below an annual income of Rs. 12,000 are poor. Each Rs. 1000 movement from Rs. 12000 to Rs. 18000 is approximately equal to 3.5 percent of the households. So movement from 12000 to 16434 is approximately 15.4 percent households, or a total of poor households in the economy of (12.4 + 15.4) or 27.8 percent. Note that this is likely to be an upper bound to poverty as derived from per capita distribution data. This 1994-95 poverty level is significantly lower than the 37.1 percent NSS estimate for the same year.

But this estimate (27.8 percent) is *not* reported in NCAER documents. Instead, NCAER reports a poverty level of 36.6 percent for 1994-95, a number strikingly close to the NSS estimate of 35.9 percent for the same year. How are such radically different results (27.8 percent vs. 35.9 percent) possible with the same set of data ? NCAER also collected *some* data on consumption, (it was primarily an income and savings survey) and chose to define consumption on the basis of these limited data, rather than define it as income minus savings. Using NCAER consumption data (Table 4b), one finds that poverty is at 35.9 percent rather than the 27.8 percent derived from the alternate definition of consumption as income minus savings.

Which of the two NCAER consumption estimates are right ? Depends on whether one believes that the household savings rate in India in 1994-95 was 20 percent (estimate due to a direct measure of savings) or 30 percent (indirect estimate derived through exhaustive set of questions on income and limited set of questions on consumption). Other evidence would also suggest that the direct estimate of consumption is grossly in error.

There is a second method by which survey data can be tested for their accuracy. This method relies on what are called Engel elasticities or Deaton curves. There are some known stylized facts about consumer behaviour. Food has an income elasticity which is less than unity; meat has a higher income elasticity than potatoes; with increasing income, food forms a smaller and smaller share of the consumption basket. Total consumption has close to a unitary elasticity with respect to income (permanent income hypothesis) though for developing countries this elasticity may be somewhat less than unity.

Cereals and pulses (C&P) are a major consumption item in India, and NSS surveys suggest that these items constituted 52 percent of the basket of the poor in 1977-78; and food constituted 80 percent of total consumption of the poor. The corresponding figures for the non-poor in the same year were 31.1 and 61.6 percent. Data on cereals and pulses are monitored by several organizations; government of India is heavily involved in the procurement, distribution, imports, and exports, of cereals and pulses. Thus, reliable outside NSS data on C&P consumption are available. It also helps to note that the only item for which NSS shows near equality with National Accounts data pertains to the consumption of C&P (though even this near equality has deteriorated in the nineties with NSS data about 85 percent of NA foodgrain consumption; see Srinivasan(1999)).

Bhalla-Glewwe (1985) offer a method by which survey and national accounts data can be tested against each other.¹⁰ (See Appendix I for details on this method). This same method is applied here. A key equation for this method is reproduced below.

$$\ddot{E} = [(\dot{q}_f - \epsilon_{ff}^c (\dot{q}_f - \dot{q}_n)) / \eta_f] + w_f \dot{q}_f + w_n \dot{q}_n \quad (1)$$

Equation 1 predicts percentage change in total expenditures (\ddot{E}), as a function of the percentage change in real consumption (quantities) of food, \dot{q}_f , the percentage change in food and non-food prices, (\dot{q}_f and \dot{q}_n), the share of food and non-food in total expenditures, (w_f and w_n), and the own-price and income elasticity of demand for food, (ϵ_{ff}^c and η_f).

This model needs assumptions and data on income and price elasticities, food and non-food inflation, and the quantity of food consumption. Reliable data on four items of food consumption are available: cereals, pulses, edible oils and sugar. The NSS survey data suggests that total expenditure (food and non-food) increased by 79 percent from 1987-1988 to 1993-94. Data from Government of India documents suggests that cereal and

pulses consumption increased from 466 grams per capita per day in 1987-88 to 468 grams per capita per day in 1998 (three-year averages centered on the survey year). During this same period, food prices rose by 77 percent, and non-food prices by 61 percent. Using an expenditure elasticity ¹¹ of cereals consumption as 0.2, and own price elasticity as -0.1, consumer theory would suggest a predicted increase of total consumption expenditures of 81 percent. (Food and non-food shares are 63 and 37 percent, respectively, for all years except 1998 when the survey estimate of 57 and 43 percent is taken).

A second estimate of total expenditure change is obtained from consumption data of edible oils and sugar. Consumption of these items increased from 17.1 kilograms per capita per year in 1987-88 to 19.2 in 1993-94. Using an expenditure elasticity of 0.6, and food and non-food prices as reported above, an estimated change in total expenditure of 94 percent is obtained. These two estimates (81 and 94 percent) are used (with weights as reflected in the consumption basket of 0.8 (foodgrains) and 0.2 (edible oils plus sugar)) to provide a non-NSS and non-NAS estimate of expenditure change from one survey year to another survey year; thus, for the 1987-93 period, predicted consumption change is 83 percent. The NSS data indicate an expenditure change of 79 percent, and the NA data an expenditure change of 97 percent. The NSS and model estimates are almost identical, with the NAS estimate about 17 percent higher than the NSS estimate.

Table 6 reports expenditure change according to the above model for the various time-periods for which NSS data are available. On an average basis, the predicted expenditure change is very close to that yielded by the National Accounts. For the 1973-87 period, the predicted consumption change is virtually identical to NA change – 283 to 277 percent. For the recent 1987-98 period, the predicted change is lower by about 14 percent. For the entire twenty five year period, the three estimates are as follows: NSS survey data, 731 percent, NA data, 1170 percent, and non-NSS non-NA expenditure change of 1063 percent. In other words, there is little doubt that the NSS has been in

¹⁰ This method was developed for the use of Sri Lankan income distribution data for 1973 and 1980. The analysis showed that the survey data were more accurate than the national accounts, and that the Sri Lankan government was grossly understating inflation.

gross error since 1983, precisely the time-period when a secular trend has been observed in the poverty ratio. Given its basis on non-NSS non-NA data, the basic food consumption method provides an objective appraisal of what data are accurate – and the verdict is unambiguous – the NSS data has been vastly understating the consumption of the population, *and* the consumption of the poor.

A final comment on the inaccuracy in the NSS data. The last column of Table 6 reports on the implied food expenditure alone to NSS total expenditure change. For example, for the 1993-98 period, real per-capita consumption of food is likely to have gone up by 6.5 percent (number yielded by per capita consumption change in cereals and pulses, column 1). Food prices during the same period increased by 54.8 percent, yielding an increase in the total expenditure on food to 64.9 percent. Since food constitutes 63 percent of total expenditures, and assuming no increase, **not even in nominal terms**, in non-food expenditure, one obtains a predicted worst-case total expenditure increase of 35 percent for 1993-98 (reported in column 5). The NSS total expenditure change for the same period is 34 percent. In other words, the NSS estimate of total consumption is even less than the estimated food consumption in 1998!

Section 4: Poverty Levels in India : The Myth and the Reality

The previous section established that the mean consumption levels as yielded by the NSS data were likely to be grossly in error, especially in the nineties. And that the National Accounts data were likely to be reasonably accurate. Analysis of survey and national accounts data for over 55 developing countries showed that the *median* country survey was reflecting a 90 percent consumption level vis-à-vis national accounts data. This is therefore taken as a “best estimate” consumption level. The distribution of consumption data are obtained from the nearest NSS survey year. The two together form estimates of poverty reported in Table 7. (This method is almost identical to the original Planning Commission estimate of poverty; the difference is that the multiplier with respect to NA consumption is 10 percent less).

¹¹ The income or consumption elasticity of foodgrain (and edible oils plus sugar) consumption is obtained exclusively from NSS data for the period 1977-78 to 1987-88. (See Appendix I for details).

These results suggest that poverty has declined from 45 % in 1975 to 34 percent in 1987-88, and down further to 25 percent in 1993-94, 21 percent in 1994-95, and 13 percent in 1998. These results are radically different from the NSS result of about 42 percent poverty in 1998.

Dubey-Gangopadhyay (D-G), and Deaton-Tarozzi(D-T), use the NSS data for 1987-88 and 1993-1994 and , arrive at corrected inflation figures for the survey households. The objective of both studies is the same – can the price data contained in the NSS data be refined to obtain better estimates of expenditure change. Both these important studies eschew questioning the estimates of nominal expenditures, something of central concern to our study. The two studies reach similar results – poverty is overstated in the NSS data (see Table 7). The table also reports on the various results obtained from NSS and NCAER data. The World Bank results are almost identical with the official estimates of poverty i.e. their adjustments appear to have only a cosmetic result. While the estimates of levels obtained by D-G and D-T are different, both studies suggest (with exclusively price adjustments to the NSS data and mandatory “cleaning” of the same), that the decline in the HCR was approximately 1 percent per year from 1987-1988 to 1993-94.

The D-T study constructs price indices based on NSS data, as well as price relatives between urban and rural data which show considerable divergence from the 16.3 percent higher urban prices (relative to rural) that were assumed by the Expert Group. The D-T corrected estimate for poverty for 1987-1988 is 34.2 percent, and 28.7 percent is their estimate for 1993-1994. (Note the closeness of this estimate to our own estimate of 25 percent for 1993-1994). D-T also estimate that inflation was less than officially stated during the two years by 6 percent. The NSS data suggests that mean expenditures (on the basis of uncorrected inflation figures) increased by a total of only 1.3 percent. Thus, D-T results indicate that real expenditures increased by 7.3 percent (1.6 plus 6) and poverty declined by 5.5 percentage points (34.2 minus 28.7 percent) from 1987-1993.

The Deaton-Tarozzi study can be used to *indirectly* estimate a trickle-down elasticity i.e. the elasticity of change in the head count ratio with respect to a change in expenditures. What the study does is to present “corrected” estimates of inflation; an overestimate of

inflation, leads to a decline in the estimate of real consumption – as does an underestimate of nominal consumption. Over time, the effects on real consumption through the two avenues – a lower inflation rate or a higher GDP growth rate) may be different. In other words, D-T results do *not* show that the trickle-down elasticity is close to 0.75 (5.5 percent change in poverty and a 7.3 percent change in real expenditures). But their results are suggestive, and given the evidence reported earlier, it appears that a reasonable estimate of the trickle down elasticity, for India, is close to 0.7.

Table 8 presents alternative estimates of trickle-down; data for over 60 developing countries for the time-period 1975-1997 are used to estimate a world poverty elasticity- 0.4. Two estimates are presented for India – one based on the international poverty line of \$ 1 per day per capita, 1985 international prices, and the second based on the domestic poverty line, which is approximately 80-90 percent of the international poverty line. The second estimate is identical to that yielded by the D-T study. An average of the two estimates (.75 and .32) yields an average trickle down elasticity for India of 0.5.

One can now address the following question: are the results presented in Table 7 real ? Per capita consumption grew by 35.6 percent from 1983-84 to 1998. Using the HCR-expenditure elasticity of -0.5 for the post 1983 period, one obtains that the decline in the HCR should be approximately 18 percent. From about 37 percent level in 1983-84, this yields a figure of 19 percent for the head count ratio in 1998. Estimate derived on the basis of the D-T data for 1998 is 16.7 percent – a per capita consumption increase of 16 percent and an elasticity of 0.75 yields a decline of 12 percentage points from the 1993-94 level of 28.7 percent. The derived D-T estimate for 1998 is strikingly close to the thirteen percent level reported earlier. These estimates assume that there has been no noticeable change in income distribution during the intervening period, an assumption supported fully by the data presented in Table 2. Thus, a reasonable conclusion is that poverty in India was between 13 and 19 percent for 1998 rather than 42 percent which is the level being reported by the Planning Commission, Government of India and the World Bank(1999).

Section 5 – The Political Economy of overstating Poverty

Estimates of poverty in India changed with the publication of the Government of India's Expert Group on Poverty report published in 1993. One conclusion of this report seems to have been reached hastily and without supporting evidence.

“If estimates of poverty-incidence are to be made with minimum recourse to adjustments based on arbitrary assumptions, the best course would be to base them entirely on the NSS. The use of NSS is preferable to (National Account Statistics) NAS for several reasons. The NAS estimates relate to private consumption rather than household consumption which is the appropriate basis for assessing poverty-incidence, The NAS estimate of private consumption is derived as a residual by deducting from estimated production of various goods and services (adjusted for foreign trade), the estimated use for capital formation and public consumption. Apart from lack of reliable direct data on production for a sizeable segment of the economy, the adjustments for users other than private consumption are based on scanty data, often of the distant past and subjective judgement; they do not take into account differences in prices across States; nor do they provide State level estimates of private consumption.” (EG-GOI, Paragraph 3.25, page 13)

The EG-GOI report discusses a lot about data, but for their controversial, and seemingly outrageous, decision of accepting the NSS data, *in toto*, the evidence offered is just what has been reported above – statements. Nevertheless, how good were the reasons offered by the Expert Group's report? First, the report refers to the fact that the institutional population (e.g. prisons) in the economy are included in the NA estimates and not in the NSS estimates. While factual, this objection is more in the nature of a *non-sequitur*. Only if the extra-covered population was large *and* its mean consumption level substantially different than the rest of the population would the expert group conclusion have any relevance – and there is no evidence of this provided by the expert committee.

The NA consumption estimate is based both on survey and non-survey data, and serves as a check to the accuracy of any individual survey data. “The lack of reliable evidence for a sizeable segment of the economy” is again offered as a Planning Commission diktat – the national accounts methods were covering about 70 percent of the economy as far back as the mid-seventies (see Bhalla-Vaishista(1988)) and that number, while still not 100 percent (nor is the NSS), should over time be getting closer to full coverage. The third and fourth explanation (“the estimates do not take into account differences in prices across States; nor do they provide State level estimates of private

consumption”) are again absolutely irrelevant to the issue of the NA estimates being a cross-check on NSS data. Price data are generated elsewhere e.g. CPI, and some analysts do classify such data as part of the NA; state level GDP estimates are being provided by the same organization that provides NA estimates (Central Statistical Organization). Rather than rejecting one and accepting the other, the Expert Group should have instead talked about data co-operation e.g. the NSS could be a useful part of the data network of the country to provide inputs into the construction of state estimates.

To suggest that the NAS data should be rejected because it does not provide all of the data needs of the nation (the Expert Group could have mentioned an additional reason for rejecting National Account estimates – it does not provide weather forecasts which affect food production which obviously affects the consumption of the poor) is ideology at its worst; it would have been far better for the Expert Group to suggest raising the poverty line and thereby achieve the purpose of showing more poverty in India. And they would have been supported by “objective” evidence since at that time (in 1993) the Indian poverty line was about 20 percent below the internationally accepted poverty line of \$ 1 per capita per day, 1985 prices.

What about the rationale for the flip side – accepting the NSS data? In perhaps a unique example of simultaneously committing both Type I errors and Type II errors (errors of commission as well as errors of omission), the Expert Group offered the following basis, and only the following arguments, for using *only* the NSS data for generating poverty estimates.

“The NSS gives a state-wise estimates of size distribution as well as commodity composition of private consumption for the rural and urban population separately. The estimate is based on the information provided by households on quantities and price of large number of goods and services consumed by them. The surveys are carefully organised, use uniform concepts and procedures across the country and the sample households are selected by rigorous scientific procedures. NSS data are of course not free of errors, biases, comparability over time and other problems. The nature of these have been widely debated and there is a sustained effort to refine and improve the survey design and procedure. Even as these efforts continue – as of course they must – the NSS remains the best available source of assessing poverty incidence and the characteristics of the poor across space and time”. (EG-GOI, Paragraph 3.26, page 13)

There seemed to be precious little basis for the decision of the Expert Committee to use only the NSS data, and just the NSS data, for generation of poverty estimates.¹²

However, the reality that poverty is big business, and the ideological underpinnings of the same (see Bhalla(2000a, 2000c)) meant that the Expert Group's highly controversial, and questionable, decision received support in terms of an enthusiastic endorsement from no less a respected authority on the subject than the World Bank.

“A second set of issues which the Expert Group addressed concerned the prevailing practice of adjusting NSS consumption figures so that these aggregated up to consumption figures from the National Accounts. The Expert Group strongly recommended that this practice be discontinued because of the arbitrary basis of the adjustments and the lack of convincing evidence for such practice....

The recommendations of the expert group *significantly strengthen the methodological basis* of poverty measurement in India, and can be regarded as a major step towards “*best practice*” Following publication, the Expert Group's recommendations were *widely adopted in the academic and research community*, but it was not until December 1996 that the Planning Commission declared its intention to also accept these recommendations. (emphasis added, World Bank(199?), p. ??)

The World Bank not only supported the decision, but in its lament that only as late as 1996 did the Planning Commission endorse the “NSS only diktat”, the World Bank also hints at parentage for the *ex-ante*, and *ex-post*, “bad” idea. Like the Expert Group, the World Bank provides precious little evidence for its assertions. The “wide acceptance” perhaps refers to some favoured institutions and/or researchers since research has been unable to unearth these endorsements. Only a few months after the Planning Commission endorsement, Bhalla(1997) submitted a research proposal to the NCAER which stated:

“There is a high degree of uncertainty, and controversy, about the evolution of poverty in India. In particular, studies by reputed authorities like the Planning Commission and the World Bank suggest that the head count poverty ratio (number of people below a poverty line) has not declined by more than a few percentage points since the mid 70's – even with an average growth rate above 5% in the last two decades.The controversy

¹² For all their pretence of abhorrence of markets, the owners of the NSS data, the Planning Commission, did seem to recognise the importance of scarcity value. With their sweeping decision, the Expert Group ensured that demand for raw NSS data would be, well, just short of infinite. Rents from rental of NSS data could be derived – and the World Bank became the only institution in the world to receive the NSS data. Trickle-down to other favoured researchers continues, and while the official policy is that anybody can purchase the CD-Rom, the reality is somewhat different.

arises due to two factors: (i) differences in measure of inflation and (ii) differences in measures of income and expenditure. It is the latter that is causing the most disparity in estimates. In particular, National Account (NA) estimates of expenditure and income are at great variance with those obtained by the NSS Surveys.”

Dubey-Gangopadhyay also do not indicate a wide acceptance: “This approach has been *hotly debated* in academic and political circles....However, given the controversy over such an adjustment, (author’s note: adjustment refers to the Expert Group rejected practice of blowing up NSS data to National Accounts data)) we have not used these adjusted measures in our analyses but have reported the calculations” (p.23 , italics added).

In its most recent report (World Bank(2000)), with no new data since its ringing 1997 endorsement of the Expert Group methods, the World Bank does a complete flip-flop and now claims that “the differences between the surveys and the National Accounts suggest a need for better statistics, a theme that echoes throughout this report” (p.1). The World Bank is being politically correct in couching its criticism in terms of better statistics, but it would be useful to know what “new” data made it change its view on “best practices” both within India and outside. In a welcome change from both the Expert Committee report, as well as the 1997 World Bank report, the new report does offer *some* evidence for the born again doubts about the NSS data.

The implications of the Expert Group decision on mis-measurement of poverty in India have been documented above. Nevertheless, most research has proceeded on the assumption that the consumption level NSS data are accurate, and that the burden of proof rests with users of *other* data . All of these studies have taken the NSS consumption data as accurate and proceeded to correct for errors in prices (Table 7). Some, like NCAER(2000) have inadvertently matched their own “wrong” survey data with that of NSS in order to arrive at close to consensus, *nee* NSS, figures. Some studies (Datt and Ravillion (1996), World Bank (1997), Datt(1999)) have then proceeded to derive elaborate implications of their NSS based results for what happened in India.

Section 5: Conclusion

This paper has tried to achieve two objectives: first, to establish whether survey data or national accounts data are more accurate? Towards this end, a methodology was presented and tested with application to the National Sample Survey of India and India's national accounts. The results strongly support the contention that the NSS data are grossly in error, especially during the nineties.

The second related objective of this study was to present alternative estimates of poverty in India, from 1975 to the present. Results of other authors (e.g. Datt, Dubey-Gangopadhyay and Deaton-Taranozzi) and institutions (e.g. NCAER, World Bank) are reviewed, and new results are presented. The conclusion – poverty in India around 1998 is likely to be close to 15 percent, as opposed to about 42 percent which has been indicated by National Sample Survey for 1998 and by the World Bank(1999).

These results suggest that poverty will mostly be eliminated in India over the next few years. But that would be the wrong conclusion. Even absolute poverty is relative, which is as it should be. The Expert Group recommended an increase in the absolute poverty level by 14 percent in 1993. It is a measure of India's success that less than a decade later, the poverty line needs to be raised again, possibly by the same amount.

This paper has not discussed at all the other correlates of poverty – low education, bad health etc. When absolute poverty is removed in terms of provision of basic expenditures, policy should move to these important correlates. Part of the reason for the emphasis in just getting the basic facts right is to clear the air for concerted, and positive, government action where it is needed. The primary, and exclusive purpose for taxation should be the efficient finance of public goods, and for efficient redistribution of income. Too often the rhetoric for removal of poverty is to cover up for the assumed guilt in not doing the right things for the poor.

Note that what is not being said is that the government should be involved in the *production* of public goods – just in the finance. There is no reason, and little justification, for school teachers, doctors, telephone operators, cement producers, food procurement officers, condom manufacturers, etc. to be government *employees*. Voucher systems for

education and health should be seriously looked into, as well as the possibility of introducing food stamps and cash transfers to the poor.

Table 1a: Different Consumption and Poverty estimates, 1973-1998.

Survey year	Official	World Bank			Real Cons/capita/month		Real p.c. inc
	HCI	HCI	Poverty Gap	Gini Coeff.	NSS	NAS	NAS
1973	54.9	54	16.4	29	56.9	341.9	454.9
1977	51.8	48.3	14.3	31.8	63.8	359.3	498.9
1983	44.8	43	11.9	31.1	67.8	390.5	551.8
1986	.	37.7	9.8	31.9	73.9	398.2	583.2
1987	39.3	38.4	9.2	30.7	72.4	400.0	594.7
1988	.	38.4	9.5	30.9	72.5	421.8	644.6
1989	.	34.1	8	30.2	75.5	427.6	673.4
1990	35.1	35.4	8.6	29.4	73.3	431.6	695.4
1991	39.7	36.3	8.3	32.1	76.5	430.1	688.6
1992	44.2	40.8	10.3	31.3	72.0	439.2	712.2
1993	35.9	34.9	8.1	30.2	75.5	456.2	741.4
1994	36.9	38.9	9	32.2	75.1	469.0	785.4
1995	35.9	34.5	7.7	30.5	77.9	481.9	830.7
1997	37.1	34	8.1	32.4	79.4	523.7	910.0
1998	42.0	.	.	.	71.5	549.6	955.1

Sources: National Account Statistics and Economic Survey, various issues; Datt(1999)

Table 1b: Changes in Consumption, Income and Poverty Level

	Change in				Percentage change in		
	Official HCI	WB HCI	Poverty Gap	Gini Coeff.	NSS, cons	NAS, cons	NAS, inc
1973-77	-3.1	-5.7	-2.1	2.8	12.0	5.1	9.7
1977-83	-7	-5.3	-2.4	-0.7	6.4	8.7	10.6
1983-87	-5.5	-4.6	-2.7	-0.4	6.8	2.4	7.8
1987-93	-3.4	-3.5	-1.1	-0.5	4.3	14.1	24.7
1993-98	6.1				-5.3	20.5	28.8
1973-87	-15.6	-15.6	-7.2	1.7	27.2	17.0	30.7
1987-98	2.7				-1.2	37.4	60.6
1973-98	-12.9				25.7	60.8	110.0

Sources: National Account Statistics and Economic Survey, various issues; Datt(1999)

Table 1 c: Poverty-Related Data

Survey year	% Urban Population	Index of Inflation	Share of consumption	Per capita (international \$, 1985)	
				Consumption	Income
1973	22	100.0	75.16	.	.
1977	23	117.3	72.01	1.29	1.79
1983	24	199.7	70.76	1.31	1.85
1986	26	248.9	68.28	1.46	2.14
1987	26	271.6	67.26	1.56	2.32
1988	26	292.5	65.44	1.66	2.54
1989	27	314.7	63.51	1.62	2.55
1990	27	351.0	62.07	1.59	2.56
1991	27	395.8	62.45	1.56	2.50
1992	28	431.1	61.67	1.62	2.63
1993	28	467.1	61.54	1.66	2.70
1994	29	514.8	59.71	1.71	2.86
1995	29	564.1	58.01	1.76	3.04
1997	30	646.8	57.55	1.92	3.33
1998	31	663.2	57.55	2.03	3.52

Source: National Accounts data; Oxus Research Database.

Notes:

1. The index of inflation is the consumer price index of industrial workers with Oct. 73 – Sept. 74 as the base. Since the attempt is to derive estimates at a national level, a “common” rather than separate (e.g. agricultural laborers index etc.) has been used for all the years.
2. The “share of consumption” refers to the share of consumption in total income, national accounts data.
3. The per capita figures refer to per day consumption and income figures at 1985 prices, PPP data.

Table 2: Household Income and Savings Distribution in India: NCAER data, 1975-76 & 1994-95

Decile Group	Distribution ordered by			Ordered by household savings	
	Household income		Per-Capita Income	Income	Savings
	1975-76	1994-95	1975-76	1994-95	1994-95
Bottom 10	2.3	2.3	2.81	6.7	-12.6
10-20	3.5	3.6	4.1	4.9	-5.8
20-30	4.5	4.5	4.92	4.7	0.2
30-40	5.5	5.3	5.89	5.9	0.9
40-50	6.5	6.3	6.91	6.6	2.0
50-60	7.7	7.6	8.01	7.0	3.6
60-70	9.3	9.3	9.36	9.0	6.4
70-80	11.5	11.9	11.35	11.0	11.4
80-90	15.4	16.3	14.69	14.7	21.2
90-100	33.9	32.9	31.96	29.5	67.4
Total	100	100			
Gini	0.416	0.425			

Sources:: Bhalla-Vashishtha (1988) for per capita income distribution data and NCAER (1999) for household income and savings distribution data.

Note: The per capita income distribution is significantly more equal than the household income distribution. This result is common to most survey data.

Table 3: Levels of Consumption and availability of selected items

Survey year	Nominal Consumption		Ratio of NSS/NAS	Per-Capita Availability			
	per-capita per month NSS	per-capita per month NAS		Cereals (grams/day)	Pulses	Edible Oils (kgs/year)	Sugar
1973	57	66	85.6	380.5	41.1	3.4	6.1
1977	75	89	83.9	386.3	43.3	3.8	7.2
1983	135	163	82.9	397.8	39.5	5.8	10.5
1986	184	206	89.2	434.2	43.9	5	11.4
1987	197	225	87.4	435.4	36.4	5.8	11.7
1988	212	256	82.7	411.8	36.7	5.3	12.1
1989	238	282	84.2	452.6	41.9	5.3	12.3
1990	257	316	81.4	435.3	41.1	5.5	12.7
1991	303	362	83.7	468.5	41.6	5.4	13
1992	310	400	77.6	434.5	34.3	5.8	13.7
1993	353	456	77.3	427.9	36.2	6.1	12.5
1994	386	514	75.2	434.0	37.2	6.3	13.2
1995	440	574	76.6	460.6	38.1	7	14.1
1996	.	.	.	447.0	33.2	8.2	14.6
1997	514	711	72.3	471.8	37.5	7.5	14.5
1998	474	814	58.3	417.5	33.2	9.5	14.9
1999	.	.	.	428.8	38.6	.	.

Sources: National Account Statistics and Economic Survey, various issues; Datt(1999)

Table 4a: Percentage Distribution of Households and their Share in Income and Savings by Annual Income Groups: All-India

Annual Income Group	Percent Share in		
	Household	Income	Savings
Upto Rs. 12000	12.41	3.11	-2.45
12000-18000	20.8	8.85	1.25
18000-24000	15.62	9.17	2.66
24000-48000	31.52	30.16	22.71
48000-72000	9.68	15.9	18.06
72000-96000	4.62	10.74	15.15
96000-12000	2.19	6.5	10.52
120000-150000	1.67	6.24	11.85
150000-200000	0.86	4.17	8.44
Above 200000	0.63	5.15	11.8
<i>All</i>	<i>100</i>	<i>100</i>	<i>100</i>

Source: NCAER (2000)

Note: Average family size is assumed to be 5.5 for computation of the above figures.

Table 4b: Percent of Population in different Expenditure Groups

Consumption Expenditure Groups	Per cent of Population		
	Rural	Urban	All-India
< 9900	12.05	3.36	9.84
9900-13200	15.80	2.22	12.35
13200-16500	20.35	5.94	16.68
16500-19800	11.45	16.38	12.70
19800-26400	19.82	9.44	17.18
26400-39600	14.88	21.26	16.51
39600-52800	3.42	19.23	7.44
52800-79200	1.78	15.50	5.27
79200-118800	0.31	5.00	1.50
>118800	0.14	1.67	0.53

Sources: NCAER (1999, 2000)

Table 5: Does Trickle Down Happen? Yes

	Constant	% change in p.c. consumption	Adjusted R ²	No. of observations
World Poverty, 1975-1997 <i>(\$1 per capita per day, 1985 prices)</i>	0.65 (0.92)	-0.38 (-3.4)	0.34	22
Indian Poverty <i>(\$1 per capita per day, 1985 prices, PPP consumption data)</i>	0.24 (0.71)	-0.75 (-10.9)	0.84	23
Indian Poverty <i>(Domestic poverty line, approx 80% of above line, National accounts data on consumption)</i>	-0.74 (-2.1)	-0.32 (-3.7)	0.36	23

Source: World Bank CD-Rom, World Development Indicators and Oxus Research Database

Note: t-statistic given in parenthesis.

Table 6: Is National Sample Survey or National Accounts Correct?

Survey Years	% Change in		% Change in CPI- Food	% Change in Nominal Consumption			Ratio of Expenditure Change in			
	Real Consumption*			Food Only	All Items		NSS to NAS (%)	NAS to Predicted (%)	Food to NSS (%)	
	Cereals & Pulses	Edible Oils & Sugar	NSS		NAS	Predicted				
1973-77	-1.3	23.1	16	10	32	40	32	80	125	31
1977-83	3.8	36.6	66	43	81	87	92	93	95	53
1983-87	1.9	11.8	39	26	45	44	51	102	86	57
1987-93	0.4	12.3	77	49	79	97	83	81	117	62
1993-98	1.7	22.4	52	33	34	71	66	48	108	98
1973-83	2.5	68	92	57	139	162	153	86	105	41
1973-87	4.4	88.0	168	98	246	277	283	89	98	40
1987-98	2.1	37.5	168	98	140	237	204	59	116	70
1973-98	6.6	158.4	616	292	731	1170	1063	62	110	40

Sources:

1. *Government of India, Economic Survey, Various Issues.*
2. *National Accounts Statistics, Various Issues.*
3. *Datt Gaurav, "Has Poverty Declined since Economic Reforms? Statistical Data Analysis", EPW Dec 11, 1999.*
4. *Report of the Expert Group on Estimation of Proportion and Number of Poor, Planning Commission, 1993.*

Notes:

1. NSS refers to National Sample Survey and NAS refers to National Accounts Statistics
2. Percentage change in real consumption has been computed by two different methods. Method I takes into account a 3-year moving average of net availability of cereals & pulses per capita per day in grams, while method II takes into account per capita availability of edible oils & sugar per year in kgs. The 3-year moving average has been centered on the year under consideration to remove spikes in the data.
3. Share of expenditure on food is assumed to be 63% of the total expenditure and that of non-food to be 37% for all years except 1998. For 1998, share of food and non-food is assumed to be 57% and 43% respectively.
4. For details on predicted expenditure see text at the end of Appendix I.

Table 7: Estimates of Poverty in India 1973-1998

Year	Official	World Bank	New (See text)
1973	54.9	54	
1977	51.8	48.3	42
1983	44.8	43	37
1986		37.7	34
1987	39.3	38.4	34
1987 (D-T)	33.4		
1987 (D-G)	39.6		
1988		38.4	30
1989		34.1	27
1990	35.1	35.4	26
1991	39.7	36.3	28
1992	44.2	40.8	27
1993	35.9	34.9	25
1993 (D-T)	28.7		
1993 (D-G)	34.2		
1994	36.9	38.9	21
1994 (NCAER)	36.6		
1994 (NCAER, adj.)	27.8		
1995	35.9	34.5	20
1997	37.1	34	17
1998	42.0	.	13

Notes:

- a. D-T refers to estimates in Deaton-Tarozzi (1999); D-G refers to estimates by Dubey-Gangopadhyay (1998); (NCAER) refers to official NCAER estimate and (NCAER,adj) to derived estimates of NCAER for those particular years. (for details see text)
- b. The "New" estimate is derived using NCAER consumption data and taking 90% of the total as consumption of the households. The official estimate differs from this only in as much as it takes 100% as the consumption of the households.
- c. The official figures are taken from GOI documents or are derived using the rural-urban weights for different years. The figure for 1998 is based on preliminary estimates.
- d. The World Bank figures are taken from its country study of India (1997a)

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Appendix I

Suggested Methodology for Comparing Survey and National Accounts¹³

The problem is as follows: both survey and national accounts data provide estimates of food, non-food and total expenditure at different points in time. In the case of NSS and NA, the food expenditure by the two sources are approximately equal to each other, though even here, the NSS food estimates are falling behind the corresponding NA estimates. (Srinivasan(1999)).

If it is assumed that the national accounts data on consumption of an all important food item – cereals and pulses – is broadly correct, then using Engel-Deaton elasticities, one can infer what total expenditure on all consumption items is likely to be. This is what the methodology outlined below attempts to do.

In a two good world, food (f) and non-food (n), a consumer's utility can be represented by

$$U_t = f(G_{ft}, G_{nt}) \text{ where } G \text{ are quantities, and } t \text{ is the time period}$$

The consumption of these items is related to the prices, C_{ft} and C_{nt} and the money expenditure, E_t . If tastes are assumed to be constant, and if there is no money illusion, and the consumer maximizes utility in each time period t and $t+1$, then the following condition should hold i.e.

$$\dot{f} = \eta_f \dot{E} + \varepsilon_{ff} \dot{f} + \varepsilon_{fn} \dot{n} \quad (1)$$

where dots refer to percentage changes; and

η_f	represents the expenditure elasticity of food
ε_{ff}	represents own price elasticity of food, and
ε_{fn}	represents the cross- price elasticity of food with respect to the nonfood price.

Equation (1) can be converted into a compensated elasticity format by noting that

$$\varepsilon_{ff} = \varepsilon_{ff}^c - \eta_f W_f \quad (2a)$$

¹³ This appendix is derived from Bhalla-Glewwe(1986) where it was first developed, and used, to successfully compare Sri Lankan survey and National Accounts data. For Sri Lanka, the survey data was found to be substantially more accurate than the National Accounts data.

$$\varepsilon_{fn} = \varepsilon_{fn}^c - \eta_f W_n \quad (2b)$$

where w_f and w_n are the budget shares of food and non-food. A relationship between ε_{ff}^c and ε_{fn}^c is obtained through use of the homogeneity condition:

$$\varepsilon_{ff} + \varepsilon_{fn} + \eta_f = 0 \quad (3)$$

and equations (2a) and (2b).

Substituting for ε_{ff} and ε_{fn} one obtains

$$\varepsilon_{ff}^c - \eta_f W_f + \varepsilon_{fn}^c - \varepsilon_f W_n + \eta_f = 0$$

or
$$\varepsilon_{ff}^c + \varepsilon_{fn}^c - \eta_f (W_f + W_n) + \eta_f = 0$$

In a two good world, the shares w_f and w_n sum to 1.

Therefore,
$$\varepsilon_{ff}^c + \varepsilon_{fn}^c = 0$$

or
$$\varepsilon_{ff}^c = -\varepsilon_{fn}^c \quad (4)$$

Substituting equations (2a), (2b), and (4) in (1), one obtains

$$\dot{E}_f = \eta_f \ddot{E} + \varepsilon_{ff}^c (E_f - E_n) - \eta_f (W_f E_f + W_n E_n)$$

Or
$$\ddot{E} = \frac{E_f - \varepsilon_{ff}^c (E_f - E_n)}{\eta_f} + \frac{W_f E_f + W_n E_n}{\eta_f} \quad (5)$$

Equations(1) and (5) are the centerpieces of the methodology used to cross- check survey and national accounts data. As mentioned earlier, E in time period $(t+1)$ is unknown since expenditure on non-food ($E_{n, t+1}$) is questionable; in particular, the survey estimate of $E_{n, t+1}$ is deemed to be too low. There is considerable reason to believe the following items in the survey are broadly correct: Food and non-food expenditure in time period t (E_{ft} and E_{nt}), and food in time period, $t+1$ ($E_{f, t+1}$). Thus, E_{t+1} is unknown, but a reliable estimate for one component ($E_{f, t+1}$) is available. If the elasticities (η_f , ε_{ff} and ε_{fn})

are known, as well as η_f and η_n , then equation (5) can be solved for \hat{E}_t , and through it \hat{E}_{t+1} and $\hat{E}_{n,t+1}$, where $\hat{}$ refers to predicted values.

The problem is that the elasticities are often not known, and different authors have differing estimates. This problem is easily resolved by estimating \hat{E} for a range of estimates of elasticities and imposing plausible a priori restrictions. For example, subsistence considerations would suggest that poor people have a zero compensated price elasticity for food. A compensated elasticity of -0.2 to -0.3 would be considered “high” for such individuals. Thus, a range of 0 to -0.3 can be attempted. The expenditure elasticity for food has been well enshrined through Engel’s law i.e. it is less than 1 . Thus a range of 0.5 to 0.9 is attempted with the high end likely to occur for the poor.

Equation (5) reduces the estimation of \hat{E} to two key parameters- the expenditure elasticity for food, and the compensated price elasticity of food, ϵ_{ff}^c , as well as η_n and η_f . The NSS data on expenditure shares, and expenditure changes for the time-period 1977-78 to 1987-88 can be used to derive implicit expenditure elasticities of two major items of food consumption: foodgrains (cereals and pulses) and edible oils and sugar. (see Appendix Table 1). According to NSS data, real consumer expenditures increased by 13.6 percent, 1977-78 to 1987-88. The share of foodgrain expenditure declined during this period from 37.6 percent to 28.7 percent yielding a negative elasticity of about 0.1 . The share of edible oils and sugar increased from 6.5 percent to 7.8 percent during the decade yielding an expenditure elasticity of about 2.5 . The share of food declined from 69 to 65.2 percent, yielding an expenditure elasticity of about 0.5 . For purposes of estimation of expenditure change (Equation 5), an expenditure elasticity of 0.2 is used for foodgrains, and 0.6 for edible oils and sugar.

Research on Engel curves can yield insights into the range of values for η_f . Using the 1969-70 Sri Lankan household survey, Deaton-Case (1985), estimate the following equation:

$$w_i = \hat{\alpha} + \hat{\alpha}_i \log E + e \quad (6)$$

where w is share in expenditure, and i are consumption items, and E is total expenditure. Conversion of $\hat{\alpha}_i$ into expenditure elasticities yields the following formula:

$$\zeta_i = 1 + \hat{\alpha}_i / w_i \quad (6')$$

(As the authors note, ζ_i is not constant but varies with w_i and E) The Deaton-Case estimate of $\hat{\alpha}_i$ for Sri Lanka is -16.08 for 1969-70 and -11.7 for 1980-81. Using the 1969-70 data, and food share of 71.7% for the first quintile and 47.1% for the fifth, the following estimates of ζ_f are obtained: 0.77 for quintile 1 and 0.66 for quintile 5. These estimates fall within the expected range and suggest that a range of $\zeta_f = 0.9$ to $\zeta_f = 0.5$ would be adequate for “simulation” purposes. Attempts at estimating ε_{ff}^c have not yielded robust estimates (though a range from 0.0 (for subsistence level expenditures) to -0.4 is representative). Given the large fraction of poor in India, an estimate of $\varepsilon_{ff}^c = -0.1$ has been used.

Two different estimates of total expenditure are obtained – one with the use of cereals and pulses data, and the second via data on edible oils and sugar. The two estimates are aggregated into one using approximate 1977-78 weights of 0.8 for cereals and pulses and 0.2 for edible oils and sugar. Table 2 in the text reports on the estimates obtained for expenditure change for the population for various years, and compares them to both NA and NSS estimates. The strong conclusion that emerges is that the NSS data on consumption have to be rejected on grounds of inaccuracy. In all likelihood, the NSS data yield a downwardly biased estimate of consumption of the poor and non-poor in India.

Appendix Table I

(All figs. in %)

Items	Rural India		Urban India		All India	
	1977-78	1987-88	1977-78	1987-88	1977-78	1987-88
Total Cereals	37.0	27.2	23.8	18.4	33.1	24.5
Gram	0.4	0.2	0.2	0.2	0.4	0.2
Cereal Substitutes	0.4	0.1	0.1	0.1	0.3	0.1
Pulses	4.0	4.0	3.7	3.6	3.9	3.9
Total Foodgrains	41.8	31.5	27.9	22.3	37.6	28.7
Milk and Milk products	6.6	8.3	8.4	8.8	7.2	8.5
Edible Oil	3.7	4.9	4.6	5.4	3.9	5.1
Meat, Fish and Egg	2.7	3.0	3.3	3.4	2.9	3.1
Vegetables	4.0	5.2	4.5	5.4	4.1	5.3
Fruits and Nuts	1.0	1.5	1.7	2.2	1.2	1.7
Sugar	2.6	2.8	2.7	2.5	2.6	2.7
Salt and Spices	3.3	2.9	2.9	2.6	3.2	2.8
Beverage and Refments	2.4	3.6	5.7	6.0	3.4	4.4
Pan, Intoxicants etc.	3.0	3.2	2.5	2.7	2.8	3.0
Total other than Foodgrains	29.2	35.4	36.2	39.0	31.3	36.5
Food Total	71.1	66.8	64.1	61.3	69.0	65.2
Non Food Total	28.9	33.2	35.9	38.7	31.0	34.8
Total Expenditure	100.0	100.0	100.0	100.0	100.0	100.0

Source: The Expert Group Report on Estimation of Proportion and Number of Poor, Gol 1993

Notes:

1. Head Count Index is assumed to be 50.6 in 1977-78 and 39.23 in 1987-88 for rural areas and is assumed to be 40.5 and 36.2 for the respective years for urban areas.
2. Rural-Urban population distribution is to be 70:30 respectively for the both the periods.