

**Not as Poor, Nor as Unequal, As you Think – Poverty, Inequality and Growth in
India, 1950-2000***

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Preface and acknowledgements

Research on this project – the understanding of the level and dynamics of Indian poverty - actually started when I was asked to write a paper for the World Bank–IMF meetings in Hong Kong in September 1997. The East Asian financial crisis was just beginning to make its impact, and over the next few years there was little else to discuss in international forums. The title of the paper I presented: “*Economic freedom and growth miracles: India is next*” is perhaps more appropriate for discussions today. But growth miracles are not miracles if they occur without significant poverty reduction. My read on how India was experiencing a growth miracle, and enabling a large reduction in poverty, was to doubt the official planning commission, government of India figures on poverty. “If one goes on the basis of NSS data alone, then the reduction of poverty in India is seen as moderate - from 53.3 percent in 1972-73 to 35 percent in 1993-94. The decline also seems less with regard to the average per capita growth rate of 2.6 percent during this period. The National Accounts (NA) consumption data seems to tell a different story. Preliminary results suggest that poverty in India in the mid-nineties is closer to 20 percent rather than the 35 plus Government of India and World Bank figures.” (1997, p.17). It was recognition of this discrepancy between national sample survey (NSS) growth rates and growth revealed by the national accounts that led me to ask the Planning Commission to finance research on the topic of “the myth and reality of poverty in India”. I am extremely grateful to the commission for having agreed to do so.

In 1997, and three years later in 2000 (when I presented additional findings with the same result - poverty in India in the mid-teens in the late nineties) the low poverty result was met with considerable skepticism, if not derision. The detailed analysis presented here arrives at the same result – poverty in India no more than 10 percent as of 1999-2000, significantly lower than the official estimate of 26 percent poor and somewhat higher according to research scholars at the World Bank. The reader can decide for herself if the numbers support her biases, and ideological predisposition.

Though this report has stayed close to numbers, facts, and their interpretation, I cannot resist mentioning my most important research finding. The numbers on poverty, both Indian and global, are not ordinary. They are not analyzed in the same fashion as growth rates, or investment rates, or export growth. There is no detachment when it comes to poverty. The subject is hot, it is political, it is ideological. Like opinion polls, the researcher often wants to find a particular result, and offers a spin consistent with the data. Of course, this is not as it

should be – it is only as it is. My only plea is that the reader suspend judgment until after the analysis and presentation of facts, figures and logic.

This project has extended its deadline by almost a year, and I am grateful to the sponsors of the project to be so understanding. I would like to acknowledge the research assistance provided by Nabhojit Basu and Tirthatanmoy Das; without their excellence, this research would literally have not been possible.

Chapter 1: Introduction & Overview

This book is about India's economic development since independence, but especially during the last two decades. A central concern of policy makers for over fifty years has been the alleviation of absolute poverty. Between 1950-1980, the economy barely grew at about 1 percent per capita per annum¹. Not surprisingly, poverty did not decline by much. In 1951-52, the first year of the National Sample Survey (NSS), the head-count ratio of poverty in India was deemed to be close to 45 percent of the population. Some thirty two years later, in 1983, the poverty ratio had stayed "constant" at 43 percent. However, since then, there has been a sharp fall in poverty with the level for 1999-2000 being "close" to 26 percent.

The goal of public policy is obviously much more than the reduction in monetary poverty – it is the attainment of higher living standards for the poor, and for the provision, or approximation, of equality of opportunity. How successful has India been in these aspects – *that* is the central concern of this research. The goal in this important first stage of understanding of past policies (so that future policies can be factually based) is to establish the reality. Often times, establishing the facts is not what research is about – it is rather about the interpretation of the facts, the isolation of the "correct" determinants. But the study of poverty and inequality, whether in India or elsewhere, is never a straightforward question of analysis. It is often tinged with "state vs. market ideology" which often pre-determines the conclusion. Analysts, and policy makers, therefore, have to be cautious about interpreting the "reality"; stated differently, they have to first establish the facts – the central goal of this Government of India Planning Commission financed research.

But how does one know if a given statement of "fact" is actually factual? This is not a semantic question; rather, it is the *core question*. In Bhalla(2002d), in a book on world growth and world poverty called *Imagine there's no country: Poverty Inequality and Growth in an era of globalization*, (hereafter *Imagine*), "smell" and or "duck" tests were offered to help distinguish fact from fiction. The logic of these tests is as follows – if a region is poor, but given its poverty, its food share of total consumption is low, then that

¹ Per capita income grew at 1.5 percent per annum, but per capita consumption seems to have grown at a much lower rate of only 0.5 percent per annum, 1950-1980.

poverty estimate fails the “smell” test (because food “should” comprise about 80 percent or more for the poor). Or if mean per capita consumption of the entire population fails to grow between 1987-88 and 1993-94, and the first end-year is a “drought of the century” year and therefore biased downward, and the second is a post-reform year when it is universally acknowledged that incomes are booming, then this statistic (yielded by NSS data for 1987-88 and 1993-94) fails the “duck” test e.g. if it runs like a BMW, then it can’t be a duck. In this report, with most important statistics smell tests are offered so that the reader/policy maker can judge for herself if the reality being projected is different than the myth.²

Among statistics on living standards, the most contentious are those pertaining to estimates of inequality and poverty. As documented extensively in this report, there is good reason for the debate – the underlying data comes in various forms, and from different sources. Data on non-monetary aspects of poverty – like infant mortality, life expectancy, or school enrollments, come from only one source – the Census, and are therefore not subject to much variation in “fact” or analysis. One of the innovations in this study is the exploitation of the data on schooling achievement or completion which is reported in the NSS Employment and Unemployment Surveys for the survey years 1983, 1987-88, 1993-94 and 1999-2000.

Chapter 2 documents the nature of the data, and methods, used in this study. A number of sources have been used, but the primary source are the NSS data, and unit record data, for the four major NSS surveys since the eighties. A little known, and even less-emphasized, aspect of the NSS consumer expenditure and employment surveys for 1983, 1987-88 and 1993-94 is that the two different surveys used exactly the *same* set of households. The households in each of the years numbered close to 125,000, the total population about 600,000. Thus, the combined data are possibly one of the richest of their kind in the world. These data are used in various manners e.g. comparing trends in agricultural wages, income, food and non-food expenditure etc. in order to assess whether the 1999-2000 NSS survey, the subject of much controversy, was accurate or not.

² The formal title of the proposal financed by the Planning Commission was “The Myth and Reality of Poverty in India”.

Chapter 2 also addresses the central methodological concern with the analysis of poverty – the reliability of consumption *growth* as measured by surveys and national accounts. Because survey growth is now less than a *third* of that registered by national accounts, it is incumbent that the relative accuracies of the two sources be assessed. By utilizing non NSS survey data on wages, as well as NSS data on wages derived not from the consumer expenditure survey (CES) but rather from the employment and unemployment survey (EUS), it is shown that for reasons not entirely clear, the growth rates revealed by the NSS consumption surveys for the period 1983-1999 were considerably below the “likely” growth rate as indicated by the national accounts. Indeed, growth in survey wage income data for the poor is very close to, and consistent with, the growth observed in national accounts.

The chapter is also concerned with the development of alternate methods to measure poverty. Two methods are offered; the first is a variant on the old planning commission (sometimes referred to as PC) method of measuring poverty. Prior to the publication of the findings of the Expert Group, Government of India task force on poverty reduction in 1993 (EGGOI), the government used the following method. The distribution of expenditures was obtained from the consumer expenditure survey, and the mean from the national accounts (indicated by the per capita monthly expenditures, private final consumption expenditure series). The variation on this method (offered in *Imagine*) is that instead of the national accounts mean, a *discounted* mean is taken. The discount factor applied is 1.15, so that in effect all NA means are multiplied by $(1/1.15)$ or 0.87. The “adjusted” survey mean for each year is thus the NA mean multiplied by 0.87. The chapter defends the reasoning behind this adjustment – in particular, it is argued that by “lopping off” 13 percent from national accounts, the possibility of over-adjusting the consumption of the poor would be minimized.

The second method offered (also see Bhalla et. al (2003b)) recognizes that surveys contained “good” information on levels of expenditure in the early eighties (but have faltered now, an experience similar to that observed in several other countries). Hence, a base year (say 1983 or 1987-88) survey expenditure mean is taken to be correct. From this point, both forwards and backwards, the survey mean for other years is obtained by imputing the growth rate from national accounts onto this base year survey mean. This

method preserves most of the attributes deemed desirable by “survey only” advocates like EGGOI, Sundaram, Tendulkar, Datt, Ravallion, and Deaton.

Chapter 3 begins the examination of the first of the three related questions: what happened to growth in India? what happened to inequality? what happened to poverty? Throughout the discussion, emphasis is on the levels, as well as the growth rates experienced during generally the so-called pre-reform and post-reform periods. As is well known, major economic reforms were initiated in India post-1991. The NSS survey periods are broken up into two time-periods: the pre-reform 10.5 year period from Jan. 1983 (survey from Jan. – Dec.) to June 1994 (survey from July to June) and the post-reform six-year period July 1994 to June 2000. While this is not a precise cut-off of the two periods (no method can be), the cut-off years are broadly consistent with changes in economic policy. And it is of course of paramount concern to examine, and examine in detail, whether growth in one period was more or *less* beneficial to the poor than the other period. With the recent concern, and discussion of quality of growth and the pro-poor status of growth, identification of what kind of policies best help the poor is the appropriate research and policy task. This has applications not just for India, but the rest of the developing world.

The primary source of information for the measurement of poverty are the estimates derived from information contained in household surveys of the type conducted by the NSS. These surveys collect consumption data for households. It is well known that because of definitions (e.g. NA data include expenditures on prisons and NGOs while survey data exclude them) the two sources will not yield identical estimates for levels of consumption at any point in time. However, there is little reason to believe that the *growth* rates of consumption yielded by the two sources should be very different. To be sure, NGOs are increasing their share of the economy, but it is difficult to think that this item has any important role to play in explaining the increasing divergence between growth derived from surveys and growth derived from national accounts.

This chapter also examines the nature of the divergence in the S/NA ratio since the early sixties. At that time, the debate in India was on a few divergent percentage points i.e. the surveys were capturing only 95 percent of total consumption and scholars, and policy makers, worried about the over-estimate of poverty levels if exclusive reliance was

placed on survey data³. This ratio started declining in the early eighties; the 1983 survey had an S/NA ratio equal to only 74.8 percent (or 81.1 percent 1970-71 series), and it stayed relatively constant at this level throughout the eighties. In 1993-94 the S/NA ratio declined to 61.5 percent (the new 1993-94 series) and the latest 1999-2000 survey, (ostensibly with the upward biased consumption levels), hit a record low S/NA ratio of 55.8 percent.

For the same 1993-94 national accounts base series, (see Annex I) , the NSS survey in India captured about 70 percent of the per capita levels shown by the NA; in 1999-00, as mentioned above, the NSS survey (with 1993-94 base) captured 56 percent of national accounts. This difference in the S/NA ratio – (log) 22 percent – means that at the terminal point, survey based estimates of consumption were about 22 percent lower than “reality” i.e. survey based estimates would report about 22 percent lower consumption and approximately 16 percentage points lower head count ratios⁴.

The above calculation assumes that the NA estimates of consumption are approximately “correct”. How much confidence can one place in that assumption? Most likely very little. Consequently, several tests are offered to check the veracity of the NA numbers. One test involves the use of the NSS EUS survey to test the accuracy of the NSS CE survey. This test is as follows: the EUS survey collects information on the wages and salaries of all households in the economy – data are not collected for income accruing from self-employment i.e. mixed income, or income from both capital and labor. Thus information is available on the incomes of the poorest households; the poorest of these poor are the agricultural workers in rural India. Given that absolute poverty means zero savings, the income growth of these households should match consumption growth. For such poor male workers, growth in incomes was at an annual rate of 10.8 percent per annum 1983-93. This level is considerably higher than the mean growth revealed by the consumption survey, and only slightly below the mean growth revealed by NA (10.8 percent (poor wages) compared to 9.5 percent (survey) and 11.2 percent per year (consumption,

³ These estimates are based on the corresponding NA data prevailing at the time the survey was undertaken i.e. the S/NA ratio for the 1970s uses the 1970-71 NA series, that for the eighties, the 1980-81 series, and that for the nineties the 1993-94 series.

⁴ The link from growth reduction to increase in poverty estimates is an extremely non-linear one and examined in some detail in Chapter 7.

NA)). This is clear evidence that the consumption path dictated by NA data is much closer to the underlying reality than that dictated by the NSS consumption surveys.

There is one *additional* problem (besides the likely presence of significant under-reporting) pertaining to the NSS consumption survey for 1999-2000. This survey obtained information on food consumption on both a 7 day recall and a 30 day recall basis. This “joint” asking led to intense academic speculation about the magnitude of the bias present in the 30 day answers, the ones with comparable data in previous surveys. Several academic papers have already been written on the 7/30 day problem. The conclusion – ambiguous, but with a bias towards the 30 day answers not being far off the mark. Different estimates of the poverty level in 1999-2000 place it within 26 to 30 percent, with the “official” level being closer to 26 percent. But given that one major objective of this study is the determination of whether poverty declined *more* during the reform period, some judgment needs to be made of the accuracy of the 1999-2000 30 day measure of food consumption. Examination of preliminary results released according to the 2000-01 *thin* sample data, and data without the 7/30 day mix-up, strongly suggests that the 1999-2000 data did not suffer from any significant contamination. Growth in real expenditures in 2000-01 was maintained over 1999-2000 – if consumption in the latter year was biased upward, then one would have expected growth in real expenditures to stay flat, or decline, and not increase by almost 3 percent per capita.

Various smell tests later, the chapter concludes the following: First, that the 7 day/30 day problem is a case of “much ado about nothing”, and indeed, the approximations introduced to circumvent the question may contain significantly more measurement error than in the 30 day estimates themselves. Second, there is no question that the S/NA ratio has shown a precipitous decline in India, and that this decline is most likely causing several erroneous conclusions being reached about both the magnitude of poverty decline and the efficacy of growth. Third, that the growth rate as revealed by the national accounts is most likely representative of the “true” underlying growth in consumption that has taken place in the Indian economy of the last two decades.

Chapter 3 examines growth trends in India in some detail. When the topic is growth, analysts generally converge towards the National Accounts (NA) estimates e.g. growth

in GDP per capita, or growth in private final expenditure. This is common practice around the world. Recently released data on the state domestic product also allows for a parallel testing of whether there has been convergence (poorer states growing at a faster rate) or not. In addition, the EUS survey is used to test for convergence in survey incomes, as opposed to convergence in survey consumption (CES survey).

Chapter 4 is an examination of trends in inequality. The analysis is conducted at several different levels of aggregation – rural India, urban India, all India, for each of sixteen major states of India including their respective urban and rural divisions. Several different indices of inequality are examined e.g. the Gini index, the variance of logs, the share of consumption accruing to different quintiles of the population, the growth in mean consumption of the poor⁵, etc. In addition, inequality within and between three socio-economic groups is examined – individuals belonging to the Scheduled Castes and Schedule Tribes (SC/ST), individuals belonging to the Muslim religion and the remainder (mostly Hindus). Trends in education inequality are also documented. It is unlikely that any one study has attempted to document inequality levels, and their trends, in as detailed a fashion as undertaken for this project. The conclusion – fortunately there is only one conclusion and an unambiguous one – there is *no* trend in inequality in India. There is no measure, no official statistic, that shows that *aggregate* inequality has worsened in India. Urban India does reveal a worsening trend, while rural India reveals the opposite. Indeed, within rural India, there is a pronounced *improvement* in inequality, especially since 1983; in urban India, almost half the states show an improvement.

The socio-economic results are equally startling in their constancy – there is no trend in the mean consumption levels of the three caste/religion groups i.e. no worsening in inter-group inequality. Wages and salaries of women are today 72 percent of men, up from 56 percent in 1983. Controlling for occupations, age, education etc. this ratio becomes as high as 82 percent in 1999-2000.

⁵ Defined as a fixed fraction of the population that was poor in 1983 i.e. close to bottom 45 percent of the population in the aggregate, though obviously the fraction varies for each state and its rural/urban component.

Given this overwhelming evidence in favor of declining inequality, and a decline experienced despite rapid growth and economic reforms (two “causal” factors normally associated with worsening inequality), the question arises: how come the presumption or belief that there has been a “pervasive increase” in inequality in India? The intellectual origins of this conclusion are examined – in particular, the three important papers of Ravallion(2000), Deaton-Dreze(2002) and Banerjee-Picketty(2003). There is an easy explanation for how, perhaps contrarily, these papers have reached the speculative conclusion that inequality has worsened in India. The Ravallion conclusion seems to be almost entirely based on his estimate of 37.83 for the national Gini for 1997; *unit level* data construction indicates that the Gini for that year was 32.9 or 10 percent lower than Ravallion’s estimate; and not much different than 31.6 in 1993-94 and 32.5 in 1983 i.e. no change in consumption inequality, pre and post-reform. In other words, the entire Ravallion conclusion is based on “estimate measurement” error.

The Banerjee-Picketty paper bases its conclusions on tax receipt data – these estimates are obviously and grievously affected by the levels and changes in compliance. The authors assume that compliance rates are constant, an untenable assumption as documented in Bhalla(2002a) and Kelkar et. al. (2002). Further, the study is forced to make Pareto distribution estimates (from tax data) for the top end of the distribution. Thus, the Banerjee-Picketty inequality worsening result is hugely synthetic, and not a credible basis for asserting any conclusions about either levels or changes in inequality.

The Deaton-Dreze result is also based on a *synthetic* estimate of consumption distribution in India in 1999-2000. The authors adjust the consumption data for the 7/30 day “problem”; these problems leads to adjustments, and the adjustments lead to a “forecast” of the total distribution based on the distribution of consumption of non-food goods which comprise less than 25 percent of total consumption. There are no statistical problems with the approach – indeed, the method is ingenious in its own right. However, the authors err in concluding about trends in inequality based on the *actual* consumption distribution in 1993-94 (low inequality) as the first end-point and the *synthetic* constructed estimate of inequality in 1999-2000 as the second end-point (higher inequality). What is appropriate, and not done by the authors, is a comparison of the *synthetic* estimate for 1993-94 with the *synthetic* estimate for 1999-2000. When their method is replicated for the earlier years (i.e. the 1983 data are used to “forecast” for

1987-88; the 1987-88 data are used to “forecast” for 1993-94 and lastly, as done by Deaton-Dreze, the 1993-94 is used to “forecast” for 1999-2000) the contrary result is obtained - little change in inequality. Thus, the overwhelming conclusion – no credible evidence for a deterioration in inequality in India.

The chapter also offers inequality estimates for Indian consumption when for 39 broad consumption items, the survey means are “matched” with national account means. This method adjusts for under-reporting by different households, item by item. For example, if a particular household reports zero consumption of durables (as reported by most poor households) then it gets allocated a zero proportion of the difference in the mean survey estimate for durables and the mean NA estimate for durables. This method indicates that there is greater understatement of expenditures by the rich; this adjustment leads to greater inequality (by about 10 percent) for each of the survey years, 1983, 1987-88, 1993-94 and 1999-2000. But again, no *trend* in (adjusted) inequality is observed.

Chapter 5 explores the all important question of the level of poverty, and its decline in India since independence, and particularly since the early eighties. Poverty is obviously a function of what the poverty line is; the poverty line used is the official GOI Planning Commission poverty line (Rs. 49 per capita per month in rural areas in 1973-74 prices, or Rs. 363 in 1999-00 prices.) The government of India method of estimating the head-count ratio of poverty was to take the distribution of consumption from the surveys and the mean consumption from national accounts. This practice changed in the mid-nineties with the adoption, by the Planning Commission, and the government of India, of the Expert committee report on the methodology for poverty estimation (EGGOI(1993)). In a significant departure from earlier practice, this report recommended that henceforth only unadjusted survey means, and survey distributions, should be used for poverty generation. While the Report mentioned reasons for the change in methodology, it was strangely inadequate in providing evidence for the change. The chapter also documents the likely political economy of the new method; in particular, the co-incidence with the “new” World Bank method arguing for the same “new” method, and also without backing of much empirical evidence, as well as the tendency, with declining survey to national account (S/NA) ratios, for the new World Bank-GOI methods to yield considerably more poverty than would have been yielded by either the old method, or the old method with constant S/NA ratios.

The chapter documents the evolution of poverty according to three different methods – the present Planning Commission method, the method offered in *Imagine*, and a method which forces the survey means to stay at the same fraction of NA expenditures as experienced in the 1987-88 survey (around 70 percent). Not unlike the results on inequality documented above, the results are striking and sharply different from those prevailing in the literature. First, that rather than the official level of poverty in India at 26 percent of the population in 1999-2000, this level is likely close to 10 percent. Even this latter level is still very high – it means that almost the every tenth person in India is absolutely poor. Further, even with 10 percent poor, there are more poor in India than the population of all but 10 countries in the world.

There are several pieces of evidence to suggest that this new 10-15 percent estimate is realistic and that the official, and other estimates, are out of sync. For example, wage income growth (between 1983 and 1999) of the *poorest* agricultural households is consistent with poverty close to 10 percent. Second, given that per capita consumption of the *poor* in China and India are approximately equal⁶, the poverty rates should also be approximately equal; at an equivalent to Indian poverty line (via consumption PPP exchange rates), China survey based data showed poverty equal to less than 15 percent of the population in 1999, in contrast to India's survey based estimate of 26 percent poor. The NA adjusted means (to correspond to country specific S/NA ratios – see Bhalla et. al. (2003b)) reveal poverty in the two countries to be strikingly similar – less than 10 percent in both.

Deaton presents credible evidence to suggest that the urban poverty lines for the major states, as well as the urban-rural price differential, are upwardly biased estimates of the underlying reality. Correcting for these biases via use of price data derived from NSS surveys, Deaton presents a corrected price index series. These state-specific urban and rural price indices affect the levels of both rural and urban poverty. But their effect in the urban areas is large. Compared to official poverty ratios of 27.1 and 23.6 percent for

⁶ This “strange” result follows from the following: China has 50 percent higher GDP than India, but a considerably higher savings rate i.e. consumption as a fraction of total expenditures is close to 50 percent. Also, it has much worse distribution – about 20 percent lower consumption for the bottom 2 quintiles. Adding the two effects, per capita NA consumption for the two countries are approximately equal for the poor (the bottom 40 percent)..

rural and urban areas, Deaton obtains poverty rates of 21.6 percent and 9.5 percent, respectively. Aggregating (urbanization ratio in India in 1999-2000 was 28.1 percent) one obtains a poverty rate of 18.2 percent in 1999-2000 – a level considerably below the official estimate of 26 percent. Bery-Shukla use NCAER data to present poverty estimates for 1998-99 – their estimate of Indian poverty, based on household income data, is less than 15 percent.

There is still more evidence to suggest poverty in India in 1999-2000 was considerably below 26 percent. Bhalla(2000b) compares food consumption as derived from per capita availability data with food consumption as derived from surveys. Using a method first developed in Bhalla-Glewwe, and employing a variety of reasonable price and income elasticities, Bhalla finds poverty in India close to 15 percent.

These low poverty estimates – between 10 to 15 percent poor - are credible for the simple reason that the official mean consumption and poverty estimates are *not* credible. For example, real rural per capita consumption is deemed to have stayed constant over the six years 1987-88 to 1993-94; this result is all the more incredible given that 1987-88 was a bad drought year! The average state domestic product increase over these six years was as high as 22 percent. In other words, if the NSS estimate is deemed accurate, the observed 22 percent increase in real incomes was all measurement error.

Chapter 6 analyzes progress in living standards – increases in life expectancy, declines in infant mortality, increases in literacy and increases in educational attainment are explicitly considered. All non-education data used are from traditional macro sources e.g. census. The education data are obtained from the NSS surveys for the various years. These data are not enrollment but rather attainment i.e. each household answered which class was being attended or completed and what the respective age was for each member of the household. Given that the education data are *not* provided by the state authorities, they are also not likely to suffer from severe measurement problems induced by a “moral hazard” problem i.e. states have an incentive to show more enrollment than normally exists in order to obtain central funding. By relying only on data the respondents state, more accurate information on educational attainment is obtained.

The results suggest considerable progress since 1960 and 1980, but the pace has slowed down for the health indicators in the nineties. But this result “improves” once account is taken care of the fact that health indicators like infant mortality and life expectancy are subject to a floor/ceiling problem e.g. reduction of infant mortality from 120 to 60 is easier, requires less state expenditures, requires less “effort” than the reduction of the same from 60 to 30. Educational attainment also suffers from the same ceiling but India’s average educational attainment is still far from the ceiling.

The Census data on literacy includes considerable amount of “overhang” i.e. the literacy of those not in the labor force is included in the basic estimate. If literacy is defined as educational attainment equal to at least 2 years of schooling completion, and only individuals potentially in the labor force are included (ages 15 to 60), then the trend has been sharp, and the increase was at a faster rate in the nineties.

The chapter also analyzes a separate indicator of gender equality – the educational attainment of girls relative to boys. The results on gender equality in education are surprising. The NSS data suggests that in urban India, in 1999-2000, there was complete gender equality among children aged 5-14 years i.e. an average ratio of 98 percent. Stated equivalently, if an urban household educated its boy to 5 years, it also educated its girl to 5 years. Rural India still has some distance to go, but even here, there has been steady progress with a girl being educated for 4.2 years for each 5 years of boy schooling. On an all-India basis, the gender equality in education ratio is close to 90 percent i.e. 4.5 years of schooling completion for girls aged 5 to 14 for each 5 years of boy schooling. This ratio was 3.5 years just 16 years ago in 1983.

Chapter 7 analyzes the important policy question of whether growth in the different states of India was “pro-poor”. The conventional approach is to compare the elasticity of poverty reduction (the percentage decline in poverty with respect to unit growth in expenditures) in different states (or time-periods) and deem a process more “pro-poor” if this elasticity is higher. However, these comparisons are not strictly correct. Poverty changes cannot be compared in an “unadjusted” manner. As extensively documented in *Imagine*, poverty declines are severely dependent on their initial position, *ceteris paribus*. Where a given poverty line intersects the distribution of consumption in the *initial* time-period has an overwhelming effect on subsequent estimates of poverty

decline. The “shape of the distribution elasticity” or SDE [i.e. the decline in *percentage* points of the head-count ratio of poverty that will occur with each 1 percent growth in the consumption of individuals clustered close to the poverty line) varies from distribution to distribution, state to state. In 1983, the SDE varied from a high of 1.3 in rural Assam to a low of 0.42 in urban Himachal Pradesh. So a given amount of growth will have quite different consequences for poverty decline even *if the distribution stayed exactly the same*. Correcting the poverty declines for initial SDE makes the pace of poverty decline in the nineties even higher than the eighties – minus 1 percentage point a year in the eighties vs. minus 2.3 percentage points in the nineties. Thus, the overwhelming result is that poverty decline was faster in the nineties, a result suggested by official data, and alternative computations by Bhalla(2001) and Sundaram-Tendulkar(2002).

Disappointment with the pace of poverty decline across the world, based on official survey data methodology, led to increasing discussion about the “quality of growth” in the nineties. This resulted in a by now voluminous literature on the nature of growth, and whether growth was “pro-poor” or not. The Indian experience has been a leading “case study” along with China. Unfortunately, there are no conclusions about whether the process of growth has been pro-poor or not; this ambiguity results from a lack of a precise definition of the determination about the pro-poor status of growth. One definition of pro-poor growth is the determination of whether inequality improved, but this definition suffers from the drawback that it is silent on the question of comparing two societies, one with improving inequality and declining growth and the other with worsening inequality and high growth (e.g. China). Clearly, in the latter case the incomes of the poor proceeded at a faster pace and therefore growth was likely pro-poor.

Recently, explicit definitions of pro-poor growth have been offered by Bhalla(2001), Ravallion-Chen(2002) and Bhalla et. al.(2003). The approach followed here is that suggested by Bhalla et. al. This approach essentially involves three steps; steps which lead to an improved definition and evaluation of the growth poverty relationship. First, the value of SDE is estimated for the “initial” year. Second, the observed change in the head-count ratio is divided by this initial value of SDE – this provides an estimate of how much poverty reduction took place according to a common standard. For example, if state A had 10 percent poor in the initial period, and had an SDE value of 0.5, and poverty reduced by 5 percentage points, then the “standard” poverty reduction was

equal to 5 divided by SDE or 10 percentage points. This is deemed equivalent to another state which reduced its poverty by 10 percentage points, but whose initial SDE was equal to unity. This “standardized” poverty reduction is the result of both survey consumption growth and changes in inequality among individuals close to the poverty line. Either cause has the same effect i.e. average growth, and the change in share, lead to exactly the same effect – a given increase in consumption for the poor. (This increase is then “filtered” by initial SDE to yield a decline in the head-count ratio). This standardized reduction in poverty is what needs to be compared across states (or countries) to determine whether one state had a greater pro-growth performance than another state.

The third step involves adjusting the standardized poverty reduction for growth as revealed by state GDP data. After this adjustment, different results obtain about the pro-poor performances of states – and these are deemed to be more accurate given the noise in the growth rate revealed by survey means. The results also indicate that the NA adjusted pro-poor rankings are realistic. For example, Maharashtra’s rank is 3rd in terms of its poverty reduction, national accounts; NSS surveys indicate that it’s rank was 12, about equal to that of Bihar. Further, if NSS surveys are correct, Jammu and Kashmir was the third best state in terms of poverty reduction, 1983-1999. The NA growth data sets the picture right – it is the second worst performing state, just ahead of Assam. The best performing state according to both sets of data – Tamilnadu. A surprising good for the poor performer, according to both sets of data, is Rajasthan.

Chapter 8 is in lieu of a conclusion – it is explicitly devoted to evaluating the “impact” of economic reforms on growth, inequality and poverty. The method employed is through a comparison of performance in two (large sample) time-periods. The first pre-reform 10.5 year period spans the surveys of 1983 and 1993-94 surveys; the second post-reform period the surveys of 1993-94 and 1999-00. The analysis of the important head-count ratio is conducted both at an all-India level as well as at an individual state level. The conventional wisdom is the following (see Datt-Ravallion, Deaton-Dreze): there is, at best, no difference in performance between the two time-periods⁷.

⁷ But an opposite view is put forward by Bhalla(2001) and Tendulkar-Sundaram(2002).

Not unlike the discussion and analysis of inequality done earlier (Chapter 4), our results indicate different. Using official price-index data, mean consumption growth between 1983-93 was at the rate of 1 percent per capita per year; between 1993-99, the rate had more than *doubled* to 2.1 percent per year.⁸ Inequality changes: as measured by the Gini, the growth rates are 0 percent per annum and a very small improvement, 0.26 percent per annum, respectively. Not much difference there. In terms of the share of the bottom 40 percent – here there is a larger improvement in the post-reform period, an increase in consumption shares, from 0.13 percent per annum to 0.33 percent per annum.

Given the above differential trends in growth and inequality, *it has to be the case* that poverty declined at a faster rate in the nineties than the eighties, 1987-1993 or 1983-1993 (higher and more equal growth). Thus, there are no official (non-synthetic) computation data that can show that poverty declined at either the same or higher rate in the eighties. The official head-count ratio declined at an average rate of 0.8 percentage points a year in the eighties compared to a much higher rate of 1.3 percentage points in the nineties.

A concluding comment on the magnitude of poverty in India, and the poverty line on which such calculations are based. This poverty line, originally set in 1962, has had an important role to play in the analysis of *world* poverty. The World Bank not only based its first income poverty line on the income equivalent Indian poverty line, but actually adopted it *in toto*. *Imagine* documents how the second, and famous, World Bank \$ a day poverty line was almost identical to the Indian poverty line, if the PPP *income* exchange rate is used to convert rupees into international dollars. Bhalla (2003) documents how the third international \$ 1.08 poverty line is equal to the Indian poverty line, if the PPP *consumption* exchange rate is used to convert rupees into international dollars. Bhalla et. al. (2003) document how the poverty line in several developing countries is a multiple of the Indian poverty line, with the multiple none other than the difference in average consumption levels (in the early eighties) between the two countries.

⁸ Deaton-Dreze compare 1987-93 to 1993-99; they do not use the 1983 data. Given that there was very little mean survey growth observed between 1987-93, the Deaton-Dreze time-periods will make the post-reform period look even better.

Given that poverty levels in India are closer to hard-core poverty levels of around 10 percent, the time has come to reconsider the level of the Indian poverty line of Rs. 49.6 and Rs. 56.8 per capita per month in 1973-74 prices, rural and urban areas respectively. With development, India has gradually moved further away from absolute poverty and into the zone of relative poverty. The suggested magnitude of this new poverty line is that it should be at least fifty percent higher than the old. This “new” higher poverty line is obtained by noting the relationship between per capita consumption levels and the poverty line observed in several developing countries (see Bhalla et. al. (2003)). With a new poverty line that is about 50 percent higher, poverty in India will be close to a third of the population in 1999-2000.

Chapter 2: Data, Definitions and Methods

The primary concern of this report is with the evolution of inequality and poverty in India over the last fifty years. Estimates of poverty involve the construction of estimates of consumption and its distribution. In the main, there are two separate sources for estimates of mean consumption – household surveys and national accounts.

Corroborative evidence is often used in the form of the trend in wages. Since the analysis has to in terms of *real* expenditures, more than normal attention has to be devoted to estimates of inflation. Thus, data is an important part of the story, and its ramifications are discussed throughout the text, but particularly in this chapter and Annex I. Equally important are methods of estimation – given faulty data on survey expenditures (and increasingly faulty as documented below) appropriate methods have to be constructed to correctly measure growth, inequality and poverty. This chapter is in two parts – the first short part describing the sources of data, and the second part detailing the attributes of the data and the methods employed.

Data

In the main, the data are from the following sources:

1. National Sample Surveys of Household Consumer Expenditure (CES):

The most important source for the study of poverty in India are the surveys conducted by the National Sample Survey Organization (NSS or NSSO). The first of these surveys was in 1951. Sample sizes and methods have increased and improved and today, the NSSO conducts large sample surveys (about 125,000 households) every five years and a small sample survey (about 25,000 households) in the intervening years. These surveys contain detailed information on the quantity and price of various food and non-food items. Besides such item-wise household expenditure, these surveys also provide data on household characteristics like size, educational attainment, religion, social group, civic amenities etc. For the years 1983, 1987, and all surveys since 1993-94, this research has used unit record data at household level has been used for the computations.

2. Employment & Unemployment , NSS:

Beside consumption expenditure, NSS conducts unemployment and employment surveys (EUS). Data on earnings, wages, occupation, education etc. have been used from these surveys. *Unit record data at person level has been used for the computations for the years 1983, 1987, 1993 & 1999.* Jointly, the CES and EUS surveys yield an extremely rich set of data. Particularly rich is the fact that for the 1983, 1987-88 and 1993-94 surveys, the *same* set of households were surveyed in each year. Not a panel, but that during each survey round, the two consumption and income surveys covered the same set of households. This allows for more robust conclusions on what happened, in particular, to growth, inequality and poverty. To date, however, the joint nature of the data has not been examined.

3. Macro Data:

GDP, State Domestic Products, Poverty Lines, Consumer Prices, non-income data, etc., have been obtained from a range of government and international data sources. As Annex I discusses, there are two estimates of personal expenditure, national accounts – one provided by the national accounts organization, Central Statistical Organization (CSO), and the other by the Reserve Bank of India. The former series is what is reported in international documents e.g. IMF Financial Statistics, World Development Indicators, World Bank, etc.

4. State level data:

Recently, the CSO has made available a state gross and net domestic product series for the different states of India. These data have been combined with state level data derived from the NSS to study the poverty reduction performance of the different states. Thus, a consistent series has been built on gross state product, consumption, wages etc. for all the major states for the period 1960-2000. In addition, census and other “official” data have been collected for indicators of living standards. Such data are supplemented by data on education derived from NSS surveys for the four years 1983, 1987-88, 1993-94 and 1999-2000.

5. Per capita consumption and poverty prior to 1983:

Survey data for the period 1950-1982 are not easily available. For the large sample surveys of 1972-73, 1973-74 and 1977-78, documents of the planning commission were

used. For data prior to the seventies, three studies were most useful – the collection of papers in Srinivasan-Bardhan(1974), Ahluwalia(1977) and World Bank(1998).

6. Updating poverty lines

The poverty line is updated separately in India according to different price series – the consumer price index for agricultural workers is used for the rural sector, and an urban based consumer price index (CPI for industrial workers and the CPI for urban non-manual employees) is used for the urban areas. The inadequacies of aggregate price indices in developing countries has long been recognized – see Bhalla-Glewwe for a detailed use of price data as revealed by surveys in Sri Lanka, and Minhas, Minhas et. al., Dubey-Gangopadhyay, Deaton-Tarozzi and Deaton(2003a and 2003b) for such studies for India.

Deaton-Tarozzi, Deaton(2002a,2002b), and Deaton-Dreze(2003), hereafter Deaton, construct detailed (Tornqvist) price indices for the urban and rural areas of India for the three survey years, 1987-88, 1993-94 and 1999-2000. Their estimates, along with the planning commission estimates of state specific poverty lines in 1983⁹, are used to provide a “Deaton” price series for 1983. The simple assumption is made that inflation in each state (rural and urban) between 1983 and 1987-88 was as indicated by the planning commission inflation series (as indicated by the data on the poverty line).

There are several data adjustments made by Deaton in his construction of a price series. First, there is an adjustment for relative prices between urban and rural areas. Using the unit level NSS surveys, Deaton(2003a) shows that the urban price level is not as relatively high as assumed by the Planning Commission in its construction of equivalent poverty lines in the urban and rural areas. Second, the inter-temporal changes in prices (between 1987-88, 1993-94 and 1999-00) were computed from the NSS unit level data rather than from official estimates of price change.

In addition to adjustments for prices, Deaton(2003b) also offers a method to “correct” the 1999-2000 survey for the bias caused by the 7 day / 30 day mix-up. The correction offered is for poverty estimates, not mean consumption. The latter can be inferred from

⁹ Deaton uses the planning commission rural poverty line for India for 1987-88, Rs. 115.4 rupees per capita per month, as his base for the construction of price indices.

the data and yields the estimate that the Deaton corrected mean consumption in 1999-2000 is about 3 to 4 percent lower than actually recorded i.e. closer to Rs. 570 rupees per capita per month rather than Rs. 590.

Methods of measuring poverty

Given data on prices and mean expenditures, it is a straightforward *accounting* matter to calculate the number of poor. The poverty line is with regard to a level of per capita expenditure of Rs. 49.6 and Rs. 56.8 for rural and urban areas respectively, 1973-74 prices. The number of people whose expenditure is registered below this pre-defined poverty line are counted as poor.

The surveys are the only source for information on the *distribution* of expenditures. However, for this given distribution, there are *two* estimates of mean expenditure that are available – one is the survey mean itself, and the other is the estimate of mean per capita expenditures available from national accounts (NA or NAS). The present method of measuring poverty in India entails an assumption that the survey data is approximately correct both with regards to the mean and the distribution of consumption. Previously, the accepted practice of the government of India was to use the distribution in per-capita expenditures from NSS surveys, and equate the survey mean to the national accounts estimate. Thus, a consistency was achieved, in that the mean survey estimate of per-capita expenditures was set equal to the mean national accounts estimate. Accordingly all poverty or head-count ratios were derived from this *mean-adjusted* NSS survey data. The entire controversy, debate, about actual levels of poverty has hinged on this important difference – is the survey or the national accounts mean a more accurate indicator of the underlying “true” mean?

The means provided by the two sources – surveys and national accounts - are not expected to be exactly equal, because their coverage (by definition) is not identical. For example, NA means include the consumption of institutional populations, be they prison inmates or non-governmental organizations (NGOs). If the true mean is denoted by X , then the law of large numbers suggests that the survey mean of per capita expenditures would approximately equal the unknown “true” mean. The NA uses several pieces of data, (including NSS when available), to obtain annual estimates of total private consumption expenditure. It is worth noting that the law of large numbers applies with

much greater force to the national accounts data. Furthermore, accounting checks and balances used in the NA should smooth out unwarranted spikes and fluctuations in average consumption. So perhaps the NA mean is likely to be more accurate than the survey mean.

A similar debate does not apply to estimates of mean *growth* rates revealed by the two sources. These should be broadly similar, since it is not expected that the share of the institutional population (or other omissions or differences in the two sources) *and* their relative mean consumption would increase significantly on a structural basis.

Survey and national accounts data – How accurate ?

A considerable part of the poverty debate in India is centered on the ‘accuracy’ of the expenditure data collected by the NSS surveys. In the sixties (see especially the collection of articles in the Srinivasan-Bardhan 1974 volume) the debate centered on whether the sample surveys were accurately reflecting the trend in household consumption as revealed by the national accounts. At that time, the survey capture ratio of the NSS was around 90 to 95 percent i.e. the mean consumption as recorded by the survey was approximately equal to 90-95 percent of the consumption as revealed by the NA data. The growth rates revealed by the two sources were near identical – yet analysts (and policy makers) felt that the issue of “divergence” in the levels deserved analysis. Attempts were made to make near identical the definitions, coverage and prices between the two sources (especially see Mukherjee-Chatterjee). The conclusion: surveys were within 5-10 percent of national accounts, with some evidence that in the early sixties and before, that the survey mean consumption estimates were actually higher than that obtained from national accounts i.e. the S/NA capture ratio was above 100 percent.¹⁰

However, in 1989, the government of India appointed an Expert Group to examine the entire set of issues relating to the estimation of poverty in India. This group recommended in its report (EGGOI 1993), which was accepted by the Planning Commission in 1996, that henceforth the practice of equating the means of the survey

¹⁰ This is observed today in some African and Eastern European nations, in the latter countries during bouts of high inflation – see *Imagine*.

and national accounts would be discontinued, and that estimates of poverty should be exclusively based on the NSS survey estimates.

EGGOI did not empirically *substantiate* their conclusion that poverty calculations should henceforth not adjust the survey data with reference to the NA, a point noted by both Bhalla(2000d) and Deaton(2001). The expert group noted the well known fact that there were problems with comparing the estimates yielded by surveys and national accounts. The report is silent on three important parameters; first, that just as the NA mean had measurement problems, so did the survey mean. Second, and more importantly, that the survey means were capturing a lower and lower fraction of the NA mean i.e. the survey to national accounts ratio of means (referred to as S/NA) was continuously declining; third, that there are few theoretical reasons (almost none) for the *growth* rate as revealed by surveys to be substantially different than the growth rate as revealed by national accounts.

Thus, the choice between NSS and NAS could not have been decided by merely noting that the national accounts mean contained errors. A useful point of departure for the Expert Group in making that choice would have been to note also errors in the NSS survey data. Only if there were considerably *less* errors in NSS, would one prefer not to use the information contained in national accounts. The Expert Group also did not note that at the time of their discussions, the S/NA mean was 25 percent lower than just a decade or so earlier. It appears that just when an attempt was needed to reconcile the widely divergent estimates, the Expert Group decided to ignore the problems in totality and opt instead for a radically new method of estimation of poverty – that of exclusively using the error prone consumer expenditure surveys¹¹.

Errors in survey and NA data – a review of the issues

Methods of collection and estimation are constantly under review and improvement. The national accounts data estimates have periodically been reviewed (the 1960-61 NA series was the basis of the first poverty line of Rs. 15 per capita per month of consumption in the rural areas), and have generally led to an upward revision of *nominal*

¹¹ Interestingly, and perhaps coincidentally, the Indian turnaround in thinking about poverty measurement followed the change in policy at the World Bank a few years earlier. Starting with WDR 1990, the World Bank also moved to an exclusively survey based method of poverty measurement.

consumption expenditures. The last such revision took place in the late nineties when the central statistical organization provided estimates based on prices prevailing in 1993-94. This revision involved an increase in *nominal* consumption in the base year by around 14 percent i.e. average consumption was higher by 14 percent in 1993-94. Stated differently, India was richer by 14 percent in real terms according to this new “base”.

Such revisions have an important bearing on estimates of poverty, especially if NA estimates are used as a benchmark. The 1993-94 upward revision in nominal consumption meant an upward revision in real incomes for that year of the same percentage. Thus, in one stroke, a NA based measure would suggest that poverty was reduced by an accounting fiat, and reduced by a large amount, 10 percent or a 100 million people!¹² This undesirable property of using NA means has been used by analysts to reject the use of national accounts data for estimates of mean consumption used in the construction of poverty estimates. (See especially the writings of Deaton, Ravallion, Sundaram and Tendulkar). There is merit in the criticism. The NA revisions appear inappropriate for poverty estimates for at least two reasons – a major form of consumption is food, and it is unlikely that food consumption is scaled upwards by the national accounts by the average revision of 14 percent; and second, even if the average revision is right, it is highly doubtful that the distribution of such revisions is poverty neutral.

Not much emphasized is the fact that in India (and as it turns out in most of the world, see *Imagine* and below) the S/NA ratio has declined by an amount far larger than any such revision in the national accounts. For the last large NSS survey (1999-2000), the survey capture ratio declined to 55 percent. In other words, almost half of total consumption has gone “missing”. So the question is not only are the NA data, and revisions credible, but whether the mean NSS estimates are credible. There are several ways in which the survey and NA data can *both* be used to construct reliable mean consumption and therefore poverty estimates. *Imagine* offered one such method – and Bhalla et. al. (2003) another. Both these methods involve the assumption that the *growth*

¹² There is an all important transformation involved in going from an estimate of increase in real expenditures to the decline in the head count ratio of poverty, even after assuming that the distribution stays constant. This is due to the intermediation of the shape of distribution elasticity, or **SDE**. Chapter 7 discusses the derivation of this elasticity.

rates in consumption revealed by national accounts data are not subject to much revisions or inaccuracies, and therefore should be used in estimates of poverty. There are valid objections, both in terms of the mean and distribution, to national accounts data; there are precious few (and even fewer have been articulated) objections to NA *growth* rates. For example, the 14 percent 1993-94 revision mentioned earlier made very little difference to the estimate of *growth* in mean consumption between 1993-94 and any earlier year.

*Imagine method of estimating poverty – use of **adjusted** NA consumption means*

A “reliable” estimate of survey consumption is provided by an *adjusted* NA consumption mean, an adjustment that reduces the NA mean. The NA means need to be adjusted *downward* to reflect two considerations; first, that surveys are likely to miss more of the rich than of the poor, and second, that the degree of under-estimation by the surveyed rich is likely to be higher than the degree of under-estimation of the surveyed poor. Thus, using a scalar unadjusted multiple to match surveys and national accounts would be inaccurate, and yield to a higher mean consumption for the poor, and therefore lower poverty. But a reduced NA mean, and therefore a lower multiple, may be an accurate reflection of the consumption of the poor, and therefore yield an accurate estimate of poverty. In recognition of the possibility of such errors, *Imagine* offered a method which discounted NA consumption by 15 percent, or used a scalar adjustment of 0.87 (1 divided by 1.15). In other words, the argument was made that 13 percent of NA consumption did not accrue to the poor, or any of the surveyed population. It accrued to a very small fraction of very rich people. Hence, the error prone survey mean was assumed equal to only 87 percent of the national accounts mean.

There are several supporting pieces of evidence to indicate that this is a very conservative lower bound estimate of the “true” consumption of the poor. The top 1 percent of the population in India has a consumption share of approximately 8 percent; the top 20 percent a consumption share of 41 percent. By discounting NA consumption by 13 percent i.e. assuming that 13 percent of total consumption accrued to the unsurveyed super rich, one is effectively stating that the top 20 percent of the Indian population has a consumption share equal to 41 + 13 or 54 percent – a share recorded by very unequal economies in the world (e.g. in Argentina, the share of the top quintile is about 52 percent).

However, Ravallion (2000), closely followed by Sundaram-Tendulkar(2001), have questioned the use of even *adjusted* national accounts means. Ravallion argues that since national accounts data on consumption includes that of NGOs, political parties etc., “replacing the NSS mean with consumption per capita from the NAS when measuring poverty would imply that campaign spending by politicians trying to get elected would automatically reduce measured poverty even if none of the money goes to the poor” (3246). Sundaram-Tendulkar also recommend in their conclusion against adjustment of NSS data. In contrast to Ravallion, they present some empirical evidence for their conclusion, evidence in the form of consumption baskets and shares of different items of expenditure for the poor (bottom 30 percent) and the rich (top 10 percent).

This Sundaram-Tendulkar paper has been widely quoted in favor of the proposition that using a common multiple to adjust household means (as argued by *Imagine* and much earlier by others e.g. Government of India, Altimir, Ahulwalia-Carter-Chenery etc.) would severely understate poverty. In an important review of the poverty debate and trends in India, Datt-Ravallion (2002) state: “In India, food is about 60 percent of consumption on average. When one focuses on consumption of the food staples that figure most prominently in the budgets of the poor, there appears to be little or no divergence between the NSS and the national accounts data” (p. 93).

It is worth examining the evidence presented by Sundaram-Tendulkar (and used by Ravallion) in some detail. They compare the NSS survey of 1993-1994 with the national accounts data for the same year. Some of the facts that they find (presented in their Tables 3 and 4). First, that food constitutes approximately 70 to 75 percent of the basket of the poor, and about 45 percent of the basket of the rich, defined as the top 10 percent of the population. Second, that cereals and pulses etc. are only understated (relative to NA) by about 10 percent. These two “facts” are presumably enough for Datt-Ravallion to conclude that the survey estimate of mean consumption and therefore poverty is not in error and for Sundaram-Tendulkar to conclude that “ our analysis at a disaggregated level across broad items of expenditure and across fractile groups shows that a uniform

scalar correction would result in a significant overstatement of the consumer expenditure of the bottom fractile groups”¹³ (119).

But there are other facts that Sundaram-Tendulkar report but apparently ignore when forming their conclusions. The third important fact reported by the authors is that close to 42 percent of the entire divergence between surveys and NA is accounted by food alone. The multiplier (ratio of NA to NSS means) for food items is large: for milk and milk products is 1.41, for edible oils it is 1.56, for fruits and vegetables it is 2.47! The contrasting numbers for non-food items like durables is 1.64. The interesting characteristic of food, ignored by Sundaram-Tendulkar and Datt-Ravallion, is that it cannot be vastly overconsumed. The rich might get obese, but they are unlikely to eat themselves to death. In other words, a large part of the food difference has to be accounted for by understatement of food expenditures by the poor.

Both Ravallion and Sundaram-Tendulkar raise relevant questions, as does the World Bank’s *World Development Report 2001: Attacking Poverty*. The central concern of these critics is that the modified adjustment method will contain large errors and mistakenly under-estimate poverty. Their strong *assumption* is that most of the missing income accrues to the non-poor, and most likely to the rich. So while survey estimates are under-estimating average consumption, most of the difference, believe the critics, is *not* accounted for by the bottom half of the population. It is shown below that this is emphatically not the case, at least in India.

The issue of under-estimation, and the question of whose consumption is being under-estimated, are empirical matters, and can therefore not be addressed merely by assertion. To this end, it should be noted that even in the US, there has been an increase in underestimation of the survey mean relative to the mean of the national accounts. Triplett (1997) notes that national accounts estimates of per capita expenditures in the US have grown at about 1 per cent per year faster than survey estimates. Triplett also finds that the underestimation of food was about the same as that of durable goods – both at about 0.7 percent per year. The largest amount of under-estimation - 1.7 percent per year - affects the item “durables less motor vehicles.”

¹³ That the Sundaram-Tendulkar conclusion does not follow from their own logic, and data analysis, is documented below.

The US data provides a perspective on India's under-estimation problems. However, the magnitudes involved are radically different – rather than a 1 percent difference per year in the US, the NSS and NAS data in India have diverged by an average of 1.6 percent per year, since the early eighties. Accordingly, NSS has recorded annualized growth of 1.4 percent per annum vs. an annualized NAS consumption growth of 3 percent per annum. In this context, it is worth noting Lal-Mohan-Natarajan (2001), who use detailed data on expenditure on durables, as well as other items, to show that durable expenditure is massively underestimated by the NSS, and that this under-estimation of durables involves the poor as well.

Declining S/NA ratio in India – the evidence

Consumption surveys have been conducted by the NSS since 1951; sometimes the period of survey has been a few months, sometimes a year; most times, the period of inquiry has been from July to June. On the other hand, NA data are annual (only recently have quarterly estimates become available). Thus, there is some “matching” involved in the computation of S/NA, independent of differences in coverage and use of different deflators (personal consumption deflator and consumer price index).

Tables 2.1 and 2.2 document the trends in monthly mean per capita consumption, nominal and real, surveys and national accounts. In order to abstract from differences arising due to differences in deflators, four real per capita consumption series are presented: real survey and NA, deflated separately by personal consumption GDP deflator and consumer prices, as revealed by the trend in the Indian 1973-74 poverty line.¹⁴ Figure 2.1 plots the trend in this ratio for all the NSS surveys with separate trend lines being drawn for the large survey years (1963-64, 1967-1968, 1983, 1987-88, 1993-94 and 1999-2000).

The S/NA ratio has been on a steady declining trend for the small sample surveys for the last forty odd years. For large surveys, the ratio was constant at around 80 percent¹⁵

¹⁴ For years when the poverty line data are not directly available, changes in consumer price index are used to “update” the data.

¹⁵ Earlier it was stated that the S/NA ratio had been constant around 90-95 percent in the sixties while it is being contended here that the ratio was constant around 80-85 percent. Both statements are correct. The reason the ratio declines is because it is based on the 1993-94 NA series rather than the NA series

until 1980, and then started declining precipitously – 69.6 percent in 1983, 59.1 percent in 1993-94 and 55.3 percent in 1999-2000. This decline in turn has led to several anomalous results – in particular, *three* results that do not pass the “smell” test of credibility.

First, the NSS data suggest that per capita consumption increased by a greater amount in the 10 years 1963 to 1973 than in the twenty years 1973 to 1993! Second, there is a

prevailing at the time of the survey. The NA series, 1993-94 base, revised upwards nominal consumption by about 14 percent.

Table 2.1: Per capita consumption in India, 1954-2000 (Rs. per month)

Year				Real GDP deflator		Real poverty line deflator	
	NSS	NA	S/NA	NSS	NA	NSS	NA
1954	17.3	18.7	92.1	277.3	301.2	252.8	274.5
1955	17.6	18.8	93.9	285.7	304.3	260.4	277.3
1956	18.8	21.9	85.7	269.9	315.1	245.9	287.1
1957	19.6	22.0	89.4	272.8	305.0	248.8	278.1
1958	21.2	24.1	88.1	283.5	321.7	258.5	293.4
1959	21.7	24.8	87.6	282.4	322.4	271.7	310.1
1960	22.9	26.9	84.8	290.3	342.3	291.2	343.3
1961	23.5	27.6	85.2	292.1	342.6	294.7	345.7
1962	24.1	28.5	84.6	285.5	337.5	291.2	344.2
1963*	24.7	31.4	78.6	268.8	341.8	289.7	368.4
1964*	28.3	36.3	77.9	283.9	364.6	293.1	376.4
1965	29.4	36.7	80.2	271.9	339.2	278.7	347.7
1966	28.9	40.1	71.9	236.6	328.8	246.5	342.7
1967*	36.1	46.9	76.9	272.1	353.8	272.6	354.4
1968	36.1	49.2	73.4	264.9	361.1	264.8	361.0
1969	36.1	52.2	69.3	256.9	370.7	263.6	380.5
1970	38.9	52.0	74.8	273.1	365.0	270.2	361.1
1972*	48.2	57.9	83.4	291.2	349.3	305.0	365.9
1973*	56.8	69.1	82.2	292.5	355.7	307.2	373.6
1977*	75.0	93.8	79.9	302.2	378.0	298.2	373.0
1983*	123.3	177.1	69.6	292.7	420.5	295.9	425.1
1986	148.5	226.3	65.6	286.3	436.0	286.8	436.9
1987*	177.0	251.2	70.5	311.8	442.6	320.6	455.0
1989	190.4	324.7	58.6	285.3	486.5	297.1	506.5
1990	204.6	367.8	55.6	277.4	498.7	292.8	526.5
1992	255.1	468.9	54.4	279.6	513.9	286.9	527.3
1993*	323.6	547.3	59.1	323.6	547.3	323.6	547.3
1999*	587.5	1062.7	55.3	375.1	692.7	357.7	660.5
2000	604.8	1119.8	54.0	378.1	699.9	375.6	695.3

Sources: National accounts data from World Development Indicators (2003); Planning commission documents for period 1972-1983; Srinivasan et. al. for data prior to 1972.

Notes:

*stands for large sample surveys.

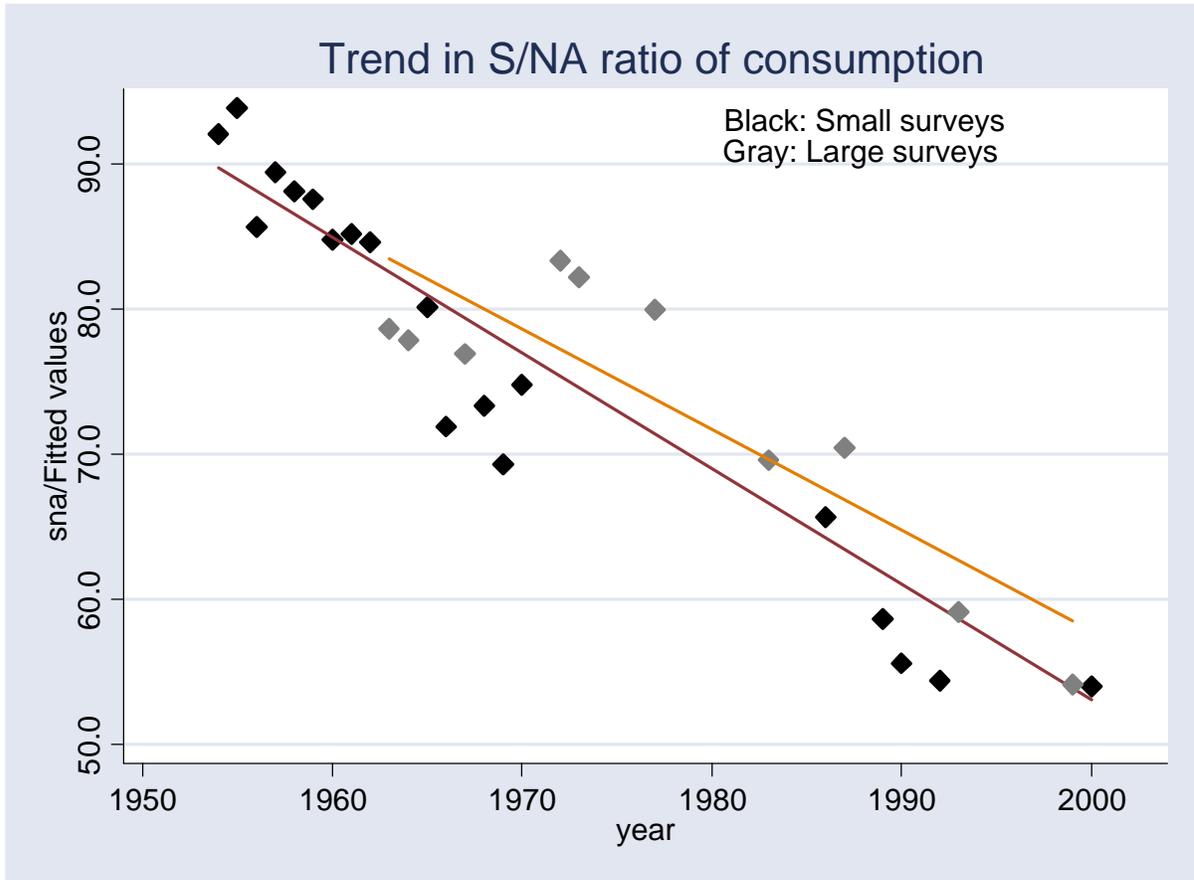


Figure 2.1

Source: NSS surveys; National accounts data; Srinivasan-Bardhan (1974); World Bank (1998)

Note: S/NA represents the ratio of mean per capita consumption, NSS surveys, to the " "mean per capita consumption, national accounts, latest 1993-94 series.

Table 2.2: Consumption, Inequality & Poverty, 1954-2000**All India**

Year	Nominal	Real	Share in consumption		Gini	Poverty
	Rs.	Rs.	Bottom 40% (%)	Top 20% (%)		Headcount ratio (%)
1954						
1968						
1973						
1977						
1983	123.3	295.9	22.1	39.5	32.5	44.8
1987	177.0	320.6	22.4	39.6	32.8	38.7
1993	323.6	323.6	23.1	38.4	32.4	36.4
1999	587.5	365.2	24.1	36.9	32.0	26.4
2000	604.8	375.6	23.4	38.1	.	23.6

Rural India

Year	Nominal	Real	Share in consumption		Gini	Poverty
	Rs.	Rs.	Bottom 40% (%)	Top 20% (%)		Headcount ratio (%)
1954						
1968	33.8	204.6	20.9	38.8	.	.
1973	53.0	219.8	23.2	37.1	.	.
1977	68.9	249.5	21.0	42.3	.	.
1983	111.7	256.9	22.5	38.9	30.4	46.6
1987	157.3	281.0	23.1	38.7	29.9	39.7
1993	279.9	279.9	23.9	37.3	28.5	37.4
1999	482.4	303.1	25.3	35.2	26.3	27.0
2000	498.0	312.9	24.8	35.9	.	24.0

Urban India

Year	Nominal	Real	Share in consumption		Gini	Poverty
	Rs.	Rs.	Bottom 40% (%)	Top 20% (%)		Headcount ratio (%)
1954						
1968	43.6	308.9	18.5	42.1	.	.
1973	70.8	349.7	22.1	39.3	.	.
1977	96.2	373.3	19.9	42.4	.	.
1983	163.1	419.0	20.6	41.8	33.9	38.5
1987	245.0	425.0	20.3	42.6	35.0	35.0
1993	456.5	456.5	20.5	41.6	34.2	33.3
1999	851.9	527.8	20.6	41.8	34.7	24.6
2000	918.8	569.2	19.2	44.3	.	22.2

Notes: All consumption levels are in terms of per capita per month. Real consumption stands for the per capita per month consumption level with the nominal poverty line as the price index.

decline in real per capita consumption of 4 percent between 1973 to 1983 according to the surveys while national accounts data indicate an increase of more than three times that amount or 14 percent. The entire difference in growth rates is obviously entirely due to the decline in the S/NA ratio from 82.2 percent in 1973 to 69.6 percent in 1983. The third incredible survey result is that there was **zero** increase in per capita consumption between 1987-88 and 1993-94. Incredible because 1987-88 was the worst drought year in India since the twin drought years of the mid-sixties (1965 and 1966). And 1993-94 was two years after economic reforms were introduced in India and according to most neutral observers, ushered in a period of rapid economic growth. Over these six years, national accounts data suggests a real increase of over 20 percent. The reason for the divergence and the incredulous estimate of zero growth in NSS per capita consumption – a decline in the S/NA ratio of close to 20 percent in just six years, 1987-1993.

Declining S/NA – what should one do?

As extensively documented in *Imagine*, and Bhalla(2003b), Indian data are part of a worldwide trend. On average, the S/NA ratio has declined by about 15 percent in the last two decades. These declines represents a loss, a disappearance, of actual consumption.

Is it possible that these declines are “virtual” i.e. having little to do with the underlying reality? The definitions are different, coverage is different etc. (But such differences are unlikely to affect estimates of growth). There are three factors responsible for why the survey and national accounts will not match *at a point in time*. First, the definitions differ i.e. *household* surveys exclude the consumption of institutions like hospitals, prisons, and NGOs. For the UK, Deaton(2003c) suggests that NGO consumption in 2001, as a fraction of total consumption, was 3.9 percent. In India, it is likely to be lower, and unlikely to exceed 1 – 2 percent of total private consumption expenditures.

However, it is unlikely that the *growth* of mean consumption of prisons, political parties, charities, etc. is significantly higher than the growth in average consumption. Even if it were, it is likely that both the initial share, and the excess growth of the NGOs, is too

small to make a material difference to the growth in average all population consumption.¹⁶

Deaton also points out that there is an important item of consumption not included in surveys but included in NA. This item is “financial services indirectly imputed” or FISIM. This is the value of financial intermediation (difference between interest paid and interest received) and Deaton correctly argues that no part of this missed consumption item is likely to accrue to the poor. According to Kurukshetra-Kar(2002), the value of FISIM services was 2.5 percent of consumption in 1993-94.

Finally, there is possibly one other error occurring due to differences in definition. Surveys typically do not include the *imputed* rent from housing, while national accounts include this large expenditure item. It is unlikely that the distribution of imputed rent is going to be much different than the pattern of total expenditures; hence, use of NA means is unlikely to cause any bias e.g. if a household’s imputed rental is small or zero, its multiple via use of a NA to survey multiplier will also be small or zero. In the 1999-2000 NSS survey, an additional question pertaining to imputed rent was asked. It was found that such expenditures accounted for about 6.3 percent of total expenditures; in contrast, actual rent paid amounted to 1.9 percent. Together, housing rent in the survey was 8.1 percent – the corresponding number in the NA was 6.7 percent. Given the fact that this expenditure has not been included, about 5 percentage points of the survey-NA gap in *levels* can be explained by imputed rent. But practically a zero amount of the difference in *growth* rates.

Another difference between surveys and NA estimates is caused by differences in coverage – the NA include the entire population, rich and poor, while surveys are likely to miss out the very rich (due to guards, dogs and other barriers to entry) and the very poor (street people, persons without a home, etc). A different aspect of coverage are differences in compliance – i.e. the likely possibility that among the surveyed households, the rich understate their expenditures to a greater degree than the poor. No estimates exist for the magnitude of missed households.

¹⁶ A simple example can illustrate. Assume the share of NGOs in total consumption is 5 percent and that such consumption grows at a 5 percent *faster* pace than average consumption. After 10 years, this will cause a difference in survey capture of only 2 to 3 percent. For most countries, the decline in survey capture has been significantly greater.

Surveys and National Accounts data – which are more accurate?

It is critical that a judgment be made about the *relative* accuracy of mean consumption as provided by survey means and NA means. This issue is of central concern in any evaluation of poverty trends, and of the relationship between growth and poverty reduction, and whether growth was pro-poor or not. In the sixties, this issue of divergence between growth rates from surveys and national accounts received detailed investigation. It is worthwhile to recall that the divergence between the two at that time was insignificant; today, the divergence in the two is *about 2 percentage points a year*. So obviously, different analysts and different policy makers obtain different results, and the debate continues without any apparent resolution.

Several tests are conducted to establish the relative accuracies. Item by item gaps between surveys and national accounts are explored for the different years – these gaps are quite high for even food, in conformity with the NSSO Expert Groups (2002) findings. Indeed, the gaps found for food, about 30 percent (i.e. the survey estimate of food consumption is 30 percent below the estimate of national accounts), are almost identical to the gaps found by the NSSO Expert Group using detailed experimental surveys.

Testing for magnitude of compliance error.

There is a method which can test for the magnitude of the compliance error. For about 39 items of expenditure (food and non-food), the survey and NA data are compared and a matching multiplier found (Table 2.3). For example, survey cereal consumption in 1983 was virtually equal to the expenditure as stated in NA. In 1999, survey cereal consumption was only 75 percent of that revealed by the national accounts. For durables, the understatement was 74 percent in 1983 and 64 percent in 1999-00. How should these “missing expenditures” be allocated among households? An obvious method is to allocate the missing expenditures in exactly the same proportion as the included expenditures. This proportion, as shown in the table, is different for different items.

Table 2.3 : Item-wise Correspondence of Survey with National Accounts, 1983-1999

	1983	1987	1993	1999
	NA/S	NA/S	NA/S	NA/S
Food Items				
Cereals, Pulses etc	101.64	105.04	90.35	75.74
Milk & Milk Products	74.01	75.37	73.1	56.03
Edible Oil	59.72	67.04	67.3	76.13
Meat Egg & Fish	73.95	70.14	54.64	47.37
Fruits & Vegetables	68.77	78.1	40.75	36.19
Sugar	45.86	51.07	49.23	37.52
Total (Food)	92.33	97.59	73.17	61.93
Non-food Items				
Clothing	56.5	45.09	58.64	84.09
Misc. Goods & Services	62.01	63.01	48.66	44.53
Durables	73.94	55.21	65.36	64.22
Total (Non-food)	57.47	56.41	50.29	49.97
Total (All Items)	77.62	78.73	61.87	55.88
Multiplier (inverse of above)	1.29	1.27	1.62	1.79

Source: *National Accounts Statistics, Various Issues; NSS household expenditure surveys.*

In their criticism of the uniform scalar correction method, Sundaram-Tendulkar correctly state that “what is critical from the perspective of uniform scalar correction of per capita total consumer expenditure for all fractile groups of population is the fact that, consumer durables have a budget share of only one-half-of-one-percent in the consumption basket of the bottom 30 per cent of the population compared to a share of 8 percent or more for the top 10 percent of the population” (p.128). The above method of allocating missing expenditures according to survey stated expenditures does *not* suffer from this drawback. If poor people have zero durable expenditures, they will have zero adjusted expenditures; if they have zero rent from housing, they will get allocated zero amount of the difference in the rent as stated in surveys and national accounts.

The above allocation method yields different aggregate multipliers for different households. Inequality is also higher by about 10 percent (see Chapter 4); the rich are found to understate their expenditures to a greater degree than the poor. For 1983, the average multiplier for the poor (the bottom 40 percent of the population) was 1.2 compared to 1.4 for the rich (top 2 deciles) and 1.29 for the entire population. In 1999-2000, the respective numbers were: 1.7 (poor), 1.91 (rich) and 1.79 average (Table 2.4). Thus, the poor understate their expenditures by approximately 5 percentage points less than the average, the rich understate by 5 percentage points more than the average. And these ratios have stayed broadly constant between 1983 and 1999-00.

Collecting the various “errors” in the surveys – definition, coverage and compliance – it is unlikely that the NA overstate average survey based expenditures, *in total*, by more than 5 to 10 percent. Among the items making up the total: missed out NGO consumption is unlikely to account for more than 2 percent; financial services, imputed rent and other considerations are unlikely to add up to more than 3 percent. Greater understatement by the rich may add as much as 5 percent. So 10 percent of NA consumption is unlikely to accrue, in any proportion, to the bottom half of the population. A straightforward application of the NA mean to all residents would mean biasing upward, by 10 percent, the mean consumption of the poor, and biasing downward the

Table 2.4: How much have decile multipliers changed, 1983-2000?

	1983	1983m	1987	1987m	1993	1993m	1999	1999m
Decile1	92.8	119.6	93.3	118.5	93	150.3	93	166.4
Decile2	94.4	121.6	95	120.7	94.8	153.2	95.1	170.2
Decile3	95.8	123.4	96.4	122.4	96.2	155.5	96.7	173.0
Decile4	97	125.0	98.1	124.6	97.7	157.9	97.8	175.0
Above4	95	122.4	95.7	121.6	95.4	154.2	95.6	171.1
Decile5	98.1	126.4	99.5	126.4	98.9	159.9	99.3	177.7
Decile6	99.6	128.3	101	128.3	100.3	162.1	100.2	179.3
Decile7	101.1	130.2	103.1	131.0	101.7	164.4	101.7	182.0
Decile8	103.1	132.8	105.4	133.9	103.1	166.6	103.2	184.7
Above4	100.5	129.5	102.3	129.9	101	163.2	101.1	180.9
Decile9	105.6	136.0	94.8	120.4	105.2	170.0	105.2	188.3
Decile10	112.6	145.1	113.3	143.9	109.2	176.5	107.9	193.1
Above2	109.1	140.6	104.1	132.2	107.2	173.3	106.6	190.8
Average	100	128.8	100	127.0	100	161.6	100	179.0
NA/S average	128.8	128.8	127	127.0	161.6	161.6	179	179.0
S/NA average	77.62	77.62	78.73	78.73	61.87	61.87	55.88	55.88

Sources: NSSO surveys, respective years.

Notes:

1. Columns labeled 1983, 1987, 1993 and 1999 show the *relative* multiplier for each decile for the respective years.
2. The columns with "m" suffix show the actual multiplier i.e. the ratio by which survey consumption in each decile has to be multiplied to arrive at a figure consistent with the national accounts estimates for the respective years.

head-count ratio by about 5 to 8 percentage points – this is the point made by critics like Sundaram-Tendulkar, Datt-Ravallion and Deaton(2003).

This criticism is valid for *non-Imagine* methods of adjustment, methods which employ a simple scalar multiplier (NA mean divided by survey mean) uniformly to all households. Given differences in coverage, compliance and pattern of food-non-food expenditures, this practice leads to an under-estimate of poverty. For example, for the 1999-00 NSS survey, the average multiplier for all households was 1.79. Item by item expenditure suggested that the bottom 40 percent had a lower multiplier of 1.71. Allocating the average multiplier to all households would result in an understatement of poverty. The *Imagine* method does not suffer from this defect; instead of allocating 1.79 to all households, it allocates a lower multiplier $[(1/1.15)*1.79]$ or 1.56 to all households, poor and rich alike. In other words, a common multiplier but one with a 15 percent lower magnitude. But the data suggests that 1.71 is the “correct” multiplier for the poor. Thus, the *Imagine* method of using the NA mean *understates* the likely expenditures of the poor by about 10 to 15 percent (difference between 1.56 and 1.71). In terms of assessment of poverty, this suggests that the *Imagine* method *overstates* poverty in India by about 8 to 12 percent.

The 1999-2000 NSS survey – the 7 day/30 day problem

The large sample 1999-2000 survey contained an unfortunate mix-up – two separate expenditure questions were asked of the same households i.e. what was the value and quantity of the (food) item that you consumed over the last 7 days, over the last 30 days. Theoretically, it is plausible that the value of the stated 30 day expenditures is an upwardly biased estimate of the “true” expenditures. This survey error has led to several examinations of the problem (especially see Deaton 2001b, 2001c and Sundaram-Tendulkar 2001). Annex I discusses in detail the 7/30 day problem. Since there is considerable interest in the efficacy of economic reforms (see Chapter 8), and since the 1999-2000 survey was a large sample survey, an assessment of the magnitude of the bias in the consumption and poverty estimates is necessary. Deaton’s conclusion is that the 7/30 day problem biased downward the poverty estimate from a “true” value” of 29 percent to the official 26 percent estimate given by the planning commission. Though no estimate of the bias in mean expenditures is reported, it can be derived as the product of the “shape of distribution” elasticity for 1999-00 of 0.80 and the 3 percentage point

Table 2.5: Were adjustments to 1999-2000 data necessary? NO

	1999-00		2000-01		Annual change	
	Rural	Urban	Rural	Urban	Rural	Urban
Mean consumption, nominal	486.2	855	494.9	913.7	1.8	6.9
Mean consumption, real					3.4	5.1
Share of bottom 40%	24.1	19.7	23.3	18.5	-3.3	-6.1
Gini	26.3	34.7	26.3	35.8	0.0	3.2
NA nominal income						6.3
NA nominal consumption						5.4
Poverty line					-1.6	1.8
GDP deflator						4.3
CPI						4.1

Notes:

Real mean consumption growths are obtained by subtracting inflation (change in poverty line) from growth in nominal mean consumption.

difference in the estimate of the head count ratio¹⁷. This suggests that the adjusted mean consumption in 1999-00 was about 2.5 percent (0.8*3) lower than the official estimate of Rs. 589 per capita per month or Rs. 575.

The 2000-2001 small sample NSS survey does not suffer from the 7/30 day bias. Table 2.5 documents the change in several aggregate indicators between the adjoining years of 1999-00 and 2000-01. If the speculation that the 7/30 day adjustment biases upward the estimate of mean consumption is correct, then one should observe a relatively sharp fall in 2000/01. The data suggests that this was not the case – indeed, the 2000/01 survey indicates that there was practically zero bias in the 1999/00 survey. Nominal per capita consumption (national accounts) increased by 5.4 percent between the two years; the weighted average gain according to surveys (with an urbanization ratio of 0.28) was 3.2 percent. Increase in real consumption (NA) was 1.3 percent; real increase in the survey means was equal to 3.9 percent. Rural areas reveal an increase of 3.4 percent; urban areas an increase of 5.1 percent. There is nothing unusual in the data in either its estimates of change in the distribution (the rural Gini is unchanged) or in its estimates of mean consumption. These data provide perhaps the most compelling evidence that while there was a theoretical bias in the estimates of mean consumption (and therefore poverty) in the 1999/00 survey, the empirical magnitude of this bias was close to zero.

The KSNA method of measuring poverty

There is an alternate (to *Imagine*) method of obtaining adjusted survey means. Assume that there is some year in which the survey estimate was broadly correct. In the selected year, it is not at all necessary that the survey mean be at all close to the national accounts mean. The mean can be lower or higher; if lower, because of differences of definition, compliance, coverage etc., it can be substantially lower. In the 1987-88 survey this ratio for India was close to 70 percent i.e. a large part of the national accounts consumption was not found in any of the surveyed households. Let it be assumed that the reasons for the difference – NGO consumption, lower statement of expenditures by the rich, lower coverage of the rich, financial services not to be imputed to the poor etc. – are legitimate and accurate. Then this alternate method states that the growth rate in real expenditures (both backwards to 1950 and forward to 2000) should be taken from

¹⁷ As discussed in detail in Chapter 7, with no change in inequality, the decline in the head count ratio is equal to the product of SDE and the growth in consumption.

the national accounts and grafted on to the survey mean observed in 1987-88¹⁸. This is equivalent to assuming that the S/NA ratio in other years is also equal to 70 percent. If a higher ratio than 70 for any particular year is observed, then the survey mean consumption for that year is reduced to make the S/NA ratio equal to 70; if the observed mean is lower, then it is raised to make the S/NA ratio equal to 70. Since errors in NA growth rates are not likely to be significant, this method, termed KSNA or the *constant survey to national accounts ratio* method, is likely to yield accurate estimates of poverty – more accurate than use of survey means *per se*, or use of national accounts mean¹⁹.

Conclusion about data and methods

The major conclusion reached by examining the data and methods is that exclusive use of surveys for determination of poverty trends is untenable. In particular, there are various reasons to question the accuracy of the growth in mean consumption as revealed by the surveys. While the estimate of the distribution may also be suspect, detailed examination of surveys for India spanning almost two decades suggests that biases in distribution cause a small, 5 to 10 percent, bias (see next chapter for details).

The question for analysts and policy makers should not be whether there are errors in data, but which source of data has what advantages. Distribution data are only available from surveys – here, the analyst has no choice. Data on means are available from two sources – data on growth from more than two (e.g. an additional indicator to growth in consumption is growth in wage incomes, especially wage incomes of the poor for whom Savings is not a priority). The above errors indicate that the choice has to be that growth estimates are not obtained from survey data.

The issue is not whether national accounts estimates contain errors. They do. The issue is not whether theoretically, and in the best of all possible worlds, only survey estimates should be used. They are the best. The issue is even not whether surveys contain errors. They obviously do. The issue is *given the nature and magnitude of errors* involved in household surveys, what should analysts and policy makers do to their methods of estimating poverty. Deaton, after careful consideration, concludes that “there

¹⁸ Any year can be chosen as the base year e.g. if 1998 is chosen, then the level of survey mean is as in 1998, and the growth rate remains as revealed by national accounts.

¹⁹ The KSNA method was first used in a study for the Asian Development Bank, *The End of Asian Poverty* (see Bhalla et. al. 2003).

is no choice but to use the surveys.” And not use any estimates from the national accounts – a conclusion at variance with his earlier 2001 conclusion that one should use a mixture of both (as done by *Imagine*). Our choice is to use both surveys and national accounts data – the former for distribution, the latter for growth rates.

Chapter 3 - Growth

An understanding of what happened to growth is vital for interpreting trends in poverty. After moving in parallel for two decades, the survey and NA growth rates started diverging in the seventies. Even though level estimates can and do differ (see previous chapter), *growth* estimates should be, and are, less prone to divergence. In the last few years, the Central Statistical Organization (CSO), has made available estimates of state level GDP. In addition, the NSS surveys provide for separate estimates of urban and rural consumption and income growth. These data make possible an investigation into different aspects of economic development in India. Does development show signs of convergence i.e. do the poorer states in some initial period, say 1983, show higher growth? Is urban growth faster and therefore possibly accentuating a trend towards greater inequality? Do different socio-economic groups e.g. Hindus, Muslims, SC/ST, show different trends in their average consumption?

Four estimates of growth are available for the period 1983-1999 – separate estimates of consumption and income²⁰ from two sources – NSS and NA. Several authors e.g. Datt-Ravallion(2002), have attempted to draw causative implications about infrastructure, non-farm growth, female literacy etc. by pooling survey poverty and NA GDP (or consumption) growth estimates. This procedure is defensible if there is a large correlation in the growth rates. Such indeed was the case for NSS and NA data prior to the eighties. Table 3.1 documents the trends in levels and growth for the four different growth rates for the period 1983-1999 (state level data).

The two series most favored by researchers – consumption from surveys and state level GDP from national accounts – show a very low correlation in the 1983-1999 growth rate - 0.20. Each 10 percent growth recorded by state GDP estimates translates into only a 3.3 percent growth in NSS consumption. This divergence is the growth equivalent of the level of “missing consumption” in the different years. The survey income growth rates (but one not used by analysts to date) show a close correspondence with the NA rate - 3.1 percent per annum compared to 3.5 percent per annum (NA).

²⁰ Income from self-employment is not included in calculations of mean income levels. This should not make much difference to growth rates, although it will obviously have some impact on *levels* of income.

Table 3.1a: Levels and growth rates, 1983-1999*(levels in Rs. per capita per month, 1993 prices)*

	1983	1999	Growth rate 1983-1999
Consumption , NSS	294	353	1.2
Consumption, national accounts	425	661	2.8
Income, NSS	223	376	3.4
Income, national accounts	590	1057	3.6

Sources: NSS survey for years 1983 and 1999; National accounts statistics for the same years

Notes:

1. The deflator used is the poverty line provided by The Planning Commission, Government of India
2. Annual growth rates are obtained by dividing total growth by 15.5 for survey (NSS) and by 16 for national accounts.

Table 3.1b: Correlation

	Consumption , NSS	Income, NSS	Income, NA
Consumption , NSS	1		
Income, NSS	0.70	1	
Income, national accounts	0.20	0.42	1

Sources: NSS survey for years 1983 and 1999; National accounts statistics for the same years

Notes:

1. Correlation obtained using state level growth rates (using Planning Commission deflator).

Which estimate (surveys or national accounts) is closer to the “correct” value? Data from two other sources – ASI data, and data for wage incomes (see Chapter 5) – suggest growth rates in the range of 3.0 - 3.5 percent per annum during this period. It would be fair to assume, therefore, that consumption growth was closer in line with NA estimates, i.e., about 2.8 percent than the survey estimate of growth of 1.2 percent per annum.

Two implications follow from the growth comparisons. First, not all NSS surveys are showing a divergence, only the consumption surveys used for poverty calculation. This suggests that the possibility of “moral hazard” in the reporting of poverty estimates is real. Cash strapped states are rewarded with grants for poverty alleviation – the less poverty they have alleviated, the more central grants they obtain for poverty removal. What makes the NSS consumption growth rates doubly problematical is that the large sample NSS surveys for 1983, 1987-88 and 1993-94 sampled the same set of households for both the consumption and income estimates. The state level correlation between the survey consumption and survey incomes for the shorter 1983-1993 period is 0.34²¹; the correlation between survey and NA income growth: 0.42. And that between survey consumption growth and NA income growth: -0.05!

The second implication is a warning for researchers – they cannot correlate NSS poverty estimates with non NSS data on literacy, infrastructure, non-farm development etc. The third implication is that NSS consumption survey estimates of the trend in poverty decline are highly questionable. In other words, international assessments of whether world poverty is declining, and/or whether the millennium development goals can be reached by 2015 (or have already been reached by 2000) cannot be made with raw, unadjusted NSS data.

Acceleration of growth?

An important research and policy concern is the efficacy of economic reforms in the reduction of poverty. Major economic reforms were instituted in 1991-93 and the identification of their effectiveness is a growth industry in itself. Table 3.2 documents the evolution of growth (rural, urban and all India) for the period 1983 to 1993-4 (loosely the pre-reform period) and the period 1993-94 to 1999-2000, the post reform phase. As

²¹ Recall that this period corresponds to the years when in each year the same households were surveyed for both consumer expenditures and incomes.

discussed in Annex 1, while there is some concern about the comparability of the 1999-2000 consumption estimates with surveys conducted earlier, the effect of the 7 day/30 day recall on mean consumption is minor, and especially minor if the data from the subsequent 2000-01 survey are incorporated. (These data are *not* contaminated by the recall mix-up).

The table contains annualized growth rates for the two periods. Only for rural survey incomes, is there a deceleration in growth. For all other categories, there is a marked acceleration in growth rates during the economic reform period. The NA income growth rate increases from 2.9 to 4.7 percent; rural consumption growth from 0.8 to 1.3 percent; survey income growth from 3.1 to 3.5 percent. This acceleration implies that poverty has to have decreased at a faster rate in the post-reform 1993-99 period than before. Alternatively, that in order for poverty decline to be at approximately the same rate in the two periods (as contended by Datt-Ravallion and Deaton-Dreze) inequality has to have increased significantly in the post-reform period.

The table also reports on an additional classification besides the usual urban/rural divide. In order to best appreciate what has happened to the poor, why not observe what has happened to the consumption of the poor? The exercise conventionally undertaken (the poverty gap index) is to document the mean distance of the poor from the poverty line. But if poverty is declining, this index captures a moving target i.e. the poor are a smaller and smaller fraction of the population. Instead, what is documented in the table is the evolution in real incomes of the poor when the *poor population is kept constant at the level observed in the beginning year, 1983*. For each rural and urban area of a state, this fraction is different i.e. it is the poor in that region in 1983. What even the “biased” NSS surveys indicate is the reality that the post-reform period was better, much better, for the poor of India. The growth in consumption of the poor more than doubled – in the pre-reform period, the growth was equal to 1.1 percent; in the post-reform period, it had accelerated to 2.3 percent per annum. This suggests that poverty decline *has* to have been much higher in the reform period.

Table 3.2: Consumption and Income growth in India, 1983-1999

	1983	1993	1999	Log growth annual(%)	
				Pre reform (83-93)	Post reform (93-99)
National accounts					
Consumption	420.5	547.3	692.7	2.51	3.93
Income	592.3	797.2	1050.7	2.83	4.60
Survey, All India					
Consumption	295.9	323.6	357.7	0.85	1.67
Consumption, Poor	155	179	202	1.4	2.0
Income	222.7	310.4	402.1	3.16	4.31
Survey, Rural					
Consumption	256.9	279.9	303.1	0.82	1.33
Consumption, Poor	147	171	193	1.5	2.0
Income	176.1	234.5	285.6	2.73	3.29
Survey, Urban					
Consumption	419	456.5	527.8	0.82	2.42
Consumption, Poor	207	223	255	0.7	2.2
Income	383.8	541.2	748.1	3.27	5.40

Sources: NSS consumer expenditure survey (for consumption) and NSS Employment Unemployment survey (for income); World Development Indicators for NA estimates of consumption and income.

Notes:

1. In conformity with general practice, survey consumption is deflated by the consumer price index (normal poverty line estimates) and survey income by the GDP deflator.
2. The NSS survey for income excludes income from self employment; this omission is unlikely to significantly bias the growth estimates.

Convergence or Divergence?

Some clues to worsening inequality can be obtained through analysis of convergence or divergence in inter state GDP (or consumption) growth rates. *Relative* growth rates across and within states can have a large impact on trends in inequality over time.. Additionally, theory would suggest that “catch-up” growth (i.e., those who are relatively poor at an initial point in time are likely to grow faster) is likely to lead to convergence; deviations from this expected outcome should therefore be noted, and the causes of such deviations determined. One way of determining the extent of convergence/divergence is to look at whether average log growth rates over 1983-99 are positively or negatively associated with initial log consumption or income levels. A positive association indicates divergence, while a negative one indicates greater convergence.

Tables 3.3a and 3.3b present regression results for convergence tests using survey and national accounts data. The results are contradictory. While survey consumption data indicate no significant association between log growth rates and log initial consumption, survey income data for rural areas indicates a strong negative association (or “convergence”), and national accounts income data a positive relationship (or “divergence”).

Table 3.3a Regression Results: Average Log Growth Rates (1983-1999) versus Initial (1983) Levels; Model 1: Separate Rural, Urban and State Regressions

		Income			Consumption		
		Rural	Urban	State	Rural	Urban	State
Survey Data	Coefficient	-2.55	-0.99	-1.0	-0.18	-1.30	0.10
	t-Statistic	-2.57	-1.10	-1.3	-0.37	-1.25	0.21
	Adjusted R ²	0.26	0.01	0.04	-0.03	0.02	-0.03
NA Data	Coefficient	.	.	1.7	.	.	.
	t-Statistic	.	.	2.1	.	.	.
	Adjusted R ²	.	.	0.09	.	.	.

Source: NSS data; national accounts data

Pooling rural and urban areas in a single regression, and adding an urban dummy to the model, the following results are obtained:

Table 3.3b: Regression Results: Average Log Growth Rates (1983-1999) versus Initial (1983) Levels; Model 2: With Urban Dummy

	Income	Consumption
Coefficient (Initial Level)	-2.10	-0.47
t-Statistic	-3.05	-0.99
Coefficient (Urban)	2.05	0.72
t-Statistic	3.0	2.59
Adjusted R ²	0.19	0.08

Wage growth

Income growth rates (regardless of source) are significantly higher than the survey consumption growth rate. For poverty computations, it is the latter that is relevant. If both are “correct”, then this would imply a large increase in savings rates, something unrealistic and not observed in any other data. So the question remains – which of the two growth rates is realistic?

The NSS surveys contain information on wages of the poorest and most unskilled workers in the economy - casual workers in rural areas. Growth in wages of these workers can help identify whether the NSS consumption growth of only 1.2 percent per annum for 16 years, 1983-1999 is correct. Given the presumption of growing inequality, rural unskilled wages are expected to be lower than average wage growth and average GDP growth; i.e. this wage growth should provide a lower bound to average consumption, and therefore an upper bound to poverty, in 1999.

Real mean wages of casual rural workers (male) increased at an average rate of 3 percent per annum, 1983 to 1999²² (Table 4.5). In striking contrast, per capita NSS consumption grew at only a 1.1 percent rate, a real gap of 1.9 percent per year; alternatively, that NSS survey wage income of the poorest workers in India (unskilled rural workers e.g. field labour) grew at almost three times the rate of increase in average consumption! Per capita NAS consumption grew at almost the same rate as casual worker wages – 2.7 percent per annum. This is strong

²² Given by a 10.6 percent per annum increase in nominal wages and a 7.6 percent per annum increase in rural inflation.

supporting evidence that between NAS and NSS consumption means, and especially growth in such means, the choice has to be with the NA data. Unemployment during these years has stayed constant between 4 to 6 percent. The increase in real wages has therefore translated into an increase in real incomes, and therefore into an increase in real consumption of the poorest workers. The slightly higher than average growth in the wages of the poor (3 vs. 2.7 percent) is consistent with the evidence cited above about the real consumption of the poor growing faster than average.

Chapter 4: Inequality

The second determinant of poverty decline, along with consumption growth considered in the previous chapter, is the change in inequality. The famous Kuznets curve postulates that in the early stages of development, inequality change is to be expected, and indeed, this is the pattern observed for several countries. There has been considerable debate about whether inequality has worsened on average, within countries, during the globalization period, 1980-2000. Earlier research (e.g. Deininger-Squire(1996), Li et. al. (1998), Dollar-Kraay(2000)) had suggested not. However, both Cornia(2000) and *Imagine* document that within country inequality definitely worsened, on average, in the developing world. (*Imagine* also goes on to document that while within country inequality worsened, overall inequality improved radically in the developing world, and did so primarily due to high per capita growth rates in the (previously) largely poor world of Asia).

The expectation of a worsening inequality in India is heightened by observation of developments in the other large country, China. There, inequality (official data – there are no unofficial data on inequality or poverty in China), as measured by either income shares of the poor or the Gini coefficient, worsened by about 20 to 30 percent. For example, the share of the bottom 40 percent in China was 23.7 percent in 1984; in 1998, the share had declined to 16.1 percent, a (log) 39 percent deterioration. Might not a parallel development have happened in India? Yes, according to three studies (Ravallion(2000b), Deaton-Dreze (2002), and Banerjee-Picketty(2003). No, according to *all* official NSS data for the last forty years!

The conclusion of an increase in inequality needs to be critically examined, especially since it contradicts the result obtained from the official NSS data, and since the Ravallion and Deaton-Dreze studies use the NSS data for their inequality worsening result. Ravallion's contradictory result is easily explained; he mixes up the data from the smaller sample annual surveys with the data from the larger sample 5 year NSS surveys. Most importantly, his estimates of inequality for the smaller sample years have not been based on raw unit-level data. If that is done (as it should), then the consumption Gini for 1997 is found to be 32.8 – the Ravallion estimate for 1997 is 15 percent higher at 37.83! (2000b, p. 3247). For 1994, the Ravallion estimate of Gini is 36.32; unit level data indicates that it is 32.4. For the large sample 1993-94 survey, Ravallion's estimate of the Gini is 31.52; we obtain 32.6. For the large sample survey, ours and Ravallion's estimates of inequality are near identical; both are using the raw unit-level data, and the small difference can be accounted for by the inclusion/exclusion of small states. But for 1994 and 1997 the only explanation for the large difference in the estimates is

that Ravallion's estimate is a Lorenz curve approximation based on decile shares while ours is based on the original, unit level data.

In an important paper, Deaton-Dreze(2002) suggest that there has been a "pervasive increase in inequality" in India, especially during the nineties. The authors correct the data for 1999 for questionnaire design (the 7/30 day problem – see Annex 1). They realize that it is this correction which makes all the difference:

"the correction for questionnaire design is critical for understanding what has been happening...the direct use of the unit record data in the 55th Round, with no adjustment, shows a substantial *reduction* in inequality within the rural areas of most states, with little or no increase in the urban sectors. With the correction, we see that within-state rural inequality has not fallen, and that there has been a marked increase in within-state urban inequality" (p.3740, emphasis in original).

The authors do not present comparable Gini's but instead report the inequality change in terms of variance in logs for only two years, 1993-94 and 1999-2000. This inequality measure shows *no* change (index stays at 0.29) for the official data and inequality increases to 0.32 with *data adjusted for the 7 and 30 day contamination in the 1999-2000 survey*. This increase of 10 percent (from 0.29 to 0.32) in inequality is clinching evidence for the authors conclusion that inequality has worsened. However, this Deaton-Dreze result is not of inequality change as reported by the NSS, but change in inequality between *unadjusted* data for 1993-1994 and *adjusted* data for 1999-2000. The need for adjustment to the 1999-2000 data is not at issue; rather, it is the comparison of a "real" versus a "synthetic" estimate of inequality. A correct interpretation of inequality can only be made provided either synthetic estimates are being compared over time, or unadjusted estimates are being compared. As documented below, neither shows a trend increase, though the synthetic estimate is more unequal.

Banerjee-Picketty use income tax data to derive their conclusions about an increase in inequality for India. It is an interesting and heroic effort given the fact that even today, less than a fifth of India's workforce files tax returns. Several assumptions are necessary to proceed to per capita incomes from these sparse data. Nevertheless, the authors proceed cautiously and judiciously. But there is one crucial assumption they make which biases their results – they assume that tax compliance among different income groups is the same. In Bhalla(2002b) (and Kelkar et. al. (2002)), evidence on compliance is presented which suggests that there is a "missing middle" in India's tax returns; both the very rich and the very poor of India's 30 percent tax eligible population have much higher compliance ratios (in the

thirties) than the single digit compliance ratios of the middle (Rs. 2 lacs to Rs. 4 lacs per person in 1999-2000). Differences in compliance ratios at a point in time, and differences in rates of growth over time, make the Baneerjee-Pickerty results very difficult to accept.

Evidence on Inequality

Table 4.1 tabulates the inequality change data in India according to both consumption and income distributions. First note that consumption inequality is considerably more equal than income inequality. This is a well established result – across countries, consumption is generally distributed more equally than income – the average is about 6 Gini points less (see Berry et. al(1983), Deininger-Squire(1996), and *Imagine* for some estimates). Empirically, it is also the case that *changes* in consumption inequality are generally of a lower order of magnitude than changes in income inequality.

Results of some income surveys are available for India. The National Council of Applied Economic Survey is the only organization conducting income surveys. The first such survey was in 1964, followed by one in 1975 (analyzed by Bhalla-Vashistha(1988)), and followed by another in 1994-95. The results for the last two – Gini of 39.3 for 1975 and 43.3 for 1994-95) – suggest some deterioration over these years – about 0.5 percent per year, which would place India in the low inequality change category.

The NSS has also inquired about the incomes of households in the parallel Employment and Unemployment Surveys. Unit records for these years indicate the Ginis reported in Table 4.1. One problem with these data is that incomes from self-employment or income from enterprises is not available – only wage and salaried income is available. What the NSS income distribution results do indicate, however, is that there was little change in inequality between 1983 and 1999 – a movement in the Gini from 50.2 to 52.3 or a deterioration of 0.2 percent a year – again, comparatively, in the super low inequality change category.

Summarizing, the official results are that there was little change in consumption inequality in India during 1983-1999 with some *decline* observed for the post-reform 1993-1999 period. The incomplete NSS employment survey, incomplete because self-employed incomes (about a third of the population) are not included in the computations of inequality, shows some deterioration. Finally, the twenty year apart NCAER survey (1975 and 1995) does show a worsening of about 10 percent in inequality (the same magnitude of change observed by Deaton-Dreze for the shorter six year period, 1993-99).

Table 4.2 documents consumption inequality levels separately for the rural and urban areas. A large improvement is observed in the rural areas and a mild deterioration in the urban areas. Together, constancy in inequality, with the Gini moving in a narrow 1 point range (32 to 33) for the pre-reform and post-reform periods.

Table 4.1: Time profile of Inequality in India, 1983-99

	1983	1987	1993	1999	Growth (log change) % per year	
					1983-93	1993-99
Inequality						
<i>NSS - Consumption</i>						
Share of Quintile1	8.4	8.6	8.7	8.9	0.35	0.38
Share of Quintile2	12.5	12.4	12.4	12.6	-0.08	0.27
Gini	32.5	32.9	32.5	32.0	0.00	-0.26
<i>NSS Emp. & Unemp. Survey data - Income</i>						
Share of Quintile1	4.0		4.0	3.8	0.00	-0.85
Share of Quintile2	8.2		8.6	7.5	0.48	-2.28
Gini	50.2		48.0	52.3	-0.45	1.43
<i>NCAER (1975 and 1994-95) income per capita data</i>						
Share of Quintile1	6.9		5.9		-1.57	
Share of Quintile2	10.8		9.6		-1.18	
Gini	39.3		43.3		0.97	

Table 4.2 : Trend in Consumption Inequality in India

	1983	1987-88	1993-94	1999-00
Consumption Distribution, NSS				
Rural				
Share of Quintile 1	8.9	9.3	9.6	10.1
Quintile 2	13.1	13.2	13.5	14.0
Quintile 3	16.7	16.5	16.9	17.3
Quintile 4	21.7	21.4	21.6	21.9
Quintile 5	39.6	39.6	38.5	36.7
Gini	30.4	29.9	28.6	26.3
Urban				
Share of Quintile 1	8.1	8.0	8.0	7.9
Quintile 2	12.1	11.7	11.9	11.7
Quintile 3	15.8	15.5	15.7	15.7
Quintile 4	21.5	21.4	21.6	21.7
Quintile 5	42.6	43.4	42.8	43.0
Gini	33.9	35.0	34.4	34.7
National				
Share of Quintile 1	8.4	8.6	8.7	8.9
Quintile 2	12.5	12.4	12.4	12.6
Quintile 3	16.2	15.8	15.9	16.0
Quintile 4	21.4	21.1	21.1	21.1
Quintile 5	41.4	42.1	41.8	41.4
Gini	32.5	32.9	32.5	32.0

Source: Unit record data, National Sample Surveys for the selected years.

Additional Evidence on Inequality in India

The previous chapter showed that there was considerable evidence to suggest that India had successfully managed to grow at healthy 3 percent plus per annum per capita rate for about two decades; the official NSS results show no increase in inequality. Are these results credible?

There is also the question of whether the consumption distribution data from the NSS can be deemed reliable when a lot of arguments have been offered to indicate that the mean consumption levels are *not* reliable. Chapter 2 did discuss reasons as to why the error was likely to be more with the means than with the distribution. Among the various reasons for non-matching of survey and NA means, the most important is the possibility of greater understatement of consumption expenditures by the rich.

Adjusting Household Distributions

One alternate adjustment to the NSS data is to match the survey means to NA means. This procedure is suggested by Bhalla(2000b,2002d) to account for the fact that the survey capture ratio (survey means as a percentage of corresponding NA means) has had a tendency to decline for most countries in the world in the nineties. For example, for India, this ratio has declined by over 20 percent since 1983 – and it does not matter what NA base series is used, the decline is still very marked.²³ An adjusted distribution can be derived on the basis of matching each survey commodity mean with the corresponding national accounts mean. For example, if mean household consumption of cereals in a particular household is Rs. V , and if the mean per-capita consumption of cereals in 1993-1994 as revealed by the NSS survey was Rs. X per capita per month, and Rs. Y as revealed by the national accounts, then the adjusted consumption of cereals for the household is Rs. $V*Y/X$. Thus, an adjusted cereal mean for each household is obtained by multiplying each households cereal consumption by Y/X . If this procedure is repeated for all items with each item having its unique ratio of Y/X , one obtains an overall adjusted distribution of consumption. This adjusted distribution is computed for each of the survey years (for each year, each survey item is “matched” with the corresponding NA mean and a ratio Y/X obtained) , and the average multiplier obtained for each household, and each decile of households.

²³ Ravallion(2002) and Sundaram-Tendulkar(2002) both concur with Sen’s(2001) erroneous conclusion that this ratio did not decline in the nineties in India. As documented in Chapter 2, Figure 2.1, this is a very erroneous conclusion.

Sundaram-Tendulkar present per capita estimates of consumption of different items according to the bottom three deciles, and the top decile. However, aggregation by such broad groups is inadequate for assessing the magnitude of under-estimation for each item, and its variation across the different deciles or percentiles. Instead, a method which obtains a multiplier for each household and each item can be used to assess the degree of under-estimation, and its location. This method is a logical extension of the Sundaram-Tendulkar exercise; the only difference is that it does for each percentile what Sundaram-Tendulkar do for broad groups.

This methodology suggests that the different under-estimation levels can be identified to some degree of accuracy, in the following manner: First, the national accounts expenditures are tabulated for each *individual* item - e.g. cereals, pulses, vegetable, fruits, dry fruits, consumer durables, education etc. A similar exercise is carried out for the survey data. Thus, two means for each item are obtained – a survey mean and a NA mean. If it is now assumed that the NA means are correct on an item by item basis, then the degree of under or over estimation for each household can easily be derived. For each individual, an average multiplier can be obtained, which is the ratio of the adjusted sum of individual and item specific expenditures, to the sum of expenditures in the survey data.²⁴

Before discussing the results of this adjustment, it is important to note three considerations. First, that the NA mean for each item is accurate – that is what is being matched with. Second, this adjustment method preserves the distribution *for each item* i.e. if a household did not “consume” any TV’s in the original distribution, it will not do so in the new distribution. Third, a lower than average overall multiplier for poorer households means that the resulting adjusted distribution will be more unequal; a higher than average multiplier will mean that the new distribution is more equal.

This was tested by constructing “multipliers” for thirty nine separate categories of consumption. These multipliers can be used to construct a synthetic estimate of the distribution. Each households adjusted consumption level for each broad item of expenditure is the original level multiplied by the ratio of the NA and the survey mean. This method

²⁴ Since the survey does not contain estimates of imputed rent, house rent is ignored. Further, as documented by Sundaram-Tendulkar, there seems to be a genuine problem with the NAS estimate for clothing. In the 1998 NAS estimate for 1993, clothing expenditures are reported to be Rs. 48350 crores. In the 1999 NAS revised estimates, this expenditure is reduced to only Rs. 21403 crores. Which figure is correct? The first estimate of clothing is taken as the “correct” figure and the difference between the two figures – Rs. 48350 and Rs. 21403 crores, or Rs. 26947 crore, is subtracted from the figure of Rs. 143787 crores for miscellaneous goods and services.

ensures that there would be “equality” between the survey and NA estimate for the thirty-nine items of expenditure.

Two major results emerge . First, that it is *not* the case that the multiplier is the same across all deciles, though a uniform multiplier holds, within a small margin of error, for the first 8 deciles. Second, even for the poorest decile, the adjustment multiplier is large, approximately 25 to 35 percent. In other words, the adjusted consumption of the poor is some 30 percent higher than that reported by the NSS. Third, for calculations of head count ratios, the assumption of a constant multiplier across all households – as suggested in Bhalla(2002a) and questioned by various authors – is surprisingly quite accurate!

But are these multiplier results plausible? Is it reasonable to expect that most of the missing consumption is accounted for by the rich. Indeed it is! The adjustments preserve the original distribution for each *item*. Since the top 20 percent of the population command about 45 percent of expenditures, they can also claim 45 percent of the missing expenditures. Further, the large under-estimation of food items should be noted, which is about 42 percent, compared to 68 percent for non-food items. Food items have a low income elasticity – and there is a physical limit to how much extra food the rich can consume. So the “benefits” of under- estimation of food items accrue “disproportionately” to the poor, as do benefits of underestimation of non-food items accrue “disproportionately” to the rich. Further to this point, it is worth noting that Item III – milk and milk products and meat, etc. plus fruits and vegetables – is estimated by the survey to be just more than half the national accounts estimate. But the rich cannot possibly be drinking all this milk and eating all the missing food. Accordingly, it must be that the non-rich have also under-estimated their food consumption by large proportions. Generally, the large error for the food group suggests that whatever adjustments are done to the Indian survey data on the basis of national accounts data, they will yield the result of a reasonably constant multiplier.

Given these item-wise ratios, it is now a simple calculation to adjust each individual's consumption to national accounts. Note that the resulting multiplier is *different* for each individual and a function of their consumption pattern. Table 3.4 aggregates individuals according to their per-capita expenditures, and reports the resulting average multiplier for each decile of households, arranged according to per-capita expenditures. The results are striking - even for the poorest decile, the under-estimation is of the order of 30 percent. The multiplier rises progressively with the wealth of the households, but the variation for the first eight deciles is in the narrow range of 30 to 46 percent. The border decile for the poor is the

40th percentile. The multiplier for this decile, 1.37, is close to the national average multiplier of 1.41.

Inequality levels for the synthetic and actual distributions are documented in Table 4.3. The data are presented separately for rural and urban areas, for actual and synthetic distributions, and for real levels of expenditure, deflated by both the planning commission and Deaton price deflators. In all there are *six* inequality estimates for each year, and therefore six separate estimates of inequality change. No all-India estimate shows that inequality worsened during 1983-1999, or during 1993-99 period. The level of inequality is higher by about 10 percent at any point in time; but there is nevertheless a decline in inequality, both between 1983-1993 and between 1993 and 1999. Given the prevalence of greater understatement by the rich, the result that inequality at any given point is greater (about 10 percent) is to be expected. The adjusted distribution is about 5 to 10 percent more unequal, regardless of whether the region examined is urban, rural or all India, and whether the deflator used is PC or Deaton. The second interesting pattern which emerges is that the *adjusted data shows a higher decline* in inequality than the raw unadjusted data. The Gini declines from 32.6 to 32, 1983 to 1999, unadjusted data; the adjusted data, adjusted for compliance errors and understatement differences, shows a much larger decline in inequality – from 35.1 to 33.6, 1983 and 1999-2000 respectively.

Given this overwhelmingly robust finding of declining inequality, the Deaton-Dreze result of a pervasive increase in inequality needs to be examined. It turns out that their terminal year calculation is based on an *adjusted* consumption distribution. The authors adjust the 1999-2000 data for the 7/30 day problem (discussed in Section 2) as well as for differences arising from computation of price differences. These differences, computed from the household data on value and quantities, yield substantially different urban/rural relative prices, and urban inflation, than the official price data.

Table 4.3: Consumption Inequality in India; 1983-1999
NSS data unadjusted

	Gini				log growth annual	
	1983	1987	1993	1999	1983-93	1993-99
<i>Nominal</i>						
Rural	30.4	30.0	28.5	26.3	-0.61	-1.34
Urban	33.9	35.0	34.3	34.7	0.11	0.19
All India	32.6	32.8	32.4	32.0	-0.06	-0.21
<i>Real (PC deflator)</i>						
Rural	31.4	30.5	28.4	26.4	-0.96	-1.22
Urban	34.7	35.6	34.2	34.4	-0.14	0.10
All India	34.4	33.6	32.4	31.7	-0.57	-0.36
<i>Real (Deaton deflator)</i>						
Rural	31.0	30.5	28.4	26.1	-0.83	-1.41
Urban	34.2	35.3	34.2	34.5	0.00	0.15
All India	33.1	33.4	32.4	32.0	-0.20	-0.21

NSS data adjusted

	Gini				log growth annual	
	1983	1987	1993	1999	1983-93	1993-99
<i>Nominal</i>						
Rural	32.9	33.3	31.1	28.4	-0.54	-1.51
Urban	35.9	36.4	36.8	36.0	0.24	-0.37
All India	35.1	36.0	35.2	33.6	0.03	-0.78
<i>Real (PC deflator)</i>						
Rural	33.8	33.7	31.0	28.4	-0.82	-1.46
Urban	36.7	37.1	36.8	35.2	0.03	-0.74
All India	36.9	36.7	35.1	33.3	-0.48	-0.88
<i>Real (Deaton deflator)</i>						
Rural	33.3	33.9	31.0	28.1	-0.68	-1.64
Urban	36.1	36.8	36.8	35.9	0.18	-0.41
All India	35.6	36.7	35.1	33.6	-0.13	-0.73

Source: Unit level data, NSS surveys, 1983-1999/2000; CSO data for personal consumption expenditure of individual items, 1993-94 series.

Notes:

1. Survey means of 18 broad food items and 21 broad non food items of expenditure have been matched with CSO data to obtain the adjusted distribution of expenditures.

Deaton(2001b) derives estimates of nominal expenditure for individual households for each of the survey years, 1987-1988, 1993-1994 and 1999-2000. For 1999-2000, the consumption data are adjusted for the 7/30 day problem. These adjusted nominal expenditures, deflated by the internal price series, yields the log variance estimates of inequality reported in Table 4.4²⁵. The basic idea behind the 7/30 day correction is that there are goods and services whose consumption recall period was the same in the 1993-94 and the 1999-2000 surveys. These items, accounting for about 20 percent of total consumption, are called m goods by Deaton. The expenditure on these m goods can be used to both generate expected total expenditure (and hence one corrected for 7-day/30-day recall mix-up) as well as the inequality in such expenditures.

Deaton-Dreze report the variance of logs inequality measure for rural, urban and all –India. One method of constructing “corrected” variance of logs is to note that expected total expenditure, E, is related to m goods expenditure as follows:

$$(1) \quad \text{Log } E = a + b \cdot (\log m) + u,$$

or

$$(2) \quad \text{variance} (\log E) = b^2 \cdot \text{variance} (\log m) + \text{variance} (u)$$

Equation 2 can be used to generate inequality in year t based on information available in time period t-1. For example, equation 2 can be estimated for year 1993 and the coefficient b as well as the (log) error variance u obtained. The 1999 survey provides a new estimate of the log variance of m goods which can be used to generate expected variance. This method is repeated with 1983 data (for an estimate of synthetic inequality in 1987), and 1987 data for 1993. Thus, for both 1993 and 1987 an equivalent inequality estimate can be obtained.

These and other results are reported in Table 4.4. Since two different price deflators have been used (planning commission and Deaton), estimates for both are reported. As it turns out, *the choice of the deflator makes little difference to either the level or the trend in inequality*. The first result to note is that our reproduction (only 1999 levels can be compared) of Deaton-Dreze is reasonably close to the original - 0.24 vs. 0.24 for rural areas, 0.36 vs. 0.37 for

²⁵ Only a few goods, were not contaminated by either the 7/30 day problem (all food items accounted for about 65 percent of total consumption in 1999-2000) or the common recall period problem (for example, in 1993-94 365 days etc). While Deaton does present an innovative procedure to adjust for comparability of survey data, the results cannot be accepted without severe reservations.

Table 4.4: Inequality in India- All India, 1983-99

	1983	1987	1993	1999
<i>Inequality -Gini</i>				
Gini	32.5	32.9	32.5	32
Adjusted Gini	35.1	36.0	35.2	33.6
<i>Inequality-Share in overall Consumption</i>				
Share of Quintile 1	8.4	8.6	8.7	8.9
Share of Bottom 40%	20.9	21	21.1	21.5
<i>Inequality-Variance of logs</i>				
Deflator -PC	0.35	0.32	0.29	0.27
Deflator- Deaton	0.32	0.31	0.29	0.28
<i>Deaton-Dreze "synthetic" estimates of inequality</i>				
Published				0.32
Reproduced with				
Deflator- PC		0.31	0.31	0.31
Deflator- Deaton		0.30	0.31	0.32

Sources: NSS consumer expenditure surveys, 1983, 1987, 1993-94 & 1999-2000

Notes:

Adjusted Gini refers to the estimate derived by matching household consumption for thirty nine broad categories of consumption. See text for details.

urban areas, and 0.32 vs. 0.32 for all India. Looking at the trend (Deaton price index), the unadjusted data suggests a significant decline in rural, urban and overall inequality. This trend is observed for both the 1983 to 1993 and the post-reform 1993-1999 period. The synthetic estimates for survey years 1987-88 and 1993-94 show a bias towards less inequality decline. Since there is no recall measurement error in these data (no 7/30 day problem), one should observe more or less the same result as the unadjusted data. Rather than a 10 percent decline in inequality (variance of logs of 0.31 in 1987 compared to 0.29 in 1993), one observes a *mild* increase in inequality in the synthetic data – from .30 to 0.31. This result suggests that the Deaton-Dreze conclusion of a pervasive inequality increase between 1993-94 and 1999-00 might be more a result of errors in measurement rather than a true reflection of the underlying change. Regarding trends in synthetic (and possibly mis-measured) inequality, there is a 1 percentage point increase in the log variance 1987 to 1993, and an equal increase between 1993 and 1999. No such increase is observed with the planning commission deflator.

Summarizing, and taking all estimates of inequality change in India, two robust conclusions are reached. First, there is *no* evidence of an increase in overall inequality, and *overwhelming evidence of a decline in rural* (where most of the poor reside) *inequality*. Second, a conservative conclusion is that contrary to most expectations, inequality performance in the post-reform period was better than in the pre-reform years. This conclusion, coupled with the observation noted in the previous chapter about higher growth in the reform period, implies that the pace of poverty reduction in the post-reform period *has* to have been faster – a result corroborated by the data and reported in the next chapter.

In conclusion, several tests and estimates of the NSS survey data, as well as external to survey data, indicate that inequality did not worsen in India between 1983 and 2000. Indeed, the more precise result is that inequality most likely improved during this period, a result also reached by the official government of India data. In addition, several bits of non-survey data also hint at the very least of a non-worsening distribution. Only three studies reach the opposite conclusion (Ravallion, Banerjee-Picketty and Deaton-Dreze), but there are reasons to conclude that these alternative studies yield results due to measurement errors, or due to restrictive and unrealistic assumptions.

Fast growth and constant to declining inequality – plausible?

Is the result of low inequality change in the presence of faster growth plausible? Does this result pass the “smell test” of credibility e.g. is the result associated with other evidence also consistent with the no change in inequality result? Several “cuts” of aggregate survey data revealed that steady to declining consumption inequality in India is the reality. Several additional pieces of evidence are examined below.

1. Wage Growth, 1983-1999:

The large scale employment-unemployment surveys of the NSS contain estimates of *wages* for all members in the household. This is not a comprehensive income survey, since only limited data are available for households engaged in business or self-employment. But the estimates of wages of casual workers in agriculture, who occupy the least-skilled jobs, should be reasonably accurate. Table 4.5 reports on both the nominal and real wages for agricultural workers for the two NSS survey years, 1983 and 1999. The deflator used is the consumer price index for agricultural labourers. To abstract from outlier problems, and to estimate wage trends for the poorest, the wage data used is that for the median worker.

The table also contains wage data from another alternate source, namely, the *Agricultural Situation in India (ASI)*. Since this source contains surveys of labor markets, its data are a useful cross-check on the mean growth observed by asking laborers about the hours they worked, the wages they received, etc.

The two sources on nominal wages (NSS and ASI) match to a large degree. The estimated rate of increase based on ASI data is 11.5 percent per annum, which corresponds closely to the NSS figure for males of 11.1 percent and females of 10.9 percent per annum. The NSS wage data also sheds some light on the inaccuracy of the CSO adjustments to nominal expenditures (see Annex I for details). This annual increase in nominal wages is higher than the annual increase in nominal GDP according to CSO of 10.4 percent per annum, but linear equal to the growth recorded by the World Bank of 11.1 percent per annum, and our “adjusted” CSO growth of 11.3 percent per annum. Notably, the NSS expenditure survey shows an

Table 4.5: Wages and Wage Growth in India, 1983-1999

	1983	1999	Growth Annualized
Wages			
Avg. Daily Wages for Males, Field Labour & Ploughman			
<i>(The data reported are for years 1981-82 & 1996-97)</i>			
Current Prices	7.7	43.0	11.5
Real			3.6
Wages, from NSS data			
Current Prices	152	953	11.1
Real	447	697	2.7
Mean Wage, Rural Female Casual Labour			
Current Prices	100.0	607	10.9
Real	265	423	2.8
Mean Wage, All Rural Workers Male			
Current Prices	274	1631	10.8
Real	628	1025	3.0
Mean Wage, All Rural Workers Female			
Current Prices	139	820	10.8
Real	316	513	2.9

Source: Agricultural situation in India & NSS rounds 1983, 1999-00

Notes:

- 1) The NSS principal status category of 41 and 51 contains casual labour, with 41 being public works; the poverty line is used as the deflator with 1993-94 equal to a 100.
- 2) The rural poverty line increased at an annual rate of 7.9 percent 1983-1993, 7.7 percent 1993-94 to 1999-00, and 7.9 percent for the overall period.

increase in per capita consumption of only 9.4 percent per annum, considerably below the increase of 11 plus percent per annum recorded for unskilled rural wages. This is another indication that the survey-capture ratio in India has declined sharply during the last two decades.

Average per capita income in India (proxied by GDP per capita) increased by 3.6 percent per annum, 1983-1999; average per capita consumption (given by the item private final capital expenditure in the national accounts) grew at 3.2 percent per annum. Thus, the wages of the poorest strata of Indian society increased at the same rate (depending on which deflator is used) as average per capita income i.e. inequality is unlikely to have worsened.²⁶

2. Agricultural Growth Low: Non-agricultural GDP growth has averaged a rate some 50 percent higher than agricultural growth. Agriculture only accounts for 25 percent of India's GDP, and employs over half of the population. Thus, it is argued by some, that a constant income or consumption inequality over sixteen high growth years is just not possible. Looking at sectoral shares ignores the important contribution of non-farm income to total family income in rural India. From a level close to only 30 percent in the mid seventies, this level had reached 50 percent in 1983 (EUS surveys) and in 1999, had further increased to 57 percent. There is considerable growth in non-farm income, and this growth is from a very high base. These data suggest that one basis for asserting the "inevitability" of the overall inequality worsening conclusion – that agriculture has grown at sub-average rates - is not valid.

3. Regional Inequality: Rural India contains more than 70 percent of the Indian population. The inequality has to have increased proponents argue that the reforms initiated in 1991-92 were primarily oriented towards the industrial sector. Further, such reforms are likely to have helped the more educated, and the rich much more than the poor residents of rural India. Hence, the result that inequality did not worsen is not credible.

It is instructive to look at Eastern Europe and former Soviet Union economies for illustration of an apparent paradox i.e. overall inequality may not change much, even if inequality within each component (country) worsens substantially. Table 4.6 shows inequality change within each of these countries during 1990 and 2000. The lowest change is observed for

²⁶ It is true that the comparison is not like with like i.e. wage growth being compared with income growth. However, several very unusual things would have to happen to yield the result that incomes of the agricultural poor in India increased at a different pace than agricultural wages. One possibility is an increase in unemployment; but then, how can unemployment increase by a significant amount and the real wage increase in a competitive labor market?

Table 4.6: Country inequality substantially worsens but group inequality stays relatively constant

	Population	Growth (1980-00)	First Survey Year Gini	Last Survey Year Gini	% Change in Gini
Armenia	3.8	-2.36	39.4	66.0	51.6
Bulgaria	8.3	0.41	25.0	34.1	31.0
Belarus	10.2	0.33	22.8	28.8	23.4
Czech Republic	10.3	0.58	20.7	26.6	25.1
Estonia	1.4	0.47	23.0	37.6	49.2
Hungary	10.1	1.20	21.0	25.3	18.6
Kyrgyz Republic	4.5	-2.28	26.0	53.7	72.5
Lithuania	3.7	-0.80	22.5	35.7	46.2
Latvia	2.4	-0.58	22.5	32.1	35.5
Moldova	4.3	-4.15	24.1	40.6	52.2
Poland	38.7	1.61	24.9	32.7	27.3
Romania	22.7	-0.98	23.4	28.7	20.4
Russia	146.9	-1.34	24.6	37.4	41.9
Slovak Republic	5.3	0.78	23.6	29.2	21.3
Slovenia	2.0	1.15	25.9	28.4	9.2
Turkmenistan	4.2	-2.96	26.4	35.8	30.5
Ukraine	52.2	-3.86	23.3	25.7	9.8
Uzbekistan	21.9	-1.34	25.0	33.3	28.7
Eastern Europe			41.2	44.0	6.8

Slovenia and Ukraine – both around 10 percent. The rest of the countries show a deterioration in the 30+ percent range. The last row is for the aggregate of the above countries – the Gini only worsened by 6.8 percent.

Table 4.7, provides estimates of the magnitudes of change in consumption inequality in the rural and urban regions of India. For the seventeen large states, inequality improved in the rural areas of 15 states; for urban India, inequality improved in only 5. On an all-state basis, consumption inequality improved in eight out of seventeen states. Thus, little corroborating evidence for the conclusion that inequality worsened in India.

Table 4.7 : Change in Inequality 1983-99: Number of States				
	Consumption Inequality		Income Inequality	
	Decrease	Increase	Decrease	Increase
Rural Inequality	15	2	9	6
Urban Inequality	8	10	5	12
Total	13	5	8	9

Source : NSS CES and EUS surveys, 1983-1999.

Note: For both consumption & income inequality, NSS data for 1983 and 1999 are used. Note that income inequality numbers are incorrect because they exclude self-employed income in both the years 1983 and 1999.

3. Urban – Rural Inequality

Table 4.3 documents the trend in urban rural inequality in the different states of India, and according to both price deflators (planning commission and Deaton). Two points are worth noting – first, that in 1983, urban incomes were only 44 percent higher rather than the 62 percent indicated by the PC deflators. Second, that the two price series show very different trends – according to the official deflator, relative consumption levels hardly budged over 16 years, while according to the Deaton deflator, urban consumption levels have increased at about a 1 percent per year faster pace.

4. Religious and Caste Inequality

Table 4.8 provides evidence on the evolution of caste and religious inequality in India.²⁷

Surprisingly, there is very little change in such inequality. Three different ratios of consumption are presented – Muslims to Hindus, Muslims relative to schedule caste (SC) and schedule tribes (ST), and SC/ST relative to Hindus. Very strikingly, there is near constancy in these means for sixteen years. The Muslim/Hindus ratio has stayed constant at 85 percent, and the Muslims/SCST ratio constant at around 1.20.

In the late nineties, India moved to a strong affirmative action policy for the SC/ST. This policy included job reservations, admissions to universities and promotions solely on the basis of caste. The 1987-1999 period can be seen as a period that can be used to test the efficacy of these policies, particularly in contrast to the pre-affirmative action period of 1983-1987. A complete analysis is beyond the scope of this project, but it does appear that the evidence cannot reject the zero affirmative action effect conclusion, at least if the indicator of welfare chosen is per capita consumption.

5. Education Inequality

Little recognized in the discussions of inequality change is the strong equalizing factor of education. For most people, labour is their primary and only asset. Increases in education, at least in the initial quantity dominant stage, are inequality decreasing. The rich always went to school is approximately correct; hence, such households are liable to reveal a lower increase in schooling attainment. Quality considerations also do not much affect the change in human capital since such change is equal to schooling quantity change and schooling quality change, and the latter is likely to be lower for the rich. Thus, as development proceeds, at least initially, the spread of primary and secondary education is equality improving. Once the quantity targets have been met, households move towards quality – in this stage, given differential access to quality education, inequality can worsen.

²⁷ See Kaur-Bhalla(2003) for a detailed discussion.

Table 4.8 presents the results for education improvement for some broad classifications including three expenditure categories – the poor (bottom 40 percent of the population according to monthly per capita expenditure), the middle class (40 to 80 percent) and the rich (top 20 percent). These data document that the poor have been investing more than the rich in education. Poor households show an increase in average education attained (for the 5-14 years age group) from 1.6 years in 1983 to 2.7 years in 1999 – a 70 percent increase. The rich show an increase of only 29 percent. Gender equality is also close to being achieved. In the aggregate, the girls school attainment was 70 percent of the boys in 1983; today, it is close to 90 percent. Even amongst the poor, gender equality is close to 86 percent.

Table 4.8 : Alternative Indicators of Constant Inequality in India

	1983	1993	1999	Annual Change (logs)	
				1983-93	1993-99
Consumption nominal, Rs. Per capita per month					
Hindus	131.2	352.1	632.3	9.87	9.76
Muslims	112	301	537.3	9.88	9.65
SC/ST	95.3	259.4	443	10.01	8.92
Muslims/Hindus	0.85	0.85	0.85	0.01	-0.1
Muslims/SCST	1.18	1.16	1.21	-0.13	0.73
SCST/Hindus	0.73	0.74	0.7	0.14	-0.84
Schooling Attainment (Age 5-14)					
All					
Male	2.71	3.32	3.46	1.9	0.7
Female	1.91	2.79	3.11	3.6	1.8
Both	2.32	3.08	3.33	2.7	1.3
Ratio (F/M)	70.5	84.0	89.9		
Poor India					
Male	2.05	2.66	2.91	2.5	1.5
Female	1.14	1.97	2.49	5.2	3.9
Both	1.59	2.32	2.70	3.6	2.5
Ratio (F/M)	55.6	74.1	85.6		
Middle					
Male	2.97	3.61	3.86	1.9	1.1
Female	2.18	3.19	3.59	3.6	2.0
Both	2.57	3.40	3.76	2.7	1.7
Ratio (F/M)	73.4	88.4	93.0		
Rich					
Male	3.80	4.29	4.56	1.2	1.0
Female	3.26	4.05	4.52	2.1	1.8
Both	3.55	4.22	4.58	1.6	1.4
Ratio (F/M)	85.8	94.4	99.1		
Hindus					
Male	3.03	3.63	3.74	1.7	0.5
Female	2.19	3.15	3.41	3.5	1.3
Both	2.62	3.43	3.62	2.6	0.9
Ratio (F/M)	72.3	86.8	91.2		

Table 4.8 (contd) : Alternative Indicators of Constant Inequality in India

	1983	1993	1999	Annual Change (logs)	
				1983-93	1993-99
Schooling Attainment (Age 5-14)					
Muslims					
Male	2.19	2.82	2.99	2.4	1.0
Female	1.62	2.42	2.71	3.8	1.9
Both	1.89	2.62	2.86	3.1	1.5
Ratio (F/M)	74.0	85.8	90.6		
SC/ST					
Male	2.11	2.78	3.08	2.6	1.7
Female	1.18	2.07	2.65	5.4	4.1
Both	1.67	2.44	2.91	3.6	2.9
Ratio (F/M)	55.9	74.5	86.0		

Chapter 5: Poverty

Overview

The most popular index of poverty is the head-count ratio (HCR); this ratio is the number of people poor as a percent of the population. The depth of poverty i.e. how poor, is *not* measured by this index. A person is defined as poor if her average consumption is below a certain pre-defined level called the poverty line. In a review of the development of poverty lines, *Imagine* documents how the first poverty line in the post-war period originated in India in 1962, followed soon by a poverty line in the US (in 1964). *Imagine* also documents how the popular \$ a day international poverty line is actually the same as the Indian poverty line. In 1999-2000 prices, the Indian poverty line is equal to of Rs. 328 per capita per month in rural areas and Rs. 454 in urban areas; in 1973-74 prices, the poverty line defined by the Expert Group, the levels are 49 and 56, for rural and urban areas, respectively. This translates into about PPP \$ 1.25 per capita per day, 1993 PPP prices. If instead of the all products PPP exchange rate, the consumption PPP exchange rate is used, then the average Indian poverty line is equal to \$1.08, or equal to the world poverty line currently used by the World Bank.

Given the simple definition of poverty, assessment of poverty should be a non-controversial and very straight-forward calculation. Unfortunately, two factors mitigate against such a solution, at least for India. First, there is a problem with estimates of mean consumption expenditure for any given year. If consistency is maintained, then both the distribution and mean consumption should be obtained from the same source i.e. household surveys. If this is done, then per capita consumption increased at the rate of 2.3 percent per annum, 1983-93, and a considerably lower 1.8 percent per annum, 1993 to 1999. Separate estimates of mean consumption levels (and growth) are available from national accounts data – these suggest a growth rate of 2.7 and 3.1 percent per annum, respectively. Thus, two radically different conclusions emerge – either growth accelerated post the advent of economic reforms in 1991-1992, and accelerated by a large amount, or growth decelerated post reforms.

What has been common in the literature, at least until recently, is to use poverty head-counts from the survey data and growth estimates from the national accounts data. But as warned by Bhalla(2000a), who called this mix of data the Peter-Paul problem²⁸, a relationship between poverty and growth can only be derived by using a *consistent* set of data. Either one has to adjust the survey mean to some fraction from that obtained from national accounts (as done by Bhalla(2002a) and *Imagine* - the former adjusts with respect to the NA mean adjusted

²⁸ This because one person's income (Peter from national accounts) is used to derive another person's poverty (Paul from surveys).

downward by 10 percent, the latter adjusts the NA mean downward by a larger amount, 15 percent) or one has to use only survey means and survey poverty measures (as done by Deaton).

Chapter 2 documented an alternative KSNA method of measuring poverty. This method keeps the S/NA ratio the same as that in any year for choice – the in-between survey year of 1987-88 was chosen as being representative. The S/NA ratio is kept constant for this year – at approximately 70 percent. In other words, the survey mean is taken to always be equal to 70 percent of the national accounts mean. This method makes the nominal growth rate to be the same as that indicated by national accounts data. The real levels of expenditure are given by the choice of deflator, PC or Deaton, for the period 1983-2000.

5.2: What happened to poverty?

Table 5.1 documents the evolution of poverty in India according to three methods – the official Planning Commission method, the method outlined in *Imagine*, and the KSNA method. Until 1973-74, poverty levels stayed in the range of 55-60 percent, though for some years (e.g. 1951 or the early sixties) measured poverty was in the mid-forties. A firm conclusion is that there was little trend in poverty mostly because there was little increase in per capita consumption, either measured by surveys or national accounts. Since the late seventies, there has been a large decline in measured poverty, a decline which is particularly impressive given that surveys now miss out on an extra 20 percent or so of total consumption. According to the *Imagine* method, poverty in 2002 is likely to be close to 5 percent, and according to the KSNA method, the predicted level is close to 10 percent.

Table 5.2 reports on the poverty and inequality levels for the four large sample surveys since 1983 and the latest 2000-01 survey for which data has just become available. Given the uncertainty regarding the 1999-00 survey (due to the 7/30 day mixup) it is useful to compare the poverty and inequality indices for the back to back survey years. The first notable conclusion is that the Gini level for 2000-01 is very close to the level observed in 1999-00 – 32.9 versus 32. The Gini levels for the small sample surveys have been higher (on an average basis), so this estimate suggests that inequality, at least according to the NSS consumption surveys, is not trending up.

Table 5.1: Poverty in India, 1951-2002

Year	Methods		
	<i>Planning Commission</i>	<i>KSNA</i>	<i>Imagine</i>
1951	45.31	65.4	53.2
1954	61.07	65.1	54.1
1958	51.8	61.4	48.4
1959	50.6	63.3	50.1
1960	45.3	62.1	47.5
1961	46.5	61.1	47.1
1963	47.9	55.3	40.4
1964	52.8	53.2	39.3
1965	56.7	59.4	45.3
1966	62	59.5	45.3
1967	61.6	57.2	42.2
1968	57.1	57.2	43.1
1969	55.6	52.4	38.4
1970	52.9	56.2	41.2
1972	53.4	56.2	42.1
1973	54.9	51.3	37.3
1977	51.32	55.2	41.2
1983	44.7	45.5	31.3
1987	38.6	44.1	28.5
1993	36.2	24.2	13
1999	26.2	14.2	5.7
2000	23.5	13.3	5.3
2001		11.3	4.1
2002		10.2	3.4

Sources: NSS unit level surveys 1983, 1987, 1993-94, 1999-00 & 2000-01; World Bank (1998), Expert Group (1993).

Notes:

1. All estimates are based on price deflators, Planning Commission method (CPI for agricultural labourers for rural areas and CPI for urban non-mannual employees for the urban areas).
2. The *Imagine* method assumes survey means to be equal to 0.87 times the national accounts mean.
3. The *KSNA* method assumes that the **Survey/NA** ratio of the consumption mean is equal to a given year's value , e.g. 72 percent, the value observed in 1987-88.

Table 5.2: Poverty & Inequality in India, 1983-2001

	<u>log growth annual</u>						
	1983	1987-88	1993-94	1999-00	2000-01	1983-93	1993-99
<u>Headcount ratio(%) of poverty, Planning Commission deflator</u>							
Unadjusted survey data	44.9	38.3	36	26.1	23.5	-2.10	-5.36
Survey data adjusted, <i>KSNA</i>	43.4	38.3	21.4	9.5	7.6	-6.73	-13.53
Survey data adjusted, <i>Imagine</i>	28	22.6	10	3.4	2.5	-9.81	-17.98
<u>Headcount ratio(%) of poverty, derived from unit level information (Deaton(2001))</u>							
Unadjusted survey data	43.2	35.3	29.1	18.4	16.9	-3.76	-7.64
Survey data adjusted, <i>KSNA</i>	41.7	35.3	15.8	5.4	4	-9.24	-17.89
Survey data adjusted, <i>Imagine</i>	26.4	19.7	6.7	1.8	1.1	-13.06	-21.91
<u>Inequality</u>							
Gini	32.6	33	32.6	32	32.9	0	-0.31
Gini (real, PC deflator)	32.3	31.7	30.4	28.8	29.6	-0.58	-0.90
Gini (real, Deaton deflator)	31.9	32.2	31.1	29.9	30.7	-0.24	-0.66

Source: NSS surveys, unit level data; Deaton(2001) for details on deflator. For details on *ADB* method, see Bhalla et. al.(2003). For *Imagine* method, see Bhalla(2002), *Imagine there's no country: Poverty, Inequality and Growth in the Era of Globalization*.

Notes:

1. *KSNA* method assumes the survey capture ratio(i.e. survey consumption means as a ratio of national accounts consumption mean) to be the same as that prevailing in 1987-88 i.e. the *S/NA* ratio is assumed to be 0.71 for all the years.
2. *Imagine* method assumes the survey means for all the years are assumed to be 0.87 times the national accounts mean.
3. The "Unadjusted data" method uses exclusively the unit level information provided in the NSS surveys.

A greater interest is in the poverty figures for 2000-01 compared to 1999-00. The various adjustments to the 1999-00 poverty estimates conducted by Deaton, Sundaram-Tendulkar, Ravallion et. al. all had poverty a few percentage points *higher* than that indicated by the raw unadjusted data. (Neither the *Imagine* nor the KSNAs estimates were affected by the 7/30 day “error”). The 2000-01 survey shows per capita consumption to be about 3 percent higher than 1999-00 (see Table 2.1) or a poverty reduction of about 2.5 percentage points. World Bank (2003) in its latest country economic report for India, reports poverty to be 29 percent in 1999-00, in contrast to the official estimate of 26 percent. If the adjustments were correct, then the 2000-01 survey should have revealed a poverty level of about 26 to 27 percent. Instead, the reported level is 23.5 percent, close to the “expected” level if there was no real error in the unadjusted mean consumption estimate in 1999-00. Thus, it seems apparent that while theoretically there was a problem with the 1999-00 estimate, for all practical purposes, there was no real error. In other words, *mean consumption and poverty estimates based on unadjusted consumption for 1999-00 are valid.*

Are low poverty levels for India realistic?

When the mid-teen poverty result for India was first presented in 2000 (poverty in 1998-2000 was estimated to be close to 15 percent; see Bhalla(2000d)) they were met with considerable skepticism. At that time, the 1999-2000 estimates were of course not available; the latest poverty estimate for India was the 42 percent estimate based on a thin sample NSS survey for Jan.-June 1998. This estimate caused a lot of ink to flow and speculation about the efficacy of the reform process was at an extreme. Today, the 1998 estimate is considered a ‘rogue’ poverty estimate and the World Bank does not even report it alongside the other thin sample surveys. Soon after my estimate, two separate papers by authors at NCAER (Lal et. al. and Bery-Shukla) also contended that poverty in India was in the mid-teens. These estimates were based on NCAER surveys on income distribution.

Table 5.3 reproduces additional poverty estimates for the four large sample NSS surveys, 1983-1999. The spectrum of poverty calculations and methods is well covered by the estimates in the table. Along with the official data, four different poverty estimates based on Deaton and Deaton-Dreze are presented. Note that the Deaton (price adjustments only) estimate of Indian poverty in 1999-00 is a low 18.2 percent. Also note that the two studies show virtually an identical poverty level for an all India estimate for 1987-88 and 1993-94 though differences are observed for rural and urban India. The key point is that a mid-teen estimate of poverty in the late nineties is actually not just yielded by Bhalla(1997) and

Bhalla(2000b), but also by other studies using very different methods and data, namely Deaton.

No matter which poverty estimation method is deemed accurate, all of them reveal a similar pattern - there is a greater pace of decline in the second-period than in the first – for many methods, the pace of decline is almost twice as fast. Only for the prices plus questionnaire adjusted Deaton-Dreze method is the pace of poverty decline almost the same in the two periods. That it is all the adjustments to 7/30 data in 1999-2000 that is yielding the “no change in the pace of poverty decline” result is indicated by the Deaton(2001) price only adjustments –with this method, poverty declined almost twice as fast in the 1993-00 period (1.8 percentage points per annum) compared with a 1 percentage point decline in the 1983-1993 period. Thus, all calculations yield the result that the reform period yielded a higher rate of poverty decline, and was more pro-poor (see Chapter 7 and 8), than the earlier pre-reform period.

Table 5.3 : Trend in Poverty, 1983-2000

	1983	1987-88	1993-94	1999-00	Log change		Arithmetic change	
					1983-93	1993-99	1983-93	1993-99
HCR, Rural								
Official	45.7	39.1	37.3	27.1	-1.9	-5.3	-0.8	-1.7
Deaton (only price adj)		39	32.9	21.6	-2.8	-7.0	-1.0	-1.9
Deaton-Dreze								
Q design		39.4	37.1	30	-1.0	-3.5	-0.4	-1.2
Above + price adj.		39.4	33	26.3	-3.0	-3.8	-1.1	-1.1
HCR, Urban								
Official	40.8	38.2	32.4	23.6	-2.2	-5.3	-0.8	-1.5
Deaton (only price adj)		22.8	18.1	9.5	-3.8	-10.7	-0.8	-1.4
Deaton-Dreze								
Q design		39.1	32.9	24.7	-2.9	-4.8	-1.0	-1.4
above + price adj.		22.5	17.8	12	-3.9	-6.6	-0.8	-1.0
HCR, All India								
Official	44.5	38.9	36.0	26.1	-2.0	-5.4	-0.8	-1.6
Deaton (only price adj)		35.0	29.0	18.2	-3.1	-7.8	-1.0	-1.8
Deaton-Dreze								
Q design		39.3	36.0	28.5	-1.5	-3.9	-0.6	-1.2
above + price adj.		35.2	29.0	22.3	-3.2	-4.4	-1.0	-1.1

Source: NSS consumer expenditure surveys, 1983, 1987-88, 1993-94 & 1999-2000.

Notes:

1. Years for which 1983 poverty estimates are not reported, the 1987-88 poverty estimates represents the 1983 poverty estimates.
2. All changes are on an annualized per year basis; note that 1983-93 is 10.5 years since the 1983 survey was from January- December and the 1993-94 survey was from July-June. Entries for which 1983 data not available, 1983-93 column corresponds to the changes between 1987 and 1993 and annualized by dividing the total by 6 instead of 10.5.
3. The all India figures have been obtained from the rural urban figures by assuming the following urbanization rates: 23.8, 24.8, 26.3 and 28.1 for the years 1983, 1987, 1993 and 1999 respectively.
4. Deaton (only price adjustment) refers to Deaton (2001b)
5. Deaton-Dreze report poverty estimates according to 2 steps; first' adjustments for questionnaire design (on 7 day 30 day recall period) and the second, according to price indices reported in Deaton (2001b).

Estimating Poverty in 1999-00 from Wage Growth during 1983-1999

Given the interest in the subject of the efficacy of reforms and poverty reduction in the post-reform period, and at least the theoretical problems caused by the 7/30 day problem, there is merit in finding out what non NSS consumer expenditure data suggests about the magnitude of poverty decline. The NSS survey data on wages of casual workers in rural areas (the lowest paid workers in the country) can be used to estimate a *lower bound* to average consumption, and therefore an *upper bound* to poverty, in 1999-00. Since the absolute poor can be assumed to have zero savings, changes in wage income are expected to translate into changes in mean consumption. These data suggest a very different story of India's development than that indicated by the NSS expenditure surveys, even if it is assumed that the 1999-00 data did not suffer from any contamination.

What level of poverty in 1999 is suggested by growth in rural wages, 1983-1999? The survey data for 1999 cannot be used for the forecast because the survey in 1999, apart from facing methodological contamination in the form of 7 versus 30 day recall for food consumption, also faces contamination in the form of the survey capturing about 25 percent less of national accounts than the 70 percent captured by the 1983 survey²⁹. If the distribution of consumption did not change between 1983-1999 (and all indications are that it did not – see Chapter 4) then the 1983 distribution, and 1999-00 survey wages, can be used to estimate poverty in 1999. For example, if real wages grew at 3.0 percent per annum real for 16.5 years, the average real consumption in 1999 would be 64 percent higher. The poverty ratio according to the Indian poverty line for this higher level of consumption – 13.5 percent in 1999.

In this calculation there are no PPP transformations involved, no national accounts, no changing ratio of surveys with respect to national accounts. The data used is household survey data for 1983; the assumption employed is that consumption expenditure of the poor increases one-for-one with wage growth as conservatively measured by household surveys. The other conservative assumption is that the distribution of consumption did not improve in the rural areas (contrary to most indicators). The result – the head count ratio is half that indicated by the official estimate of poverty for 1999-00 survey.

²⁹ This implies, of course, that the incomes of the poor would have to rise by 25 percent in real terms, between 1983 and 1999 before any decline in the poverty ratio is observed.

Chapter 6: Non-monetary living standards

This chapter briefly discusses the evolution of non-monetary living standards in the different states of India. Several indices of living standards are evaluated – two indicators relating to health (life expectancy and infant mortality decline) and two related to education (literacy and years of educational attainment). Two aspects about these indicators deserve emphasis – first, these indicators are subject to problems arising from considerations of floors and ceilings i.e. the limit is a biological maximum, and it takes more effort, more investment etc. to improve life expectancy from 75 to 80 years than from 80 to 85 years. Second, the change tends to be progressive i.e. the rich always had medical care etc. so social supply of services, and technology, tends to benefit the lower strata of society more.

Data on social indicators have been collected from various sources, that of educational attainment is from within the NSS surveys. The NSS data are both enrollment and completion data (for those above the relevant age group). These completion data, with associated socio-economic characteristics, is a rich source of analysis.

The figures on literacy revealed by the survey are not that different than those revealed by the census. If literacy is defined as 2 or more years of education, then almost two-thirds of the labor force is literate. In terms of schooling years, there has been a gradual increase from 3.9 years to 4.7 years 1983 to 1999.

	1983	1999
Years of education (years)		
Age ≥ 15 & age ≤ 60	3.9	4.8
Age ≥ 9 & age ≤ 60	3.7	4.7
Literacy (%)		
Age ≥ 15 & age ≤ 60	44.7	59.0
Age ≥ 9 & age ≤ 60	48.5	63.5

Source: NSS survey unit record data for 1983, 1987-88, 1993-94 & 1999-00.

Table 6.1: Infant Mortality rates, Rural

	Levels								
	Actual				Predicted (log) Levels		Residuals (Actual-Predicted)		
	Absolute		Log		1983	1999	1983	1999	Change
	1983	1999	1983	1999					
Andhra Pradesh	95	74	4.55	4.30	4.76	4.40	-21%	-9%	11%
Assam	.	78	.	4.36	4.51	4.05		31%	
Bihar	98	63	4.58	4.14	4.68	4.48	-10%	-33%	-23%
Gujarat	129	69	4.86	4.23	4.80	4.20	6%	3%	-3%
Haryana	132	69	4.88	4.23	4.92	4.00	-3%	23%	26%
Himachal Pradesh	146	64	4.98	4.16	4.94	3.86	4%	30%	25%
Jammu & Kashmir	117		4.76			3.60			
Karnataka	87	68	4.47	4.22	4.50	4.28	-4%	-6%	-3%
Kerala	56	14	4.03	2.64	4.05	2.88	-3%	-24%	-21%
Madhya Pradesh	158	94	5.06	4.54	5.16	4.62	-10%	-8%	3%
Maharashtra	131	57	4.88	4.04	4.85	4.03	2%	1%	-1%
Orissa	171	99	5.14	4.60	5.08	4.65	7%	-6%	-12%
Punjab	135	56	4.91	4.03	4.89	4.06	2%	-3%	-5%
Rajasthan	153	83	5.03	4.42	4.87	4.60	16%	-19%	-34%
Tamil Nadu	116	57	4.75	4.04	4.69	4.12	6%	-8%	-14%
Uttar Pradesh	139	87	4.93	4.47	4.72	4.14	22%	33%	11%
West Bengal	103	54	4.63	3.99	4.78	4.04	-14%	-5%	9%

Table 6.2: Infant Mortality rates, Urban

	Levels								
	Actual				Predicted (log) Levels		Residuals (Actual-Predicted)		
	Absolute		Log		1983	1999	1983	1999	Change
	1983	1999	1983	1999					
Andhra Pradesh	72	36	4.28	3.58	4.42	3.83	-15%	-25%	-10%
Assam	.	35	.	3.56	4.07	3.50	.	6%	
Bihar	62	53	4.13	3.97	4.14	4.08	-2%	-11%	-10%
Gujarat	85	45	4.44	3.81	4.32	3.69	12%	11%	-1%
Haryana	94	57	4.54	4.04	4.59	3.90	-5%	14%	19%
Himachal Pradesh	63	38	4.14	3.63	4.16	3.47	-1%	15%	17%
Jammu & Kashmir	63	.	4.14	.	.	3.32	.	.	
Karnataka	62	24	4.13	3.18	4.13	3.45	0%	-27%	-26%
Kerala	49	14	3.89	2.64	3.79	3.05	10%	-41%	-51%
Madhya Pradesh	105	54	4.65	3.99	4.62	3.82	4%	17%	14%
Maharashtra	67	33	4.20	3.50	4.27	3.38	-7%	12%	19%
Orissa	111	66	4.71	4.19	4.64	4.23	7%	-4%	-10%
Punjab	104	38	4.64	3.64	4.57	3.86	8%	-22%	-30%
Rajasthan	97	58	4.57	4.06	4.61	4.05	-3%	2%	5%
Tamil Nadu	78	38	4.36	3.64	4.42	3.58	-6%	6%	12%
Uttar Pradesh	81	65	4.39	4.17	4.27	3.63	12%	55%	42%
West Bengal	59	37	4.08	3.61	4.21	3.69	-13%	-8%	5%

Table 6.3: Primary School Enrollment

	Total			Boys			Girls		
	1980	2000	Change	1980	2000	Change	1980	2000	Change
Himachal Pradesh	97.0	88.6	-8.4	108.6	95.2	-13.4	85.0	82.7	-2.3
Kerala	107.2	87.1	-20.1	109.9	87.7	-22.2	104.5	86.5	-18.0
Madhya Pradesh	68.2	118.4	50.2	90.6	129.9	39.3	45.2	106.5	61.3
Uttar Pradesh	62.5	65.7	3.2	81.8	79.9	-1.9	40.3	50.3	10.0
West Bengal	93.9	107.2	13.3	105.4	110.9	5.5	81.9	103.3	21.4
Andhra Pradesh	74.5	104.1	29.6	86.9	105.2	18.3	61.8	102.9	41.1
Assam	71.0	111.5	40.5	78.8	122.0	43.2	62.6	100.7	38.1
Bihar	66.0	57.0	-9.0	89.9	70.2	-19.8	40.5	43.2	2.7
Gujarat	98.3	126.2	27.9	112.3	137.9	25.6	83.2	113.6	30.4
Haryana	70.5	78.9	8.4	87.6	78.1	-9.5	51.1	79.8	28.7
Jammu & Kashmir	65.5	91.8	26.3	81.3	104.1	22.8	48.7	80.1	31.4
Karnataka	86.6	113.6	27.0	96.7	116.6	19.9	76.3	110.4	34.1
Maharashtra	103.7	110.4	6.7	114.5	112.9	-1.6	92.2	107.8	15.6
Orissa	76.6	112.6	36.0	93.0	130.0	37.0	60.3	94.7	34.4
Punjab	100.7	78.1	-22.6	104.5	76.8	-27.7	96.3	79.5	-16.8
Rajasthan	59.2	114.1	54.9	86.5	139.7	53.2	30.0	85.9	55.9
Tamilnadu	112.8	96.4	-16.4	122.0	96.6	-25.4	103.3	96.3	-7.0
India	80.5	92.6	12.0	95.8	101.5	5.7	64.1	83.2	19.0

Table 6.4: Middle School Enrollment

	Total			Boys			Girls		
	1980	2000	Change	1980	2000	Change	1980	2000	Change
Himachal Pradesh	63.8	96.4	32.6	85.9	103.9	18.0	41.0	89.2	48.2
Kerala	89.4	97.3	7.9	94.4	99.8	5.4	84.4	94.8	10.4
Madhya Pradesh	33.4	61.1	27.7	48.2	71.2	23.0	17.4	50.1	32.6
Uttar Pradesh	38.7	37.4	-1.3	56.3	48.1	-8.2	18.0	25.2	7.2
West Bengal	45.3	52.2	6.9	53.3	59.7	6.4	37.0	44.4	7.3
Andhra Pradesh	32.3	49.0	16.7	41.8	53.5	11.7	22.3	44.3	22.0
Assam	40.0	71.5	31.5	48.8	78.4	29.6	31.0	64.3	33.3
Bihar	26.0	23.2	-2.8	39.4	30.2	-9.2	11.6	15.4	3.8
Gujarat	44.9	47.0	2.1	54.6	50.6	-4.0	34.4	43.2	8.8
Haryana	47.2	63.2	16.0	64.4	65.8	1.4	27.1	60.2	33.1
Jammu & Kashmir	37.0	67.0	30.0	48.7	73.6	24.9	24.2	60.2	36.0
Karnataka	37.7	74.4	36.7	49.5	78.2	28.7	25.4	70.5	45.1
Maharashtra	50.9	85.2	34.3	62.1	89.7	27.6	38.7	80.5	41.8
Orissa	30.6	55.6	25.0	41.1	66.8	25.7	20.0	43.9	23.9
Punjab	59.1	63.5	4.4	68.3	62.2	-6.1	48.8	64.9	16.1
Rajasthan	30.0	84.4	54.4	46.7	112.4	65.7	12.0	52.4	40.4
Tamilnadu	56.3	92.8	36.5	69.4	93.8	24.4	42.9	91.8	48.9
India	41.9	56.6	14.7	54.3	64.1	9.8	28.6	48.4	19.8

Table 6.5: Primary School Completion

	Total			Boys			Girls		
	1980	2000	Change	1980	2000	Change	1980	2000	Change
Himachal Pradesh	59.2	64.3	5.1	66.0	66.2	0.1	52.1	62.9	10.8
Kerala	99.7	94.0	-5.7	106.1	96.2	-9.9	90.0	91.7	1.7
Madhya Pradesh	42.4	99.2	56.8	62.7	113.0	50.3	22.1	84.7	62.7
Uttar Pradesh	32.3	28.6	-3.7	57.4	37.6	-19.8	23.9	19.1	-4.8
West Bengal	43.9	52.0	8.1	50.7	59.7	9.0	36.5	44.5	8.0
Andhra Pradesh	32.0	60.9	28.9	37.5	62.3	24.8	26.3	59.4	33.1
Assam	19.4	75.9	56.5	18.3	94.7	76.4	21.2	58.1	36.9
Bihar	25.5	16.5	-9.0	34.6	21.1	-13.5	15.5	11.7	-3.8
Gujarat	60.7	96.7	35.9	65.7	106.8	41.1	54.7	85.9	31.3
Haryana	50.4	61.6	11.2	64.7	59.6	-5.1	34.2	64.1	29.9
Jammu & Kashmir	43.5	61.3	17.9	68.3	68.3	0.1	19.1	41.0	21.9
Karnataka	25.2	88.7	63.5	39.0	87.8	48.7	13.4	90.1	76.7
Maharashtra	47.6	91.4	43.8	58.8	94.9	36.1	36.1	87.6	51.5
Orissa	24.7	65.2	40.5	34.6	76.1	41.5	15.1	54.2	39.0
Punjab	14.3	60.6	46.3	16.6	57.6	41.0	11.7	63.9	52.3
Rajasthan	37.4	54.1	16.7	53.7	77.0	23.3	17.5	30.6	13.2
Tamilnadu	85.4	55.3	-30.1	95.5	45.4	-50.1	75.2	65.8	-9.5
India	42.6	55.1	12.5	53.3	62.0	8.7	31.3	47.8	16.5

Table 6.6: Middle School Completion

	Total			Boys			Girls		
	1980	2000	Change	1980	2000	Change	1980	2000	Change
Himachal Pradesh	41.2	80.1	38.9	63.6	89.8	26.1	20.9	71.0	50.1
Kerala	77.8	109.2	31.4	82.6	114.4	31.8	73.1	104.0	30.9
Madhya Pradesh	15.2	33.3	18.1	25.3	42.9	17.6	5.4	23.6	18.2
Uttar Pradesh	17.2	14.6	-2.6	28.9	21.0	-7.9	5.5	7.9	2.5
West Bengal	15.5	17.7	2.2	19.9	22.5	2.6	11.2	13.2	2.0
Andhra Pradesh	6.9	16.8	9.9	10.6	19.5	8.9	3.6	14.1	10.4
Assam	16.8	21.7	4.9	22.4	25.1	2.7	11.5	18.2	6.7
Bihar	4.7	4.3	-0.4	8.1	6.3	-1.8	1.4	2.2	0.8
Gujarat	8.1	25.2	17.0	10.1	27.7	17.6	5.8	22.4	16.6
Haryana	28.9	52.0	23.1	44.3	56.9	12.6	12.2	46.6	34.4
Jammu & Kashmir	12.9	49.6	36.7	12.8	52.4	39.5	11.5	46.9	35.4
Karnataka	7.2	36.3	29.1	10.4	39.8	29.5	4.1	32.8	28.7
Maharashtra	11.7	53.3	41.6	17.3	59.4	42.1	5.6	47.1	41.5
Orissa	11.8	21.8	10.0	16.3	28.5	12.2	7.3	15.5	8.2
Punjab	15.8	46.3	30.4	21.4	45.1	23.7	10.6	47.6	37.0
Rajasthan	12.7	53.5	40.8	21.2	79.4	58.1	3.9	26.4	22.6
Tamilnadu	20.2	70.6	50.3	29.1	78.7	49.7	12.4	62.0	49.6
India	15.6	26.2	10.6	20.2	31.3	11.1	7.7	20.8	13.0

Progress in Gender Equality

Gender equality goal is primarily concerned with equality in schooling for both boys and girls. Eventually, the goal of all societies has to be the elimination of sex discrimination in all sectors, in schooling and in the workplace. The presence of discrimination in schooling can be evaluated by differences in schooling completion between boys and girls belonging to the *same* household. Sex discrimination in the workplace can be evaluated by evaluating the total wages received by men and women belonging to the same place of residence, the same occupation, the same age, and the same educational background. Differences between individuals can still be observed, but not differences in the mean salary obtained. Today, in the US, for most occupations, there is gender equality.

The availability of large household sample surveys (over 25,000 households for each of the three years 1983, 1987-88, 1993-1994 and 1999-2000) makes such an exercise both feasible, and potentially very illuminating. As discussed in Chapter 4, preliminary research suggests that a major social transformation has occurred, and is continuing to take place; for example, today, in India, for children between the ages of 5-14, there is near complete gender equality in educational *attainment* (not enrollment). In rural areas, where close to 70 percent of the population lives, there is less equality, only about 83 percent i.e. for each 5 years of education that a boy receives, *ceteris paribus*, a girl receives 4.2 years of schooling.

The important role of female education, and why it is extremely remunerative, and why households are overcoming tradition and investing in girls education, can be analyzed in terms of the improvement in household living standards *contributed specifically by women*. It is well recognized that mother's education has an important bearing on the health and welfare of children. A preliminary analysis of just how important this role is for India is documented in Bhalla et. al.(2003).

Chapter 7: Nature of growth

This chapter is concerned with the analysis of how given a certain amount of growth, what poverty decline should be expected. The question is important, for policy makers, politicians, and policy wonks. It is especially important in India, a country where *garibi hatao* became an everyday term. Internationally also, and especially at aid agencies like the World Bank, the perennial question is: how effective is growth in terms of poverty reduction. Over the last few years, there has been an outpouring of papers on “pro-poor growth” i.e. identification of policies which reduce poverty by a greater amount, *ceteris paribus*. The identification of pro-poor growth is particularly important for large democracies like India. The last part of this chapter will develop a measure of pro-poor growth and analyze it with respect to the different states.

There are two distinct aspects to the identification of whether pro-poor growth is being achieved or not. First, and most importantly, is whether there has been any change in inequality – if an improvement, then growth was likely pro-poor. But what happens if growth declines *more* than inequality improves? Or equivalently, inequality increases more than growth? In both these instances, the absolute levels of income of the poor decline and poverty increases. These processes cannot be considered pro-poor. Now contrast a situation of very high average growth with a large increase in inequality – e.g. China. In this instance, the poor do become considerably better off, and poverty declines by an enormous amount. A poor person would rather be born in high growth and inequality increasing China of the eighties and nineties, than in a low growth, low inequality, and stable inequality China of the fifties, sixties, and seventies.

In *Imagine* (also see Bhalla et.al. (2003b), Bhalla(2003g)) a simple definition of pro-poor growth was offered – the excess of the growth in consumption of a pre-defined poor relative to the average economy wide growth rate. These “pre-defined” poor are the fraction of people observed poor in any particular year. For example, if 29 percent are the percent poor observed in 1987, then the growth rate in consumption of the bottom 29 percent should be compared with the growth rate in average consumption. This definition, however, is incomplete. A more complete definition is one which looks at the absolute growth in incomes of the poor. This definition is also incomplete. A more

complete and statistically consistent definition is offered in the latter half of this chapter. First, however, we need to look at pro-poor growth in a definitional manner.

Pro-Poor definitions and math:

The general evaluation of pro-poor growth has been via the elasticity of poverty reduction with respect to growth. It is presumed that the greater the elasticity, the greater the pro-poor nature of growth. Interestingly, while much discussed, the “properties” of the growth poverty elasticity have not been dissected. Datt-Ravallion state the following tautology:

$$(1) \quad \text{Poverty Reduction} = \text{Poverty reduction due to income growth} + \\ \text{Poverty reduction due to improvement in inequality}$$

The first term is the contribution due to growth, and the second is the contribution due to distribution.³⁰ But how does one measure each contribution? The suggested (but incorrect) method is to measure all variables (head count ratio, growth in mean consumption and an inequality index like the Gini) in log changes and obtain an elasticity of poverty reduction. Additional variables can be inserted into this definitional model e.g. initial inequality, urbanization etc. If the regression is estimated without an inequality term, one obtains an *average* elasticity of poverty reduction with respect to growth. Note that this estimated elasticity says nothing about how much poverty reduction should one expect with distribution-neutral growth, *ceteris paribus*. Nor does it mean that if the elasticity is higher, the growth process was more “pro-poor”.

The elasticity of poverty reduction can be estimated from “first principles” (see *Imagine*). Let $F(Y)$ be the cumulative distribution of per capita consumption, H the head count ratio and P the poverty line. Then, $H = F(Y)$. Differentiating, $dH = f(Y).dY$, where $f(Y)$ is the density of the distribution at the poverty line P . Evaluating the equation at the poverty line P , and dividing both the numerator and denominator by P , and noting that at the poverty line dY is equal to dP and Y is equal to P , one obtains,

³⁰ Since the equation is a reduced form, Datt-Ravallion are compelled to add a third residual term which is equal to “the difference between the growth (redistribution) components evaluated at the terminal and initial Lorenz curves (mean incomes) respectively”(p.5).

$$(2) \quad dH = P \cdot f(Y) \cdot dY/Y = \zeta \cdot Y',$$

or dividing both sides by H_{t-1} (poverty in the initial time-period), and primes referring to log change),

$$(3) \quad H' = (P/H_{t-1}) \cdot f(Y) \cdot Y' = \hat{a} \cdot Y'$$

The italicized term P/H_{t-1} is known *ex-ante* since H_{t-1} is poverty in the initial period (also referred to as H_0) and P the poverty line; \hat{a} is the elasticity of poverty reduction with respect to growth.

The log change in the head count ratio H' is equal to the product of the amount of economic growth that occurs Y' and the elasticity of poverty reduction. This elasticity is highly non-linear and its value is a function of the poverty line P , initial poverty level H_{t-1} , and the density of the distribution function (at the poverty line P). Equation 3 is the conventionally defined elasticity i.e. the percent decline in poverty that can be expected with a 1 percent growth in per capita consumption.

The decline in poverty in *percentage points* is given by dH in equation (2). Policy makers, and policy discussions, are concerned about the impact of growth on the decline in the head-count ratio dH and not H' . (A decline from a HCR of 29 percent to a head-count ratio of 23 percent is a 6 percentage point decline or a (log) 23 percent decline – the latter is hard to relate to). This was defined in *Imagine* as the **shape of distribution elasticity (SDE)**. While not an elasticity in the conventional sense, it does measure what policy makers are interested in, and what the “headline” discussion is all about when it comes to poverty reduction. SDE measures the magnitude of poverty reduction (in percentage points) which will result from a given amount of growth in expenditures *of the poor population*. This is an important contrast – the conventional elasticity is in (log) percent and relates the decline in poverty associated with an increase in average consumption. The *Imagine* offered elasticity is in percentage points and relates the decline in poverty to growth in consumption of not the average population, but the population close to the poverty line. It is also important to note that this elasticity is *not a function of the growth process* but is known *ex-ante* i.e. SDE at (t-1) determines the impact of growth (from t-1 to t) on poverty (also from t-1 to t). The

value of this elasticity is a function of the poverty line (known *ex-ante*), and the density of individuals close to the poverty line in the initial year (also known *ex-ante*).

The change in incomes of the poor, Y' , can be written in a manner that corresponds to most popular discussions of poverty – in terms of growth in average consumption, and change in inequality (shares of expenditures of the poor). Consumption (log) growth is by definition equal to the log change in mean consumption, g , and log change in the share of consumption of any group, i . In other words, $Y' = g + i$. If this change is considered for those close to the poverty line, then this decomposition of consumption growth, along with knowledge of SDE_{t-1} , can help translate income *and* inequality changes (without a residual term a la Datt-Ravallion) into expected changes in poverty, via the following formulae:

$$\begin{aligned}
 (4) \quad & dH = (g + i) * SDE_{t-1}, \text{ or} \\
 (5) \quad & (dH / H_{t-1}) = (g + i) * SDE_{t-1} / H_{t-1} \\
 (6) \quad & \hat{a} = \zeta / H_{t-1}
 \end{aligned}$$

where all figures relate to changes *at or near the poverty line, P*. (Note that the conventional elasticity, \hat{a} , is equal to the *Imagine* defined elasticity, ζ (given by SDE_{t-1} in equation 4) divided by the initial poverty level H_{t-1} .) For non-small changes, equations 4 and 5 do not hold exactly, for the simple reason that the large changes in expenditures most likely traverse a large portion of the distribution and the arc elasticity represented by SDE is an average of several “arcs”. However, as documented in *Imagine*, the approximation for large changes provided by equation (4) is reasonably close.

The arithmetic change “elasticity”³¹, SDE (equation 4) addresses *the* policy question – if there is $(g+i)$ amount of growth in expenditures of the poor, then the amount of poverty reduction one should expect is lagged SDE times this growth. Thus, SDE is the “answer” to the original question – how much decline in poverty (in percentage points) is brought about by growth – and it is equal to lagged SDE , which is equal to the product of the poverty line with the density function evaluated at the poverty line P .

³¹ Defined as the percent growth that is needed to obtain a given percentage point decline in poverty, dH in equation 7.

Pro-poor performance indicators

There are only three exogenous and “statistical” determinants of the conventional log change poverty-growth elasticity ($P \cdot f(P) / H_0$ or SDE_{t-1} / H_{t-1}): the poverty line P , the *initial* value of the head-count ratio, H_0 , and the initial density of expenditures at the poverty line $f(P)$. It is tempting to conclude that this elasticity is a positive function of poverty line P and a negative function of the initial value of poverty H_0 . But this conclusion is erroneous because each of these variables also affects the value of the density function at the poverty line P , $f(P)$.

The determinants of change in poverty can be easily explored via equations 4 and 5. The first result is that growth can, and does, affect poverty *differentially* depending on the value of SDE in the initial period i.e. the same amount of growth can often lead to a higher, or lower, reduction in poverty depending on the density of the distribution, $f(Y)$. The more congested is the population close to the poverty line, the larger will be the impact on poverty reduction, for a given amount of growth.

The second important result is that the impact of both average expenditure growth, g , and average change in the share of expenditures of those close to the poverty line, i , is the *same* and equal to SDE_{t-1} / H_0 . In other words, it is not the case that average growth and inequality change have a different elasticity. Growth in expenditures of the poor is the sum of growth from two sources: the mean growth in expenditures of the entire population (this is the popular “headline” growth variable) and the growth in the share of expenditures of the poor (change in inequality but only of those close to the poverty line). The coefficients of both growth and distribution are unity. For example, if mean expenditures increase by (log) 10 percent, and inequality, measured as the share in total expenditures of the population close to the *poverty line* worsens by (log) 10 percent, then there will be no change in net income of the poor, and therefore little change in the head-count ratio of poverty.

The third important result is that this density has no obvious relationship with either growth or initial inequality. A highly unequal economy like Brazil can have income ranges where the distribution is equal; a relatively equal economy like India can have income ranges where the distribution is unequal. Rural Rajasthan had a very unequal distribution in 1983 – a Gini index of 34.6; rural Punjab was considerably more equal – a

Gini of 28.6. But rural Rajasthan had a fifty percent higher SDE – 0.74 compared to only 0.48 for Punjab.

If the amount of poverty reduced by a given amount of growth is defined as the poverty *yield* of growth, then it is obvious that the same amount of growth will lead to different yields. And if the yield is taken as an indicator of performance, then one would be attributing to policy what merely is a function of statistics, and/or initial conditions. And this yield does not stay constant but indeed can vary considerably over time, and across time from state to state, from urban to rural areas. The reason the yield moves around, unpredictably and paradoxically to some, is because of the simple fact that where the poverty line cuts the distribution of income is an important component of how much poverty decline can be expected with growth, *ceteris paribus*. This effect can be quite large and can generally swamp other effects. The following heuristic example illustrates the non-linearity. Assume the poverty line is 100 and the mean income of the poor is 50 and the standard deviation is 10. An increase in consumption of 10 percent will have a zero impact on the head count ratio. Now assume that the mean income of the poor was 99. Now a 10 percent increase in consumption will lead to a very large decline in the head count ratio – so the elasticity has changed from zero to infinity with virtually no change in the underlying reality – except the phenomenon of where the poverty line cuts the distribution of income.

This simple fact has not been appreciated enough and has led many to conclude from “normal” differences in growth yield (defined as dH/Y) that what is required is a change in policy and/or that non-growth instruments are needed. Several research documents (e.g. WDR 1990, WDR 2000/01) highlight the important role of “initial conditions”, “initial inequality”, non-farm growth, infrastructure investments etc. to explain why the growth poverty relationship has been observed to be weak. Indeed, the “explanation for all seasons” is that it wasn’t growth that did it – it was the “catch-all” initial differences.

The fourth important result is that the conventionally defined elasticity $\hat{\alpha}$, defined in equation (5) is misleading. Note that it is a function of the initial poverty level; when such levels get low, the elasticity gets inordinately high. To reduce poverty from 5 to 4 percent might only need 2 or 3 percent growth yielding a theoretically very high elasticity with no meaning or implication about performance or policy.

Does initial inequality have an effect on the elasticity of poverty reduction? No

One of the most popular “facts” prevalent in the pro-poor literature is the notion that initial inequality matters i.e. that the more equal the distribution, a bigger poverty reduction can be obtained with a given amount of growth. A more equal distribution may be desirable for several reasons, but a higher impact on poverty reduction is *not* a theoretically valid reason. It is important to note that there is no *direct* role for initial inequality in equation 4 – it does not appear in the equation, while both the poverty line and initial head count ratio do. Indirectly, though, the initial distribution of income can enter into the equation via the density $f(Y)$ in the initial time-period. However, the impact is non-linear and is high or low depending on *not* overall inequality but the *congestion (or inequality) of people close to the poverty line*. It is not *overall* inequality in the initial period that matters, as conjectured by most, but rather the inequality levels of those *close to the poverty line*. It can indeed be, and often is the case, that the density at the poverty line is higher for an *unequal* economy than an equal economy; this can especially occur at the tails of the distribution where even very equal economies will have a low elasticity. The inequality that matters is the *inequality of the cluster of individuals at the poverty line* ; and it is unclear *a priori* what its effect can be – it can be positive or negative, it all depends. Thus, *the magnitude of the growth poverty elasticity is not a monotonic function of either the poverty line or initial aggregate inequality*.

Estimation of SDE and its role

Non-linear estimation techniques are necessary to estimate the value of SDE, which maybe an important reason why it has been “ignored” in discussions of the effect of growth on inequality, and has had only limited “circulation” to date (but see Kakwani(1993) for Cote d’Ivoire, Deaton-Tarozzi(2000) for India, and *Imagine* for all the countries of the world, and all years, 1950-2000³²). Analysts have decomposed the growth poverty elasticity into changes in mean expenditures and changes in average or overall inequality e.g. the Gini index. If there is no inequality change, then the calculation is correct i.e. growth in expenditures of the people around the poverty line is equal to growth in mean expenditures. But when there is inequality change, then it matters *where* the inequality change occurs, and use of an index (e.g. Gini or Theil) representing

³² It’s importance has long been recognized (see Anderson(1964)) but mostly in a qualitative fashion e.g. “we recognize that the growth elasticity of poverty is affected by SDE but let us assume the value of SDE is equal to unity”.

“average” inequality change, is inappropriate. For most countries and time-periods, a reasonable approximation to inequality change at the poverty line, is provided by the change in share of the expenditures of the entire poor population (not just at the poverty line) whose magnitude is fixed at some initial level e.g. the percent poor in a “base” year e.g. 1983.

SDE has been estimated for different states of India by the following procedure. Each distribution (rural and urban areas separately) for each was “shocked” by a consumption increase (and decrease) of 2.5 percent and 5 percent. The resulting change in the head count ratio was divided by the percent change in mean consumption to obtain an average SDE.

Knowledge about the value of SDE can help in putting into perspective, and giving a magnitude, to the large error introduced into poverty computations by the declining S/Na ratio in India. An *average* value for SDE for the non-industrialized world is 0.5; for India, it is close to 0.8. The average change in the S/NA ratio between the mid-eighties and late nineties was close to 20 percent in India. Thus, if it is assumed that *inequality around the poverty line stays constant or is equal to zero*, (as has been the case for India), then this change in the S/NA ratio leads to an *over-estimate* of poverty of around 16 percentage points (20 multiplied by 0.8). Thus, rather than the observed reduction of poverty from 45 percent in 1983 to 26 percent in 1999-2000, the poverty decline, if exactly the same pattern of growth had occurred but the S/NA ratio had stayed constant at 70 percent, would have been 16 percentage points more. Thus, one should have observe poverty equal to 26 – 16 or close to 10 percent in 1999. Given that the “actual” decline observed was 19 percentage points, it means that the *missed* poverty decline due to the statistical artifact of a declining S/NA ratio was almost equal to that which was actually “observed”!

Towards a new measure of pro-poor growth

The above theoretical discussion provides a basis for a rigorous definition of pro-poor growth and its measurement. The existing definitions have drawbacks. The most appealing such definition, change in inequality of the poor, suffers from the drawback that it is not “interesting” in situations pertaining to low or negative growth. Ditto with the definition of the relative growth in incomes of the poor (*Imagine*) or in the absolute

change in incomes of the poor (Ravallion-Chen(2002)). All the above formulations ignore the role of SDE in interpreting the poverty reducing capacity of growth.

One possible determination of growth being pro-poor is by noting whether there is a decrease or an increase in inequality with the former being obviously pro-poor. This definition, however, is too restrictive, and also not very useful. It ignores the China phenomenon – large positive change in per capita expenditures (log 68 percent growth between 1987 and 1998) and large negative change in the share of incomes of the poor (minus 11 percent) yielding a large net change of 57 percent increase in just 11 years.³³ Surely, the Chinese experience has to be regarded as pro-poor; if not, then something is likely wrong with the definition of pro poor being only those changes that result in a decrease in inequality.

The following four steps, it is suggested, leads to an improved definition and evaluation of the growth poverty relationship. First, estimate the SDE for the different regions (states and within states, rural and urban areas) for each year in which an NSS survey has been conducted. Second, the observed change in the head-count ratio is divided by SDE_{t-1} – this provides an estimate of how much poverty reduction took place according to a common standard. In other words, one obtains the amount of poverty reduction which would have taken place if the statistical initial conditions were the same in each region i.e. a common yardstick. Third, this standardized poverty reduction (in percentage points) is then divided by the growth that actually took place – the resulting ratio answers the question “How much (standardized) poverty reduction a state was able to achieve per unit of growth”. The ratio is the yield of growth and is in terms of the amount of poverty reduction (in percentage points) per unit of economic growth. This “yield” does not account for the fact that *ceteris paribus*, the growth itself in a particular state may have been higher (or lower) than average growth. Ultimately, one is interested in poverty reduction, regardless of whether it is brought about through income inequality improvement or economic growth. The “benchmark” poverty reduction that was possible at any given time is that observed, on average, for all of India. The poverty reduction performance index is given by how much *less* growth is needed in a given state to achieve the same poverty reduction as observed for India.

³³ This is according to household survey data – national accounts data show an increase in per capita incomes over the same period of 124 or log 80 percent.

An example for the rural areas of Rajasthan can illustrate. The poverty reduction observed there between 1983 and 1999 was 20.9 percentage points – a decline from a head count ratio of 34.3 to 13.4 percent. The SDE in 1983 for rural Rajasthan was 0.74. Thus, if rural Rajasthan had an initial of SDE of 1, the poverty decline, with the same observed growth, would have been **28.3** percentage points over 16.5 years or 1.7 percent a year. For all of rural areas of India, the aggregate poverty decline between 1983 and 1999 was 19.6 percentage points; with an SDE of 0.82, the standardized poverty decline was $19.6/0.82$ or **23.9**. Poverty reduction *per se* in rural Rajasthan was thus somewhat better than rural India. – and it achieved this with a cumulative growth (between 1983 and 1999-00) of only 1.8 percent compared to the national average of 16.6 percent. Whether through inequality improvement or higher growth, poverty in rural Rajasthan got reduced by 1.7 percentage points a year, compared to 1.4 percentage points for rural India. In order to achieve the same poverty reduction as the average (23.9 percentage points rather than 28.3 percentage points) rural Rajasthan would require *lower* growth than it experienced. How much lower? About 2.6 percentage points given by the ratio of the difference (4.4) and the standardized rural Rajasthan yield of 1.7. This lower growth requirement is the performance index.

Tables 7.1, 7.2 and 7.3 reports the details of the calculation for the different regions of India (rural, urban and all India). The difference that the level of SDE makes is indicated by the columns for actual and “adjusted” poverty decline. For example, in rural Punjab the actual poverty decline between 1983 and 1999 was “only” 7.9 percentage points, less than half the decline for rural India. It would appear that Punjab was a bad performer in terms of poverty reduction. But the adjusted declines make rural Punjab relatively better – its performance is now two-thirds that of India. The last column reports the performance index – rural Punjab would have needed an extra cumulative growth of 7.3 percent to perform in the same manner as India. On an all India basis (Table 7.3) Punjab is an average state – it would have required only 0.9 percent extra growth to achieve the same poverty reduction as the rest of India. The best performing state in terms of poverty reduction is Tamilnadu, followed by West Bengal and Kerala. Note that for urban areas, West Bengal is the second most worst performing state, just marginally better than urban Bihar.

Table 7.1: Pro-Poor growth in India, All India, 1983-1999-00

State	Mean Consumption		(Log) Growth	Headcount ratio		Decline in HCR	SDE in 1983	Standardized		
	1999-00	1983		1983	1999-00			reduction in HCR	Standardized Yield	Pro-poor index
	Tamilnadu	421		298	34.6			52.4	21.2	-31.1	0.77	-40.5	-2.5	-7.3
West Bengal	337	269	22.7	55.1	27.9	-26.2	0.77	-33.8	-2	-5.4
Kerala	497	363	31.5	40.7	12.2	-28.3	0.84	-33.8	-2	-5.4
Rajasthan	374	356	4.9	34.9	14.8	-20.1	0.74	-27	-1.6	-2.6
Delhi	770	541	35.3	27	9.2	-17.1	0.66	-26	-1.6	-2.1
Jammu & Kashmir	450	303	39.6	28.6	2	-26.6	1.07	-24.9	-1.5	-1.5
Karnataka	368	308	17.9	38.5	19.4	-19.1	0.77	-24.9	-1.5	-1.5
Bihar	262	219	17.8	61.8	43.1	-18.9	0.79	-23.8	-1.4	-0.8
India	358	296	19	44.8	26.4	-18.4	0.81	-22.7	-1.4	0
Punjab	511	450	12.5	17.3	5.9	-10.8	0.5	-21.5	-1.3	0.9
Orissa	246	201	20.3	64	47.6	-17.7	0.83	-21.4	-1.3	1
Andhra Pradesh	330	285	14.7	34.2	15.8	-16.7	0.79	-21.3	-1.3	1.1
Gujarat	413	330	22.4	31.9	13.3	-18.3	0.92	-20	-1.2	2.2
Maharashtra	403	357	12	38.6	24.8	-14.9	0.78	-19.1	-1.2	3.1
Uttar Pradesh	322	277	14.9	47	31.3	-15.7	0.85	-18.5	-1.1	3.7
Haryana	486	409	17.5	23.1	8.2	-14.6	0.85	-17.3	-1	5.2
Himachal Pradesh	463	397	15.3	18.7	7.6	-11	0.65	-16.8	-1	5.7
Madhya Pradesh	292	265	9.8	51.2	37.7	-13.4	0.84	-15.9	-1	7
Assam	295	274	7.3	41.4	37.1	-4.8	1.26	-3.8	-0.2	81.2

- Notes: 1) The standardized reduction in HCR is given by the ratio of the decline in HCR and the SDE in 1983.
2) Standardized yield is the standardized reduction in HCR divided by the (log) growth in consumption.
3) The poverty line for rural and urban areas is used to obtain real consumption levels.

Table 7.2: Pro-Poor growth in India, Rural India, 1983-1999-00

State	Mean Consumption			Headcount ratio		Decline in HCR	SDE in 1983	Standardized		Pro-poor index
	1999-00	1983	(Log) Growth	1983	1999-00			reduction in HCR	Standardized Yield	
Tamilnadu	328	243	30.1	54.4	20.4	-34.1	0.79	-43.1	-2.6	-7.4
West Bengal	287	221	26.2	64.3	31.5	-32.8	0.78	-42	-2.5	-7.2
Kerala	498	344	37	40.1	9.4	-30.7	0.88	-34.9	-2.1	-5.3
Rajasthan	345	339	1.6	34.3	13.4	-20.9	0.74	-28.3	-1.7	-2.7
Maharashtra	304	244	22.1	46.3	23.4	-22.9	0.87	-26.4	-1.6	-1.7
Bihar	245	203	18.6	65.3	44.4	-20.9	0.8	-26.3	-1.6	-1.6
Orissa	224	178	22.8	68.5	48.4	-20	0.82	-24.6	-1.5	-0.6
Jammu & Kashmir	432	283	42.3	26.5	1.7	-24.8	1.01	-24.5	-1.5	-0.5
Karnataka	301	264	13.2	36.3	17.2	-19.1	0.79	-24.2	-1.5	-0.3
India	303	257	16.6	46.8	27	-19.6	0.82	-23.7	-1.4	0
Andhra Pradesh	281	257	9	27.3	11	-16.2	0.8	-20.2	-1.2	2.9
Gujarat	349	292	17.8	29.3	12.5	-16.9	0.85	-19.8	-1.2	3.3
Uttar Pradesh	295	262	11.9	47.4	31.4	-16	0.85	-18.7	-1.1	4.4
Haryana	460	386	17.5	21.5	7.4	-14	0.83	-17	-1	6.5
Punjab	479	448	6.7	14.1	6.2	-7.9	0.48	-16.5	-1	7.3
Himachal Pradesh	435	386	12.1	18.4	8	-10.3	0.67	-15.4	-0.9	8.9
Madhya Pradesh	249	232	6.9	50.3	37.4	-12.8	0.85	-15.2	-0.9	9.3
Assam	271	266	1.9	44.3	40.4	-3.9	1.3	-3	-0.2	114.2
Delhi	.	582	.	.	.	.	0.33	.	.	.

Notes: 1) The standardized reduction in HCR is given by the ratio of the decline in HCR and the SDE in 1983.
 2) Standardized yield is the standardized reduction in HCR divided by the (log) growth in consumption.

Table 7.3: Pro-Poor growth in India, Urban India, 1983-1999-00

State	Mean Consumption			Headcount ratio		Decline in HCR	SDE in 1983	Standardized		Pro-poor index
	1999-00	1983	(Log) Growth	1983	1999-00			reduction in HCR	Standardized Yield	
Himachal Pradesh	750	526	35.4	22.2	3.1	-19.1	0.42	-45.9	-2.8	-9.9
Tamilnadu	606	401	41.2	48.5	22.8	-25.7	0.73	-35.3	-2.1	-7.9
Kerala	549	431	24.2	42.4	20	-22.4	0.64	-34.8	-2.1	-7.8
Punjab	587	456	25.4	24.4	5.4	-19	0.56	-33.9	-2.1	-7.5
Andhra Pradesh	471	353	28.8	51.2	27.4	-23.7	0.73	-32.7	-2	-7.2
Karnataka	539	414	26.4	44.2	25.1	-19.1	0.71	-27	-1.6	-5.2
Delhi	770	532	36.9	27	9.2	-17.8	0.67	-26.6	-1.6	-5.1
Jammu & Kashmir	591	366	47.8	37.3	3.2	-34	1.3	-26.3	-1.6	-4.9
Rajasthan	480	412	15.2	37.2	19.5	-17.7	0.78	-22.8	-1.4	-3.1
Gujarat	559	407	31.6	37.3	15	-22.3	1.08	-20.6	-1.2	-1.7
Madhya Pradesh	457	369	21.2	54.3	38.5	-15.8	0.81	-19.5	-1.2	-0.9
Haryana	560	479	15.6	27.4	10.1	-17.3	0.92	-18.8	-1.1	-0.3
India	528	419	23.1	38.7	24.6	-14	0.76	-18.4	-1.1	0
Uttar Pradesh	429	342	22.6	45.3	31.1	-14.2	0.82	-17.4	-1.1	1
Assam	502	376	28.9	16.4	7.7	-8.6	0.88	-9.9	-0.6	14.4
West Bengal	524	465	11.9	21.3	15	-6.2	0.75	-8.3	-0.5	20.2
Bihar	378	342	10.1	38	34.2	-3.8	0.76	-5.1	-0.3	43.4
Orissa	390	402	-3.1	41.2	43.5	2.3	0.91	2.5	0.2	138.4
Maharashtra	593	602	-1.6	26.3	27.1	0.9	0.6	1.4	0.1	230.7

Notes: 1) The standardized reduction in HCR is given by the ratio of the decline in HCR and the SDE in 1983.

2) Standardized yield is the standardized reduction in HCR divided by the (log) growth in consumption.

Table 7.4: Poverty Reduction, Actual and Forecast, All India, 1983-1999-00

State	Share, bottom 40%		(Log) Growth in share	Growth in average Consumption	Growth in Consumption (bottom 40%)	SDE in 1983	Poverty reduction	
	1999-00	1983					Predicted	Actual
Tamilnadu	21.6	19.6	9.6	34.6	44.2	0.77	-34	-31.1
West Bengal	24.8	21.6	14	22.7	36.7	0.77	-28.4	-26.2
Kerala	22.2	20.7	7.1	31.5	38.6	0.84	-32.4	-28.3
Rajasthan	26	19.9	26.7	4.9	31.6	0.74	-23.5	-20.1
Delhi	18.5	18.8	-1.5	35.3	33.8	0.66	-22.1	-17.1
Jammu & Kashmir	23.6	26.1	-9.7	39.6	29.9	1.07	-31.9	-26.6
Karnataka	23.8	20.9	12.7	17.9	30.6	0.77	-23.5	-19.1
Bihar	26.3	23.6	10.8	17.8	28.6	0.79	-22.6	-18.9
India	24.1	22.1	8.8	19	27.8	0.81	-22.5	-18.4
Punjab	23.9	21.9	8.7	12.5	21.2	0.5	-10.6	-10.8
Orissa	24.4	23.1	5.3	20.3	25.5	0.83	-21.1	-17.7
Andhra Pradesh	24.4	22	10.2	14.7	24.9	0.79	-19.5	-16.7
Gujarat	24.4	23.9	2.2	22.4	24.6	0.92	-22.6	-18.3
Maharashtra	22.2	21.5	3.1	12	15.2	0.78	-11.8	-14.9
Uttar Pradesh	24.1	22.4	7.4	14.9	22.3	0.85	-18.9	-15.7
Haryana	23.8	23	3.3	17.5	20.8	0.85	-17.6	-14.6
Himachal Pradesh	24.9	23.4	6.1	15.3	21.4	0.65	-14	-11
Madhya Pradesh	24.2	22.4	8	9.8	17.8	0.84	-15	-13.4
Assam	26.5	27.4	-3.4	7.3	3.9	1.26	-4.9	-4.8

Notes: 1) The predicted decline in HCR is given by the product of the growth in consumption of the bottom 40 percent and SDE in 1983.

Table 7.5: Poverty Reduction, Actual and Forecast, Rural India, 1983-1999-00

State	Share, bottom 40%		(Log) Growth in share	Growth in	Growth in	SDE in 1983	Poverty reduction	
	1999-00	1983		average Consumption	Consumption (bottom 40%)		Predicted	Actual
Tamilnadu	23.2	19.5	17.4	30.1	47.4	0.79	-37.4	-34.1
West Bengal	26.1	22	17.3	26.2	43.5	0.78	-34	-32.8
Kerala	22.9	21.3	7.1	37	44.1	0.88	-38.8	-30.7
Rajasthan	26.8	19.7	30.6	1.6	32.2	0.74	-23.7	-20.9
Maharashtra	24	22.6	6.1	22.1	28.3	0.87	-24.5	-22.9
Bihar	27.1	23.9	12.7	18.6	31.2	0.8	-24.8	-20.9
Orissa	24.8	23.2	6.6	22.8	29.4	0.82	-24	-20
Jammu & Kashmir	23	26.2	-12.9	42.3	29.4	1.01	-29.7	-24.8
Karnataka	25.2	21.5	15.7	13.2	28.9	0.79	-22.9	-19.1
India	25.3	22.5	11.8	16.6	28.3	0.82	-23.3	-19.6
Andhra Pradesh	25.7	22.3	14.1	9	23.1	0.8	-18.5	-16.2
Gujarat	25.3	24.2	4.5	17.8	22.3	0.85	-19	-16.9
Uttar Pradesh	25	22.6	10	11.9	21.9	0.85	-18.7	-16
Haryana	24.4	23	6.1	17.5	23.6	0.83	-19.5	-14
Punjab	24.6	22.6	8.2	6.7	14.9	0.48	-7.2	-7.9
Himachal Pradesh	25.2	23.8	5.6	12.1	17.7	0.67	-11.9	-10.3
Madhya Pradesh	25.1	22.4	11.6	6.9	18.5	0.85	-15.7	-12.8
Assam	27.1	27.7	-2.2	1.9	-0.3	1.3	0.4	-3.9
Delhi	.	.	.	.	.	0.33	.	.

Table 7.6: Poverty Reduction, Actual and Forecast, Urban India, 1983-1999-00

State	Share, bottom 40%		(Log) Growth in share	Growth in	Growth in	SDE in 1983	Poverty reduction	
	1999-00	1983		average Consumption	Consumption (bottom 40%)		Predicted	Actual
Himachal Pradesh	21.6	17.3	22.4	35.4	57.8	0.42	-24.1	-19.1
Tamilnadu	18.6	19.8	-6.3	41.2	34.9	0.73	-25.5	-25.7
Kerala	20.3	17.7	13.5	24.2	37.7	0.64	-24.3	-22.4
Punjab	22.4	19.8	12.5	25.4	37.9	0.56	-21.2	-19
Andhra Pradesh	21.1	20.9	1	28.8	29.8	0.73	-21.7	-23.7
Karnataka	20.3	19.5	3.8	26.4	30.2	0.71	-21.3	-19.1
Delhi	18.5	18.8	-1.5	36.9	35.4	0.67	-23.7	-17.8
Jammu & Kashmir	26	25.4	2.6	47.8	50.3	1.3	-65.2	-34
Rajasthan	23	20.5	11.6	15.2	26.8	0.78	-20.8	-17.7
Gujarat	22.5	23.1	-2.6	31.6	29	1.08	-31.4	-22.3
Madhya Pradesh	21.2	22.4	-5.7	21.2	15.5	0.81	-12.6	-15.8
Haryana	22	.	.	15.6	.	0.92	.	-17.3
India	20.6	20.6	-0.1	23.1	22.9	0.76	-17.4	-14
Uttar Pradesh	20.6	21.3	-3.5	22.6	19.1	0.82	-15.6	-14.2
Assam	20.9	24.1	-14.1	28.9	14.8	0.88	-13	-8.6
West Bengal	20	20.3	-1.3	11.9	10.6	0.75	-7.9	-6.2
Bihar	21.1	21.8	-3.3	10.1	6.8	0.76	-5.2	-3.8
Orissa	22.2	22.4	-0.8	-3.1	-3.8	0.91	3.5	2.3
Maharashtra	19.2	19.2	-0.1	-1.6	-1.7	0.6	1	0.9

Table 7.7 ranks the different states according to their poverty reduction performance when the observed growth rate is that according to state GDP data. Several anomalies in the results are corrected with this adjustment. Jammu and Kashmir no longer emerges as one of the best states (as indicated by NSS survey data). Instead, it is the second worst performer, just ahead of Assam. The incredible figure for Maharashtra is also corrected – it is not the worst performer in urban areas, but the fifth best.

The best performing state is not Kerala (as popularly assumed) but Tamilnadu – and it is the best performer according to both survey and SDP data. The head count ratio in 1983 was 49 percent in Tamil Nadu – today it is close to 20 percent. One “surprise” and consistent (across both SDP and survey data) performer is the BIMARU state of Rajasthan.

Table 7.7: Ranks of Pro-Poor Performance

State	NA – all	Survey - All	NA-rural	Survey-rural	NA- urban	Survey – urban
Tamilnadu	1	1	1	2	4	4
Karnataka	2	7	2	8	3	8
Maharashtra	3	12	4	5	5	19
Kerala	4	2	6	1	2	6
Rajasthan	5	6	3	6	10	11
Andhra Pradesh	6	8	5	7	9	7
Delhi	7	4	.	.	6	3
West Bengal	8	5	7	3	12	16
India	9	10	8	9	11	13
Himachal Pradesh	10	17	9	15	1	1
Haryana	11	11	10	11	7	9
Punjab	12	13	11	16	8	5
Gujarat	13	9	12	10	13	10
Madhya Pradesh	14	18	13	17	14	12
Uttar Pradesh	15	16	14	14	15	14
Orissa	16	15	15	13	16	18
Bihar	17	14	16	12	19	17
Jammu & Kashmir	18	3	18	4	17	2
Assam	19	19	17	18	18	15

Notes: See text for derivation of ranks

Chapter 8: In lieu of a conclusion – economic reforms and poverty reduction

Major economic reforms were introduced in India in the early nineties, 1991 to 93. Considerable interest, worldwide, is in the poverty “content” of the reforms – did the reforms accelerate growth? Did these reforms accelerate poverty reduction? Did the reforms primarily help the rich? The NSS surveys have been followed keenly for clues to whether economic reforms were “pro-poor” – not just for domestic consumption, but for use worldwide in economic forums and, in particular, for use by international agencies like the World Bank. India provided a perfect laboratory experiment – a large economy, with economic reforms and with continuous sample surveys.

To be sure, the experience of China was also present for all to see. China had experienced large scale growth (about 7 to 8 percent per capita per annum) for two decades, and a large increase in inequality. Despite this increase, poverty had been substantially reduced, and virtually eliminated. But China did this within the context of a closed political system, a regimented political environment. China could not be a “lesson” for others to follow in their poverty reduction strategy. India could provide clues to whether a market system for both politics and goods could deliver poverty reduction.

Throughout this text, various results have been computed for the two time-periods, 1983-1993-94 and 1993-94 to 1999-00. The end points are given by the large sample NSS surveys, and the middle year has been accepted by most as the “benchmark” year of economic reforms. The easy “laboratory” calculation is to look at what happened to the change in the first 10.5 pre-reform years and the subsequent post-reform six years. Unfortunately for academics (and policy makers) the data for 1999-2000 became tainted by the mix-up with the 7/30 day questions. As emphasized throughout this report, the potential consequences of this mix-up were far, far less than the damage caused to the analysis, and interpretation, of events by the precipitous decline in the survey to national accounts ratio. This ratio declined by about 1.6 percent a year compared to a much lower rate of decline in the pre-reform period.³⁴ However, because of the bias towards

³⁴ Sen(2000) suggests that this ratio stayed steady post 1993-94 for the 1980-81 base consumption series. This interpretation is correct till 1997; for every year thereafter, the declining story holds. Since the 1980-81 series data is not published post 1997, the rate of growth according to the 1993-94 series is grafted onto the 1997 1980-81 data (a common linking procedure). The results: S/NA ratio, 1980-81 base, was 74.8 percent in 1983, 79.7 percent in 1993-94, and 79.7, 69.7, 66.7 for the years following 1996-97. Indeed, the decline post 1993-94 in the S/NA ratio is greater for the 1980-81 series than for the 1993-94 national accounts series!

believing that surveys contain fewer errors, the profession has proceeded to relatively ignore the survey capture problem. The genuine bias for poverty calculations may not be as high as 10 percent, but even if it is half that magnitude, the error caused by ignoring this phenomenon for poverty calculations would be more than twice as high as the upper bound to the error caused by the 7/30 day mix-up.

Datt-Ravallion(2002) rightly emphasize the importance of the Indian experience “What happens to poverty in India is quantitatively important to the world’s overall progress in fighting absolute poverty” (p.89). There are three possible conclusions about the effect of economic reforms on poverty. There is first the outlier Sen conclusion, that poverty reduction has stopped and that poverty may indeed have risen in the nineties. The statistical base of this conclusion is fragile, and as the discussion below shows, the conclusion is unlikely to be even close to the truth. There is the Datt-Ravallion and Deaton-Dreze conclusion that the economic reforms, and the extra growth the reforms brought about (at least for the period 1993 to 1999 compared to 1983 to 1993) did not make any material difference to poverty reduction. “Our own estimates and our review of alternative estimates in the recent literature lead us to the conclusion that India has probably maintained its 1980s rate of poverty reduction in the 1990s. Our results suggest that the incidence of poverty has been falling at a little less than one percentage point per year over the main post-reform period” (Datt-Ravallion, p.106). Deaton-Dreze concur: “poverty decline in the 1990s proceeded more or less in line with earlier trends” (p.3729). The authors somewhat surprisingly add that their “poverty estimates are broadly consistent with independent evidence on per capita expenditure, state domestic product and real agricultural wages” (p.3729).

The third possible conclusion – that the period of economic reforms was coincident with accelerated poverty decline – is reached by Bhalla(2000d) and Sundaram-Tendulkar(2003b) who state: “Both at an all-India level and in a sizeable majority of states, the pace of decline (normalized for the time-interval and initial values) in poverty is seen to be faster during the 1990s relative to the 1980s on all the four indicators (of poverty)” (p.4872).

This chapter compares economic performance, variously defined, for the two periods. Three separate tables present data on the various indicators – mean consumption,

mean food consumption, wages of farm workers, inequality indices, head-count ratios etc. Excluding the head-count ratio, all changes are annualized log changes; for the head-count ratio, the data are presented in terms of percentage points i.e. the first difference in the head-count ratio. All the data are from NSS surveys; the income data (incomplete because of the exclusion of self-employment income) are from the NSS employment and unemployment survey. Two price deflators are used – inflation as contained in the official poverty line, and inflation as calculated by Deaton.

There is some question about whether the first pre-reform period should be between the survey years 1987-93 rather than 1983-1993. There is no easy way to settle this question. However, to the extent one is using NSS survey data, it should be noted that these surveys show barely any growth in mean consumption between 1987 and 1993 – only 1 percent, in total, according to the official price deflators (but 6 percent according to the Deaton deflators). Thus, performance comparisons with reference to the base year 1983 makes the pre-reform period “better”.

There is one set of statistics that deserve special mention, especially if concern is with poverty performance. Absolute poverty was originally defined primarily in terms of food consumption. In the mid-sixties, the share of food in a poor person’s basket was close to 80 percent, if not higher. In 1983, this share had declined to 75 percent, and in 1993-94, to 72 percent. Over the next six years, this ratio “collapsed” to 65 percent. The importance of this drop is recognized by noting that the average share of food consumption of the poor in 1999-2000 was equal to the average share in the population just 10 years earlier.

Also of some relevance is the change in the absolute value of food consumption³⁵ between 1993 and 1999 – only 4 percent increase over 6 years. According to inflation as indicated by the poverty line, the increase in real food consumption was close to zero. Non-food consumption, on the other hand, increased at an annual rate of 2.8 percent per annum. This very low growth in food consumption is strongly indicative of under-estimation of food consumption. And **if** the NSS data are accurate, then the data

³⁵ Using survey unit value data, food price indices were constructed with the “base” year as 1983 i.e. 1983 expenditure weights were used.

suggest that poverty has declined to a very large extent, for food expenditure shows such a low income elasticity at very high levels of consumption.

Table 8.1 presents data on different measures of growth in consumption and income. The national accounts data shows a marked acceleration in per capita growth – 1.3 percent per annum for consumption, and 1.7 percent per annum for income. The absolute levels are also high – 4 percent for consumption and 4.7 percent for income. Given these “headline” statistics, it is to be expected that poverty reduction should be higher in the reform period. Indeed, if not higher, and even if the same, then the growth process in the post-reform period would certainly be disturbing. Given these headline statistics, and given a shape of distribution elasticity of 0.8 in 1993-1994 (see previous Chapter), the expectation would be that poverty should have declined by about 3 percentage points per annum, or about 18 percent over the six years 1993/94-1999/00. Or given a poverty level of 36 percent in 1993/94, a poverty level of about 18 percent should have been observed in 1999-00.

The “should” involves several assumptions. First, that inequality did not significantly worsen, which we shall soon see, was indeed the reality. Second, that the growth rate reported in the surveys was approximately the same as that reported in the national accounts. The survey growth rate is less than half that of the national accounts – 1.7 percent per annum compared to 4 percent per annum. But despite a decline in the S/NA ratio, the survey growth rate is almost twice that observed in the pre-reform era – 0.9 percent per annum.

So if average growth is the criterion of performance, there is no question but that the reform period was better, and better by a very large margin. Note that this conclusion is based on the unadjusted mean consumption data for 1999/00 i.e. consumption data “uncorrected” for the 7/30 day problem. This problem affected food consumption, and even if food consumption is biased upward due to the error, its magnitude cannot be large and is unlikely to exceed a few percentage points. And if this upward bias is accepted, then it would lead to the uncomfortable conclusion that real food consumption may have declined in real terms between 1993 and 1999, and this at a time when the income-elastic non-food consumption, even for the poor, was increasing at a 2 to 3 percent annual rate. The net conclusion is that there is a minimal error in interpretation

caused by the assumption that the 7/30 day problem led to a zero bias in the mean consumption estimate, *ceteris paribus*. And that one can safely proceed with the use of the 1999-00 end year official estimate of mean consumption (and associated variables like poverty and inequality).

Table 8.1 also reports on wages of casual workers in rural areas, as well as growth in mean wages. The latter also shows a marked acceleration from 2.3 percent in pre-reform era to 3.9 percent in the post-reform era. These numbers are close to the national account estimate of GDP growth, suggesting that the NSS EUS survey data supports the conclusion that the NSS consumer expenditure surveys have vastly been understating aggregate growth in the nineties. Wage data for rural casual workers does yield a deceleration in the post-reform era – a growth rate of 2.2 percent compared to an earlier growth of 3 percent. But even this wage growth, for the poorest, is about a third higher than that yielded by consumption data (1.7 percent per annum).

The table also reports the increase in real consumption for the poor and non-poor in the population, with the grouping decided according to the poverty levels prevailing in 1983. In particular, the poor are defined as the bottom 45 percent of the population, and this magnitude is kept constant for all the survey years. In effect, therefore, the comparison is for a fixed (rather than ever changing) count of the poor. This computation suggests that throughout the eighties and the nineties, the poor had a higher rate of growth in real consumption than the non-poor; during 1983-93 real consumption of the poor grew at 1.4 percent compared to a growth rate of 0.8 percent for the non-poor. In the reform period, the gap grew larger – 2 percent annual growth for the poor, compared to only 0.9 percent for the non-poor. The reform period also yields a faster aggregate growth – 2 percent per annum compared to 1.4 percent in the earlier period.

These data are consistent with a decrease in inequality and an increase in poverty reduction in the era of economic reforms. Table 8.2 documents the various statistics on inequality. The official figures for Gini, variance of logs, and the share of consumption for the bottom 40 percent – all suggest a better performance in period II. Given this

Table 8.1: Wages, Consumption and Income; Pre and post economic reform

	Level			Annual changes(logs)	
	1983	1993	1999	1983-93	1993-99
National accounts					
Consumption	177	547	1063	11.3	11.1
Consumption, real	419	547	697	2.7	4.0
Income	249	797	1612	11.6	11.7
Income, real	590	797	1057	3.0	4.7
Survey, All India					
Consumption	123	325	579	9.3	9.6
Consumption, real	296	325	369	0.9	2.1
Income	223	310	402	3.1	4.3
Consumption, poor (real)	155	179	202	1.4	2.0
Consumption, non-poor (real)	412	445	490	0.7	1.6
Survey, Rural India					
Consumption	113	281	486	8.7	9.1
Income	176	235	286	2.7	3.3
Consumption, poor (real)	147	171	193	1.5	2.0
Consumption, non-poor (real)	357	379	405	0.6	1.1
Survey, Urban India					
Consumption	164	458	855	9.8	10.4
Income	384	541	748	3.3	5.4
Consumption, poor (real)	207	223	255	0.7	2.2
Consumption, non-poor (real)	561	602	689	0.7	2.2
Survey, mean wages					
Wages, casual workers (rural)	384	528	604	3.0	2.2
Wages, all workers	801	1015	1286	2.3	3.9

Notes 1: Real survey data is obtained by deflating by the poverty line indexed to a 100 in 1993; for national accounts data, GDP deflator is used.

unanimity of data, the case for a “pervasive increase in inequality” in India is severely weakened.³⁶

The trend in official inequality data for rural, urban and all India is documented in Figures 8.1-8.3. Each graph contains two trend lines – one fitted line for all the survey years post 1980³⁷ and the second line for just the large sample surveys. Three results follow. First, a decline in rural inequality of more than 10 percent since 1983 is unambiguous. Second, an increase in urban inequality is also unambiguous. Third, a flat to declining aggregate trend in inequality is unambiguous. The graph also shows the outlier (and erroneous) Ravallion 1997 estimate which gives him the wrong result of an increase in inequality. These results are robust, as they are based on data for a twenty year period and not dependent on one data point.

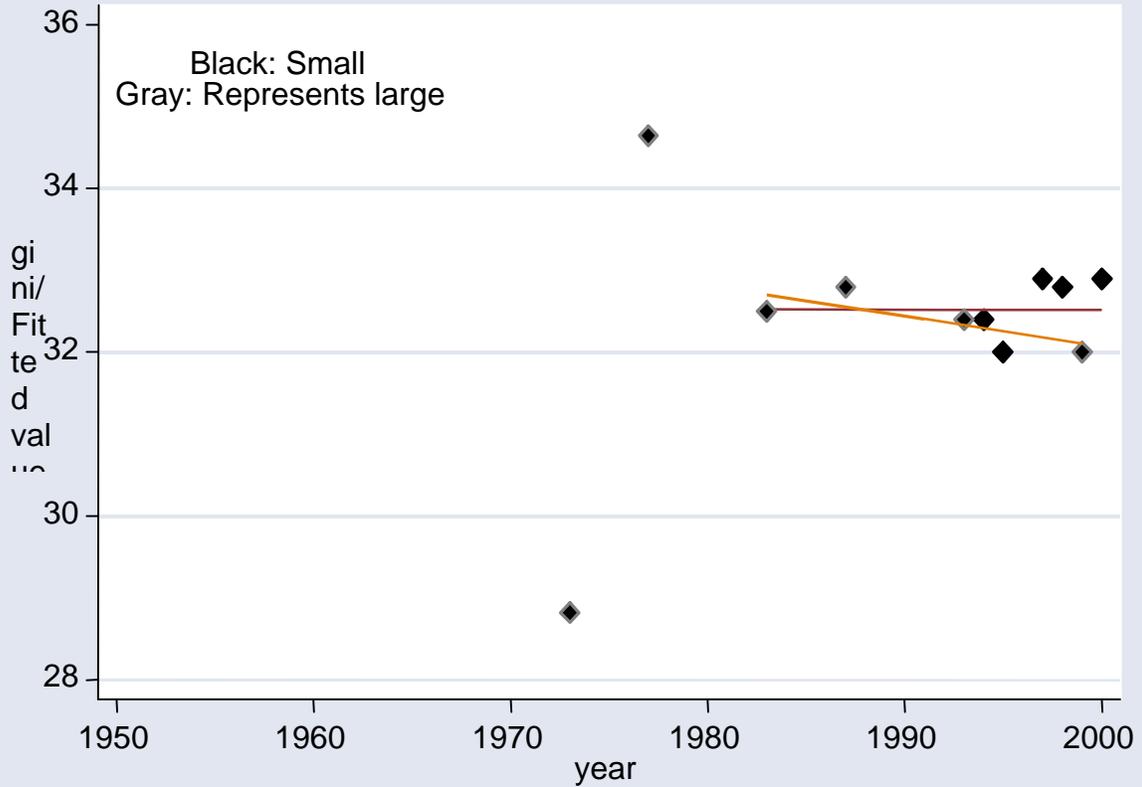
The table also reports the synthetic inequality estimate of Deaton-Dreze – a level of inequality (variance of logs) of 0.32 in 1999-00. This estimate is 14 percent higher than the unadjusted official estimate of 0.28. The authors compare this synthetic estimate with the unadjusted estimate and conclude that inequality increased in India in the nineties. Given the large set of measurement error problems associated with the NSS data, it may well be the case that inequality increased in India. But the Deaton-Dreze evidence is not convincing. For the simple reason that their method is inconsistent – the authors compare an *unadjusted* inequality estimate for 1993-94 (0.29) with an *adjusted* inequality estimate for 1999-00. The correct method is to construct inequality a la Deaton-Dreze for the other years as well, and then observe if there is a trend increase. If this computation is undertaken³⁸, there is a very small increase in inequality 1987 to 1993 and an even smaller increase in the subsequent six years. Inequality increases from 0.30 to 0.31 in 1993-94 to the Deaton-Dreze estimate of 0.32 in 1999-2000.

³⁶ NSS data on wages (rate of growth in income of casual workers being below the average growth rate) remains the only variable suggesting an increase in inequality.

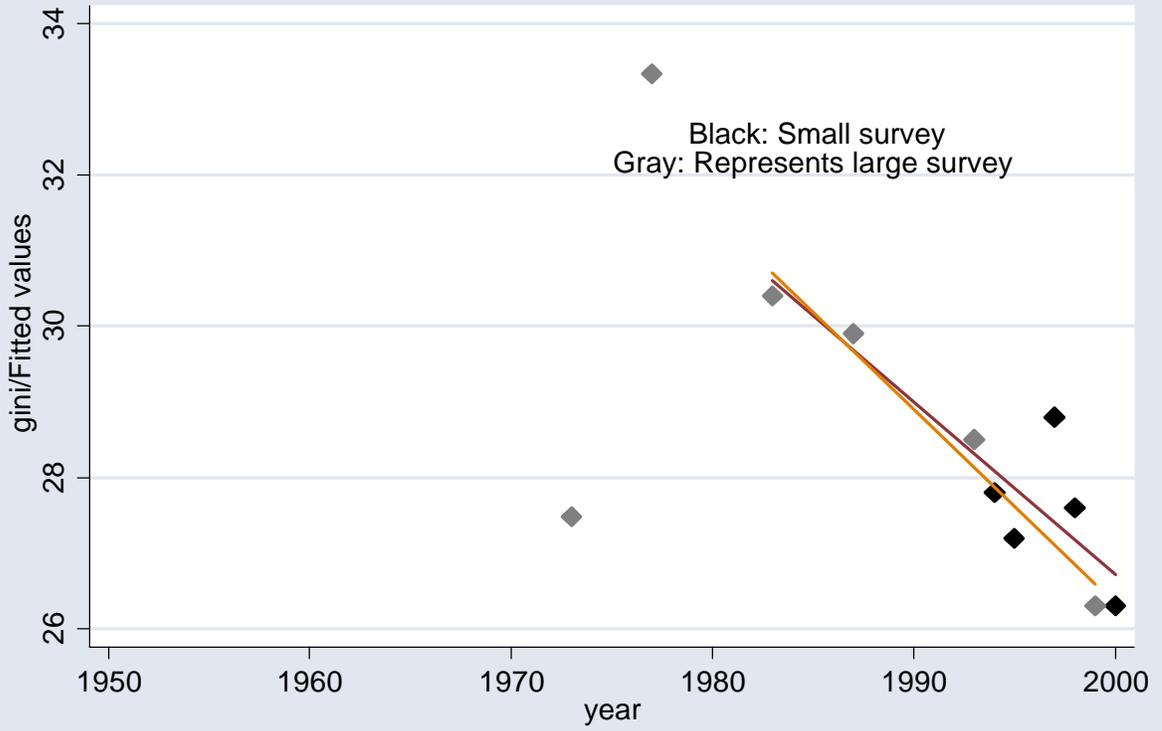
³⁷ The data for the 1970s are excluded from the trend estimation but are reported in the charts. Note the large increase in inequality from 1973-74 to 1978-79, observed for both rural and urban areas. For every year subsequent to 1978-79, aggregate inequality in India has been substantially (10 percent) lower than this outlier level.

³⁸ The method strictly follows the approach of the authors i.e. 1983 distribution is taken to yield an estimate for 1987-88, and the 1987-88 unadjusted distribution is used to generate the synthetic inequality estimate for 1999-00.

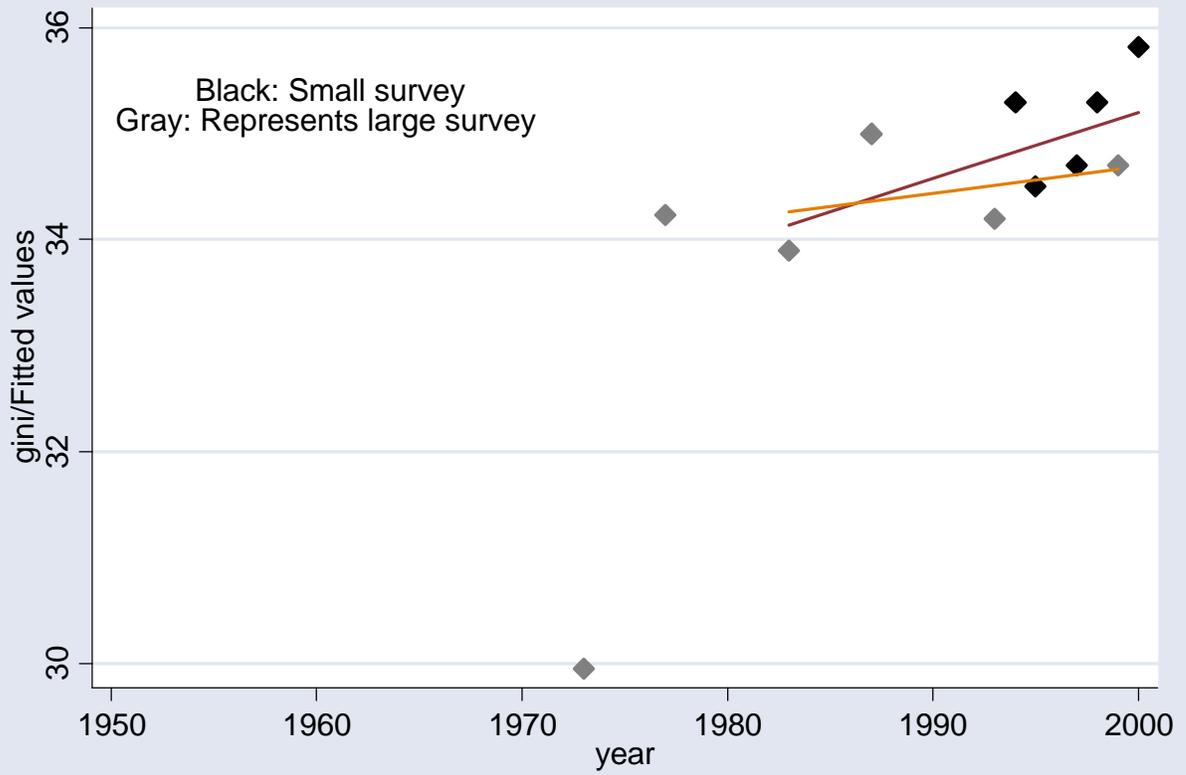
Fig. 8.1: Trend in inequality (Gini), All India



Trend in GINI, Rural India



Trend in GINI, Urban India



Note, however, that the synthetic estimate of inequality is always larger than the official estimate. The prior years NSS data did not suffer from any contamination and therefore the synthetic and the actual inequality estimates should be near equal. The fact that they are not is due to the measurement error inherent in the synthetic estimate – and this error happens to have an upward bias in 1993, and a downward bias in 1987. So whether inequality actually increased in the reform period is far from proven by Deaton-Dreze.

There is a synthetic estimate of inequality that incorporates nearly all of the objections raised with respect to the NSS data. These data have two major deficiencies: the average expenditure is understated, and all the rich expenditures are most likely not captured. Which means that official inequality is likely lower than “true” inequality. How much lower is indicated by the row “adjusted Gini” i.e. the Gini that results from allocating missing expenditures (NA minus survey) for each item to each household in the proportion of actual survey consumption. So if only the rich consume durables, the adjusted data would allocate the missing expenditures to only the rich. This estimate of inequality does not suffer from the drawback of the 7/30 day problem, or other nuances associated with the 1999-00 data. All the method requires is that *relative* proportions of expenditure (between rich and poor) are accurate; the method does not require that the proportion of aggregate understatement be the same for all households. Indeed, the understatement proportion is *derived* from the data. The adjusted Gini for each year is about 10 percent higher, and the trend in the adjusted inequality is towards lower inequality – i.e. exactly the opposite conclusion to that reached by Banerjee-Picketty, Ravallion, Datt-Ravallion and Deaton-Dreze. Both the adjusted and unadjusted Gini’s reveal the same trend – towards less inequality in the era of reforms. Given the near identical nature of the trend for both official and adjusted inequality, the conclusion that the 1999-00 inequality estimates were relatively unaffected by the 7/30 day problem is inescapable.

If growth was higher in the reform period, and inequality stayed at least the same, then it *has* to be the case that poverty was reduced at a faster pace during the reform period. Table 8.3 documents that this is indeed the case – and is independent of the method, or the price index used (official or Deaton). The differences in magnitude are not minor – for the official data, poverty declined at twice the rate in the reform period – 3.9

Table 8.2: Inequality; Pre and post economic reform

	Level				Annual changes(logs)	
	1983	1987	1993	1999	1983-93	1993-99
All india						
Gini	32.5		32.5	32	0.00	-0.26
Variance of logs	0.32	0.31	0.29	0.28	-0.94	-0.58
Share of bottom 40%	20.9		21.1	21.5	0.09	0.31
<i>Synthetic estimates</i>						
Gini	35.1		35.2	33.6	0.03	-0.78
Variance of logs		0.3	0.31	0.32	0.55	0.53
Rural India						
Gini	30.4		28.6	26.3	-0.58	-1.40
Variance of logs	0.28	0.26	0.23	0.2	-1.87	-2.33
Share of bottom 40%	22		23.1	24.1	0.46	0.71
<i>Synthetic estimates</i>						
Gini	32.9		31.1	28.4	-0.54	-1.51
Variance of logs		0.26	0.25	0.24	-0.65	-0.68
Urban India						
Gini	33.9		34.4	34.7	0.14	0.14
Variance of logs	0.34	0.35	0.34	0.33	0.00	-0.50
Share of bottom 40%	20.2		19.9	19.6	-0.14	-0.25
<i>Synthetic estimates</i>						
Gini	35.9		36.8	36	0.24	-0.37
Variance of logs		0.33	0.37	0.36	1.91	-0.46

Note: 1) the synthetic estimates are obtained with reference to the previous survey year; hence, estimates are not available for 1983; see text.

percentage points a year vs. 1.9 percentage points in the pre-reform data. For the Deaton price data, the reform period is still better – a decline of 1.7 points per year vs. 1.3 percentage points a year decline, 1983 to 1993. The Deaton-Dreze method³⁹ also yields a better performance in the nineties - a 1.3 percentage point decline 1993 to 1999, compared to a 0.8 percentage point decline 1987 to 1993.

The statistics are striking – there is *no* official statistic for which the performance during the earlier period was higher, or better, than the post-reform years. Growth, inequality and poverty – all three indicators accelerated in the era of reforms. The Deaton-Dreze adjustments to the 1999-00 data do not change the conclusion; nor, as shown by Sundaram-Tendulkar, does the conclusion change if reference periods are kept consistent at 30 or 365 goods for various goods and services and kept the same for all the years, 1983 to 1999. Among conclusions on as emotive a subject as poverty and inequality, such firm conclusions are rare.

³⁹ The Deaton-Dreze method is used to forecast poverty in 1987-88 based on 1983 data, and the 1987-88 data are used to forecast poverty for 1993-94. The authors only present estimates for 1999-00 based on 1993-94 data and its distribution.

Table 8.3: Poverty – pre and post economic reform

	Level				Annualized change	
	1983	1987	1993	1999	1983-93	1993-99
All India						
Headcount ratio	44.7		36.8	29.2	-0.8	-1.3
SDE	0.80		0.84	0.80		
Headcount ratio adjusted for SDE	55.9		46.0	34.8	-0.9	-1.9
HCR, forecast, Deaton method		32.0	28.6	21.0	-0.6	-1.3
Rural India						
Headcount ratio	45.8		37.2	30.4	-0.8	-1.1
SDE	0.92		0.94	0.81		
Headcount ratio adjusted for SDE	49.8		40.4	32.3	-0.9	-1.3
HCR, forecast, Deaton method		35.0	31.7	23.9	-0.6	-1.3
Urban India						
Headcount ratio	38.9		33.7	24.5	-0.5	-1.5
SDE	0.76		0.67	0.61		
Headcount ratio adjusted for SDE	51.2		44.3	36.6	-0.7	-1.3
HCR, forecast, Deaton method		21.7	17.6	12.2	-0.7	-0.9

Notes:

- 1) The Deaton method uses data for a prior year for forecasts; hence, forecast for 1983 is not available; see Deaton(2002a).
- 2) The standardized yield is given by the ratio of the decline in poverty and the SDE in the initial period.

Annex I

Special Topics on data issues

Problems with NSS (1999-2000) consumption data

There is one aspect of the 1999-2000 consumption survey that has created a considerable amount of debate and discussion. For this year, the survey authorities posed the *same* food expenditure questions to the *same* households, asking them to recall their estimates for both a 7 and a 30 day reference period. (In previous years, NSS surveys had only used a 30 day recall period for food, though in the thin samples, 1994 to 1998, the survey authorities had sampled separate households according to the 7 and 30 day recall period). Thus, the possibility exists that the total 30 day recall based food expenditure results for 1999-2000 could have been influenced by the expenditure reported for the 7 day reporting period; and that the “bias” was likely to be upwards since typically a lower recall period for food results in higher reported mean expenditures. Since food is a large proportion of expenditures, there is therefore the theoretical possibility that estimates of the “contaminated” 30 day recall period for 1999 cannot be used for inferring trends from the earlier years.

However, as argued Bhalla(2002a), while some bias is admittedly present in the 1999-2000 survey due to its use of mixed reference period, the magnitude of this bias is likely to be small, especially in comparison to other mis-measurement caused by use of survey data. This other mis-measurement or bias is underlined by the growing divergence between the survey (NSS) and national accounts (NA) based estimates of mean per capita consumption. Today, the NSS surveys are capturing about 20 to 30 percent *less* of aggregate consumption as revealed by the NA, than they did just fifteen years ago.

The magnitude of error with the 7/30 day problem is considerably less. The mean food estimate for the 7 day period was Rs. 343 per capita per month in 1999-2000; for the 30 day recall period, the corresponding estimate was Rs. 323 – i.e. six percent lower. If the 30 day period recall is taken as the “true” estimate, this would imply that surveyed consumption of all items is only 12.4 percent higher in real terms in 1999-2000, than it

was six years earlier, in 1993-94. However, the national accounts estimate of growth in mean consumption over the same period is 30 percent, i.e. two and a half times the equivalent survey estimate. It is reasonable to argue, therefore, that the error in the 30 day recall period is unlikely to be more than a few percentage points, and considerably smaller than the 16 percentage points “error” in the poverty estimate when national accounts are used instead of surveys. Thus, efforts by authors (e.g. Deaton-Dreze, Sundaram-Tenndulkar) to come up with adjusted food estimates for 1999-2000 may generate greater errors than the error already present – and especially so if the 20 to 30 percent decline in the survey capture ratio is *not* accounted for.

Trends in the Survey Capture Ratio, S/NA

How accurate are the survey estimates of mean consumption expenditure? Since changes in mean expenditure have a very large impact on one’s assessment of changes in consumption and therefore poverty, it is important first of all to set out the correct methodology for assessing the level of, and changes in, these expenditures. Of course, distributional changes also affect poverty, but such changes have been observed to be minimal in India and to move in a direction favoring the poor. Mean changes meanwhile, are based on differences in *levels*, and *levels* may not be subject to the same systematic proportionate bias over time. In any case, the emphasis is on accuracy within a rough order of magnitude.

The degree of survey capture, defined as the ratio of survey means to national accounts means, affects the level of consumption and poverty at any point in time. Thus, if there are no trends evident in the survey capture (denoted by S/NA), then surveys can reliably be used to infer trends in the calculation of poverty. But calculations of survey capture assume that the national accounts estimate of current expenditures are known and reliable. This is not evident in India. Twice over the last fifteen years, in the “conversion” years of 1980-81 and 1993-94, the *nominal* expenditures have increased by high percentages. Though estimates of *real* expenditures are known to change because of changes in base year prices, India’s case is unusual because of the frequency and magnitude of these changes.

The problem of calculating the appropriate S/NA ratio is complicated by these adjustments of nominal consumption. The 1970-71 and 1980-81 base-year estimates of

consumption for 1970-71 are about 9 percent apart, with the 1980-81 estimate being higher. For 1993-1994, the 1980-81 base and 1993-1994 base estimates are about 15 percent apart, with the later base year estimate being higher. There are plausible explanations for this. It is likely for instance, that with development and growth, new products arrive on the market, new tastes are created, and statistical systems improve. Any of these factors might cause the later base year estimate to reveal a different composition of consumption, e.g. with some products showing less consumption than thought before, whereas other products show more. Theoretically, the mean according to both an old and new base should be unaffected. However, the reality is that the *mean* is severely affected, and in the seventies the impact of upward revisions was a 24 percent higher consumption i.e. nominal (and real) consumption in the late seventies was considered to be 24 percent higher in 1997 than was thought to be the case in 1983!

There are several ways in which this 24 percent increase can be allocated across the different years. One method would entail making no adjustments to data for the sixties, and then a gradual adjustment upwards from the 70s. However, no set of assumptions, or calculations, would support such a large upward adjustment for the 70s as was performed by the Central Statistical Organization (CSO) of the Indian national accounts authority.

Annex Table 1.1 reports *four* national accounts estimates for per capita expenditure in current rupees, covering several selected national sample survey years since the mid-fifties. The four different NAS estimates are as follows:

- (i) The NAS estimates prevailing at the time of the survey and designated as “original.” By example, the 1983 estimate is the estimate based on the 1970-71 series of national accounts and the 1993-94 estimate is the one based on the 1980-81 series. Each new national account base series was developed in the latter half of the decade e.g. the 1980-81 base series was not published until the late eighties.
- (ii) The 1993-94 base CSO estimates reported in RBI, *Handbook of Statistics in the Indian Economy*, 2001, and designated as RBI.

- (iii) The 1993-94 NAS statistics as reported by the World Bank in *World Development Indicators*, 2002 and referred to as WB.
- (iv) A “smoothed” NAS series for the 1993-94 base, with the method of smoothing outlined below.
- (v) The table also contains a *fifth* estimate of nominal expenditures (NSS), namely that yielded by the national sample survey for the selected years.

The “smoothed” estimate is based on the “Occams razor” principle of straightforward, and logical, assumptions. The key assumptions are that some new information about new expenditures or new products comes to light, and, further, that these new expenditures are not at the expense of existing expenditures, but actually compose part of increased new income. The question then is, how should the *past* estimates of consumption be adjusted?

One method of deriving estimates of new means is to assume a time-period for which the adjustment needs to be made, and then derive the “final” estimates of consumption. Using this method, assume a 15 year adjustment period. A 9 percent upwards adjustment for the 1980 base is then applied in a compounded manner from 1963 to 1978, and a 15 percent upward adjustment is applied, again in a compounded manner, for the fifteen years, 1979 to 1993.

The second part of the table contains the ratio of the new and original estimates of current per-capita expenditures, as well as the (log) percentage difference between the old and new series for the 70s (1970 to 1980) and the 80s (1981 to 1993). This table reveals the NAS series as published by the World Bank to be a lot smoother than that published by the CSO. For both time-periods, the World Bank series is upgraded by about 10 percent, specifically 11.8 percent in the 70s and 8.9 percent in the 90s. The CSO series, however, shows a 27 percent increase in the first period and a mean increase of 16 percent in the second period. The official (CSO) estimates of the ratio seem to be particularly off-base in the seventies, when nominal expenditures have been upgraded to show a 31.7 percent increase for 1977-78, as compared to only an 18.7 percent increase for 1983. In comparison, the World Bank series seems to be considerably better behaved for all the years, and does not show any “spikes”.

Annex Table 1.1: Estimates of mean consumption

Year	Population	Expenditure Per Capita Per Month (Nominal)				NSS
		National Accounts				
		Original	RBI	WB	Smoothed	
1954	392.1	17.4			17.4	17.3
1957	414.6	20.9			20.9	19.8
1960-61	434.8	29.7	31.0	26.9	29.7	23.5
1967-68	522.8	50.2	54.4	49.2	51.4	43.4
1972-73	586.2	61.1	79.7	69.1	64.4	48.3
1973-74	599.6	72.4	94.4	78.6	76.8	56.7
1977-78	642.1	82.0	108.0	93.8	89.0	73.4
1983	734.1	166.8	198.0	177.1	174.8	124.8
1987-88	798.7	233.8	271.5	251.2	254.4	181.1
1993-94	898.2	463.0	533.3	547.3	533.0	327.9
1998	979.7	970.7	970.7	1002.7	970.7	462.7
1999-00	997.5	1057.2	1057.2	1062.7	1057.2	589.9

Annex Table 1.2: Derived estimates of S/NA

Year	Ratio			S/NA (%)			
	RBI/	WB/	Smoothed/	Original	RBI	WB	Smoothed
	Original	Original	Original				
1954			100.0	99.4			99.4
1957			99.8	94.9			95.0
1960-61	104.5	90.8	100.0	79.2	75.8	87.2	79.2
1967-68	108.3	98.0	102.4	86.4	79.9	88.2	84.4
1972-73	130.5	113.1	105.4	79.1	60.6	69.9	75.0
1973-74	130.4	108.6	106.0	78.3	60.0	72.1	73.9
1977-78	131.7	114.4	108.5	89.5	68.0	78.2	82.5
1983	118.7	106.1	104.8	74.8	63.0	70.5	71.4
1987-88	116.1	107.4	108.8	77.5	66.7	72.1	71.2
1993-94	115.2	118.2	115.1	70.8	61.5	59.9	61.5
1998	100.0	103.3	100.0	47.7	47.7	46.1	47.7
1999-00	100.0	100.5	100.0	55.8	55.8	55.5	55.8

Source: RBI: from Handbook of Statistics; CSO: National Accounts data for 1993-94 base; WB: from World Development Indicators (WDI)

Notes: (1) Smoothed: is CSO series "smoothed" for base adjustments; see text.

(2) For all years, the NAS estimates are for the fiscal years. The NSS estimate is the survey based mean estimate for the corresponding year i.e. for 1983 it is the survey year Jan-Dec, for 1999-00 it is the survey year, July '99 – June '00.

Annex Table 1.3: S/NA Ratio: A Deceptively Large Fall in the 90's ?

	1973	1977	1983	1987	1993	1997	1998	1999
Mean Consumption - Rural (Rs.)	53	68.9	112.5	158.1	281.4	395	382.1	486.2
Mean Consumption - Urban (Rs.)	70.8	96.2	164	250.6	458	645.4	684.3	855
Urbanization Ratio (%)	20.7	22	23.8	24.8	26.3	27.4	27.8	28.1
Mean Consumption, Survey (Rs.)	56.7	74.9	124.8	181	327.8	463.6	466.1	589.8
Mean Consumption, NA '93 base (Rs.)	79.7	108	198	271.5	533.3	844.1	970.7	1057.2
Mean Consumption, NA '81 base (Rs.)	66.3	89.8	166.8	233.8	411.2	582	669	729
Mean Consumption, NA '70 base (Rs.)	61.1	82	153.9					
Mean Consumption, smoothed	76.8	89	174.8	254.4	533	844.1	970.7	1057.2
S/NAS Ratio, '93 base	71.1	69.4	63	66.7	61.5	54.9	48.0	55.8
S/NAS Ratio, '81 base	85.5	83.4	74.8	77.4	79.7	79.7	69.7	66.7
S/NAS Ratio, '70 base	92.8	91.4	81.1					
S/NAS Ratio, smoothed	73.8	84.2	71.4	71.2	61.5	54.9	48.0	55.8

Note: 1) The 1999 level for the 1980-81 series is derived by grafting the growth rate in nominal consumption (1993-94 base) onto the last observed value for the 1980-81 base, namely 1997-98.

The survey capture ratio yielded by these different methods can now be assessed (Annex Table 1.3). The “smoothed” NAS series yields one indicator of the trend in the S/NA ratio. Also shown in bold are the relevant ratios for the different years and the different “base prices”. By example, the relevant S/NAS ratio for the sixties is the 1970 base, for the eighties it is the 1980 base, and so forth.

The estimate based on “original” NAS data shows a consistent trend downwards, and a loss of about 10 percentage points in each decade. In the sixties this ratio was in the nineties, and accordingly NSS and NAS estimates were virtually identical.⁴⁰ In the seventies, the ratio fell into the eighties, and today, 1999-2000, the ratio is only 55 percent. All other S/NAS estimates show a similar downward trend i.e regardless of which series is chosen as being the relevant one, the table evinces a strong trend downward since the sixties, and a particularly sharp break in the nineties. In light of this, it is somewhat difficult to concur with Sen’s conclusion that: “the striking result is that *there is no evidence of any large widening of the gap between the NAS and NSS estimates of nominal consumption during the 1990s*” (Sen 2001, p19, emphasis in original).

The estimate of S/NA has a direct bearing on the estimate of poverty in 1999-2000. It is important to emphasize that the likely decline in S/NAS between 1983 and 1999 is of the order of around (log) 24 percent. This corresponds to a decline in the S/NAS from about 71 percent in 1983 (smoothed series) to about 56 percent today. In turn, this implies that for the NSS survey estimate to show no decline in the head count ratio, the consumption of the poor would have to have rise by 24 percent between 1983 to 1999. Equivalently, if the poor increased their consumption by (log) 24 percent, the NSS would in 1999 actually show that the poor did not reap any increase in their real expenditures! To further highlight the abnormality of this situation, it can be noted that log 24 percent over 16 years corresponds approximately to an increase of 1.5 percent a year – an increase recorded by very few countries over such an extended length of time.

⁴⁰ The importance of the S/NA ratio is highlighted by the fact that in the sixties, there was a debate raging over inaccuracies of survey estimates because they diverged by a *few* percentage points from the national accounts estimate. Today, survey estimates are *half* the NAS estimates and scholars like Sundaram-Tendulkar (2001), and Ravallion (2001) maintain that there are no problems with surveys!

References

Ahluwalia, Montek S. (1976), "Inequality, Poverty and Development", Journal of Development Economics

Ahluwalia, Montek S. (1977), "Rural Poverty and Agricultural Performance in India", Journal of Development Studies 22: 298-323.

Ahluwalia, Montek S., Carter, N., and Chenery, H., (1979), "Growth and Poverty in Developing Countries", Journal of Development Economics, Vol. 6, No. 3, September.

Anand, Sudhir, and Kanbur, S.M.R., (1993a), "Inequality and Development", Journal of Development Economics, Vol. 41, Pg 19-43.

Anand, Sudhir, and Kanbur, S.M.R. (1993b), The Kuznets Process and the Inequality-Development Relationship. *Journal of Development Economics* 41, no. 40: 25-52.

Anderson, Locke, W, H, (1964) "Trickling Down: The relationship between economic growth and the extent of poverty among American families", The Quarterly Journal of Economics, Vol. LXXVIII, November 1964, No. 4

Aiyar, Shekhar, "Growth Theory and Convergence Across Indian States: A Panel Study, India At The Crossroads: Sustaining growth and Reducing Poverty, ed. by Callen, Tim, Patricia Reynolds and Christopher Towe, International Monetary Fund (2001).

Altimir, Oscar. 1981. "Poverty in Latin American Countries: A Review of Concepts and Data". CEPAL Review no. 13 (April).

Atkinson, A.B. 1999. "Is Rising Income Inequality Inevitable? A Critique of the Transatlantic Consensus". World Institute for Development Economics Research publication. Tokyo: United Nations University.

Atkinson, A.B., (1999), "Is Rising Income Inequality Inevitable? A Critique of the Transatlantic Consensus", United Nations University, WIDER, November.

Atkinson, A.B., and Brandolini, A., (1999), "Promise and Pitfalls in the use of "Secondary" Data Sets: Income Inequality in OECD Countries", mimeo, Nuffield College & Banca d'Italia Research Department, July.

Banerjee, Abhijit and Thomas Piketty, (2003), "Top Indian Incomes, 1956-2000", BREAD Working Paper No. 046, September.

Bardhan, Pranab K., and Srinivasan, T.N. (ed), Poverty and Income Distribution in India, Statistical Publishing Society, 1974.

Barro, Robert J. and Jong-Wha Lee. (1993) " International Comparisons of Educational Attainment", Journal of Monetary Economics, Dec.

Barro, Robert and Jong Wha Lee. (2001). "International Data on Educational Attainment: Updates and Implications". NBER Working Paper 7911. Cambridge, MA: National Bureau of Economic Research.

Berry, Albert, François Bourguignon, and Christian Morrisson, (1981), "Changes in the World Distribution of Income between 1950 and 1977". *Economic Journal*, series 93 (June): 331-50.

Berry, Albert, François Bourguignon, and Christian Morrisson, (1983), "The Level of World Inequality: How Much Can One Say?" *Review of Income & Wealth* vol.29, no.3: 217-41.

Bhalla, Surjit S., (1980), "Measurement of Poverty - Issues and Methods", background paper for World Development World Bank.

Bhalla, Surjit S., (1988), Is Sri Lanka an Exception? A Comparative Study of Living Standards, August 1984, In TN Srinivasan and P. Bardhan (ed.), *Rural Poverty in South Asia*, Columbia University Press.

Bhalla Surjit S., (1994). "Freedom and Economic Growth : A Virtuous Cycle?", in Democracy's Victory and Crisis: Nobel Symposium 1994 ed. Axel Hadenius. Cambridge University Press. 1997.

Bhalla, Surjit S. (1997), "Growth Miracles: India is next", paper presented at the World Bank – IMF meetings, Hong Kong, Sept.

Bhalla, Surjit S. (1999), "Hayek Rediscovered: The Road to Economic Freedom", Paper presented at University of Michigan Conference on Economic Freedom, Tokyo (17 June).

Bhalla, Surjit S., (2000a), "World Bank – We have a Poverty Problem", *Economic Times*, Jan 18.

Bhalla, Surjit S. (2000b). *Trends in World Poverty: Research and Ideology*. Paper presented at the International Monetary Fund, Washington (28 June).

Bhalla, Surjit S., (2000c), "Bis-mil-muflis: In the name of the poor", *Business Standard*, Sept. 16.

Bhalla, Surjit S. (2000d), Growth and Poverty in India—Myth and Reality. In Govinda Rao ed. *Development, Poverty and Fiscal Policy: Decentralization of Institutions*, Oxford: Oxford University Press, Oct. 2002.

Bhalla, Surjit S. 2002a. *Recounting the Poor*. Paper presented at a World Bank workshop on Poverty Monitoring and Evaluation, New Delhi, January 11; *Economic and Political Weekly*, Jan 25-31, 2003, p. 338-350.

Bhalla, Surjit S., Tax Compliance in India, mimeo, Feb.

Bhalla, Surjit S. 2002c. Unintended Consequences of Monopoly Funding of Research. Photocopy (May).

- Bhalla, Surjit S (2002d), *Imagine there's no country: Poverty, Inequality and Growth in the Era of Globalization*, Institute of International Economics, Sept 2002; first draft, 2001.
- Bhalla, Surjit S (2002e), "Trade, Growth and Poverty: Re-examining the Linkages", presented at the Fourth Asia Development Forum, Seoul, Korea, Nov. 3-5.
- Bhalla, Surjit S (2002f), *Poor Results and Poorer Policy: A Comparative Analysis of Estimates of Global Inequality and Poverty*, presented at the CESifo conference on *Globalisation, Inequality and Well-Being*, Munich, Nov. 8-9.
- Bhalla, Surjit S, (2003a), *Defying the Kuznets U: Inequality, Poverty and Growth in India*, paper prepared for UN Human Development Report 2003, Jan.
- Bhalla, Surjit S. (2003b). "Raising the Standard: The War on Poverty", Initiative for Policy Dialogue, Global Poverty Workshop, Columbia University, new York, March 31-April 1, 2003
- Bhalla, Surjit S., (2003c). "Crying Wolf on Poverty: Or How the Millennium Development Goals of Poverty Reduction have already been reached", April 29; Economic and Political Weekly, vol 38, # 27, July 5.
- Bhalla, Surjit S., 2003d. "Misconceptions about pro-poor growth ", mimeo, Oct.
- Bhalla, Surjit S, Suraj Saigal and Nabhojit Basu, 2003, "Girls' Education is It – Nothing Else matters (Much)", paper prepared for World Bank , World Development Report 2003, Feb.
- Bhalla, Surjit S, and Associates, 2003, *The End of Asian Poverty?*. Report prepared for research project RETA-5917, Asian Development Bank, Manila. Photocopy (May).
- Bhalla, Surjit S., and Paul Glewwe, (1986), "Growth and Equity in Developing Countries - A Reinterpretation of the Sri Lankan Experience", World Bank Economic Review, July.
- Bhalla, Surjit S., and P. Vashishtha. 1988. Income Redistribution in India: A Re-Examination. In *Rural Poverty in South Asia*, ed. T.N. Srinivasan and P. Bardhan. New York: Columbia University Press, 1988.
- Bourguignon, François, and Christian Morrisson. (2002) "Inequality among World Citizens: 1820-1992", The American Economic Review, September 2002, World Bank, Washington.
- Callen, Tim, Patricia Reynolds and Christopher Towe(Ed) (2001), India At The Crossroads: Sustaining growth and Reducing Poverty, International Monetary Fund.
- Chen, Shaohua, and Martin Ravallion. (2000) "How Did the World's Poorest Fare in the 1990s?" Development Research Group, World Bank, Washington. Photocopy.
- Chen, Shaohua, and Martin Ravallion. (2001) "How Did the World's Poorest Fare in the 1990s?" Review of Income and Wealth, 47:283-300.
- Chen, Shaohua, Gaurav Datt, and Martin Ravallion, (1994), "Is Poverty Increasing in the Developing World". *Review of Income and Wealth* 40, no. 4 (December): 359-376.

Collier, Paul, and David Dollar. (2000) "Can the World Cut Poverty in Half? How Policy Reform and Effective Aid Can Meet International Development Goals", Development Research Group, World Bank, Washington. Photocopy (July)

Cornia, Giovanni Andrea, and Kiiski, Sampsa, (2001), "Trends in Income Distribution in the Post WWII Period: Evidence and Interpretation", Paper presented at the UNU/WIDER conference on 'Growth and Poverty' Helsinki, 25-26 May.

Datt, Gaurav, (1999), "Has Poverty Declined since Economic Reforms? Statistical Data Analysis", Special Article, Economic and Political Weekly, Dec 11.

Datt, Gaurav, and, Ravallion, Martin (1991), "Growth and Redistribution Components of Changes in Poverty": A decomposition with Application to Brazil and India in the 1980s, *Living Standards Measurement Study*, Working Paper No. 83, World Bank.

Datt, Gaurav, and, Ravallion, Martin (2002), "Is India's Economic Growth Leaving the Poor Behind?", *Journal of Economic Perspectives*, 16(3): 89-108

Datta, K, L, and, Sharma, Savita (2002), Facets of Indian Poverty, Concept Publishing Company, New Delhi

Deaton, Angus. 2001. *Counting the World's Poor: Problems and Possible Solutions*. World Bank Research Observer, volume 16, No. 2, Fall

Deaton, Angus, (2003a), "Adjusted Indian poverty estimates for 1999-2000", Economic and Political Weekly, (January 25), Vol. XXXVIII No. 4, 2003, Page 322-326.

Deaton, Angus, (2003b), "Prices and Poverty in India, 1987-2000", Economic and Political Weekly, Vol. XXXVIII No. 4, January 25, 2003, Page 362-368.

Deaton, Angus, (2003c), "Measuring poverty in a growing world (or measuring growth in a poor world)", mimeo, Princeton University, June.

Deaton, Angus, and Dreze Jean, (2002), "Poverty And Inequality in India: A Reexamination", Economic and Political Weekly, (September 7), Vol. XXXVII No. 36, 2002, Page 3729-3748.

Deaton, Angus, and A. Tarozzi, (1999), "Prices and Poverty in India" Princeton University", Princeton, NJ. Photocopy (13 December).

Deininger, Klaus, and Lyn Squire, (1988), "New ways of looking at old issues: Inequality and Growth". Journal of Development Economics, Vol. 57, Pg 259-287.

Deininger, Klaus, and Lyn Squire, (1996), "A new data set measuring income inequality", World Bank Economic Review, September.

Dollar, David, and Aart Kraay, (2000), "Growth Is Good for the Poor" World Bank, Washington. Photocopy (March).

Dollar, David, and Aart Kraay, (2001), "Trade, Growth, and Poverty" World Bank, Washington. Photocopy (March).

Dubey, A., and S. Gangopadhyay, (1998), *Counting the Poor: Where are the poor in India?* Sarvekshana Analytical Report No.1, Dept. of Statistics, Government of India, February

Eastwood, Robert, and Lipton, Michael, (2001), "Pro-Poor Growth and Pro-growth Poverty reduction", mimeo, Asia and Pacific Forum on Poverty: Reforming Policies and Institutions for Poverty Reduction, Asian Development Bank, Manila, February 5-9.

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

Fields, Gary S., (1993), "Poverty and Income Distribution Data for Measuring Poverty and Inequality Changes in the Developing Countries", Journal of Development Economics, Vol.44, Pg 87-102.

Firebaugh, Glenn, 2003, *The new geography of global income inequality*, Harvard University Press, Cambridge.

Food and Agriculture Organization, FAO, "Energy and Protein Requirements", Report of a Joint FAO/WHO/ Ad Hoc Expert Committee, 1973.

Gangopadhyay, S., and Wadhwa W., (2000), "Poverty Policy: Old Wine in an Old Bottle" in Bhalla S.S. (ed.) *New Economic Policies for a New India*, Hari Haran Press, New Delhi. Feb.2000.

Government of India (2003), National Accounts Statistics, Ministry of Statistics and Programme Implementation, http://mospi.nic.in/national_account_main.htm , accessed March 1, 2003.

Jain, S., (1975), *Size Distribution of Income: A Compilation of Data*, World Bank, Washington DC.

Kakwani, Nanak, (1980), *Income Inequality and Poverty: Methods of Estimation and Policy Applications*, World Bank, Oxford University Press.

Kakwani, Nanak, (1993), Poverty and Economics Growth with Application to Côte D' Ivoire, *Review of Income and Wealth* 39: 121-139.

Kakwani, Nanak, (1997), "On Measuring Growth and Inequality Components of Changes in Poverty with Application to Thailand", forthcoming, Journal of Quantitative Economics.

Kakwani, Nanak, and Pernia, Ernesto M., (2000), "What Is Pro-poor Growth?" *Asian Development Review* 18, no. 1: 1-16.

Kelkar, Vijay, 2002, Report of the Tax Force on Direct Taxes, Ministry of Finance, Government of India.

Klasen, Stephan, (2001), "In Search of The Holy Grail: How to Achieve Pro-Poor Growth?" mimeo, July 1, 2001.

Kulshreshtha, A.C. and A.Kar (2002), Estimates of Food Consumption Expenditure from Household surveys and National Accounts, Working paper at <http://www.worldbank.org/indiapovertyworkshop> .

Kuznets, Simon, (1955), "Economic Growth and Income Inequality", American Economic Review, Pg 1-28, March.

Kuznets, Simon, (1963), "Quantitative Aspects of the Economic Growth of Nations: VIII, Distribution of Income by Size", Economic Development and Cultural Change, Part 2, Pg 1-80, January.

Lal, Deepak, and Myint H., (1996), The Political Economy of Poverty, Equity and Growth, Oxford University Press.

Lal, Deepak, Mohan, R., and Natarajan I. 2001, "Economic Reforms and Poverty Alleviation: A Tale of Two Surveys", *Economic and Political Weekly*, Pg 1017-1028, March 24.

Li, Hongyi, Squire, Lyn, and Zou, Heng-fu, (1998), "Explaining International And Inter temporal variations in Income Inequality", Economic Journal, Vol. 108, Pg 26-43.

Maddison, Angus, (2001), *The World Economy: A Millennial Perspective*, Development Center of the Organisation for Economic Co-Operation and Development, April.

Maddison, Angus, (2001), *The World Economy: A Millennial Perspective*, Development Center of the Organisation for Economic Co-Operation and Development, April.

Milanovic, Branko. 2002a. *True World Income Distribution, 1988 and 1993: First calculations Based on Household Survey Alone*. *Economic Journal* 112:51-92 (first draft, Oct. 1999)

Milanovic, Branko. 2002b. *Worlds Apart: Inter-national and world inequality 1950-2000*, mimeo, World Bank, February.

Milanovic, Branko, 2002c, *Ricardian Vice: Why Sala-I-Martin's calculations of world income inequality cannot be right*. World Bank mimeo, September.

Milanovic, Branko, and Shlomo Yitzhaki. 2001. *Does the World Have a Middle Class? Decomposing World Income Distribution*. Development Research Group, World Bank, Washington. Photocopy, Feb.

Minhas, B.S., (1974), "Rural Poverty, Land Redistribution and Development Strategy: Facts", *Poverty and Income Distribution in India*, Statistical Publishing Society, Pg 253-263.

Minhas, B.S., (1988), "Validation of Large Scale Sample Survey Data: Case of NSS Estimates of Household Consumption Expenditure", Sankhya: The Indian Journal of Statistics, Vol.50, Series B, Pt.3, Pg 279-326.

Minhas, B.S., Kansal, S.M. (1989), " Comparison of NSS and CSO Estimates of Private Consumption: Some Observation Based on 1983 Data", Journal of Income and wealth, 11: 7-24

Minhas, B.S., Kansal, S.M., Kumar Jagdish and Joshi P.D., (1986), "On the Reliability of the Available Estimates of Private Consumption Expenditure in India", The Journal of Income and Wealth, Vol. 9, No.2, July.

Mistiaen, Johan A. and Martin Ravallion (2003), "Survey Compliance and the Distribution of Income. Washington

Mukherjee, M and Chatterjee, G.S., "On the validity of NSS estimates of consumer expenditure", in Srinivasan-Bardhan. ed. *Poverty and Income Distribution in India*, p. 139-147.

NSSO Expert Group, (2003), "Suitability of Different Reference Periods for Measuring Household Consumption; Results of a Pilot Survey", Economic and Political Weekly, Vol. XXXVIII No. 4, January 25, 2003, Page 307-321.

Pradhan, Menno, Suryahadi, Asep, Sumarto, Sudarno, and, Pritchett, Lant (2001), "Eating like which "Joneses?" An iterative solution to the choice of a poverty line "Reference group", Review of Income and Wealth, Series 47, Number 4, December 2001.

Pritchett, Lant. (1997). Divergence--Big Time. Journal of Economic Perspectives 11 (3): 3-17.

Prichett, Lant, (2001), "Divergence, Big Time", mimeo, World Bank, July 7.

Quibria M.G. (2002) "*Growth and Poverty: Lessons from the East Asian Miracle Revisited*" ADB Institute Research Paper 33. Manila: Asian Development Bank.

Rao, D.C., (1978), "Economic Growth and Equity in the Republic of Korea", World Development, Vol. 6, No. 3, Pg 383-396.

Ravallion, Martin, (2000a), "What is needed for a More Pro-Poor Growth process ", Economic and Political Weekly, Pg 1089-1093, March 25.

Ravallion, Martin, (2000b), "Should Poverty Measures be Anchored to the National Accounts?", Economic and Political Weekly, Pg 3245- 3252, August 26- September 2.

Ravallion, Martin, (2001a), "Growth, Inequality and Poverty: Looking Beyond Averages", mimeo, Development Research Group, World Bank, June 3.

Ravallion, Martin, (2001b), "Inequality Convergence", mimeo, World Bank, July 17.

Ravallion, Martin, (2002), "Have we already met the Millennium Development Goals for Poverty? Surjit Bhalla's Imagine there's no Country", Economic and Political Weekly, Nov. 16-22

Ravallion, Martin, and Chen, Shaohua. (1996). "What Can New Survey Data Tell Us about Recent Changes in Distribution and Poverty?" World Bank, *Policy Research Working Paper* 1694, December.

Ravallion, Martin, and Chen, Shaohua. (2002). "Measuring pro-poor growth" *Economics Letters* 78 (2003) 93-99, *Economics Letters*, World Bank, 29 May 2002.

Ravallion, Martin, and, Datt, Gaurav, (1996), " How Important to India's Poor Is the Sectoral Composition of Economic Growth?", World Bank Economic Review, January.

Ravallion, Martin, and, Datt, Gaurav, (2001). "Why Has Economic Growth Been More Pro-Poor in some states of India than others?" *Journal of Development Economics* 68 (2002): 381-400.

Ravallion, Martin, and Lipton, Michael, (1993), "Poverty & Policy", World Bank, Policy research working paper 1130, April.

Ravallion, Martin, Datt, Gaurav, and Walle, Dominique van de, (1991), "Quantifying Absolute Poverty in the Developing World", Review of Income and Wealth, Series 37, Number 4, World Bank, December.

Reddy, G. Sanjay, and Thomas W. Pogge. (2002) "How Not to Count The Poor" mimeo www.socialanalysis.org.

Reutlinger, S., and Selowsky M., (1976), Malnutrition and Poverty, Baltimore, Johns Hopkins University Press.

Sala-i-Martin, Xavier. (2002a). "*The Disturbing Rise of Global Income Inequality*" NBER Working Paper 8904. Cambridge, MA: National Bureau of Economic Research.

Sala-i-Martin, Xavier. (2002b). "The World Distribution of Income" NBER Working Paper 8933. Cambridge, MA: National Bureau of Economic Research.

Sen, Abhijit, (2000), "Estimates of consumer expenditure and its distribution: Statistical priorities after NSS 55th round.", Economic and Political Weekly, Vol.35, No.51, Pg 4499-4518, December 16.

Sharma, Savita, 2002, "Report on India for Asian Development Bank Research project on Poverty in Asia"; also in Bhalla et. al. (2003b).

Slesnick, Daniel K., (1998) "Are Our Data Relevant to the Theory: The Case of Aggregate Consumption", Journal of Business and Economic Statistics, Jan.

Srinivasan, T.N., (2001), "Growth and Poverty Alleviation: Lessons from Development Experience", ADB Institute, Working Paper No.17, April.

Srinivasan, T.N. and Bardhan, P.K., (ed.) 1974, Poverty and Income Distribution in India, Statistical Publishing Society, Calcutta.

Srinivasan, T.N., and Bardhan, Pranab K., (ed), (1988), Rural Poverty in South Asia, Oxford University Press

Srinivasan, T.N. et. al., "Data on distribution of consumption expenditure in India: An evaluation" in Srinivasan-Bardhan. ed. *Poverty and Income Distribution in India*, p. 148-163.

Sukhatme, P.V., (1977), "Malnutrition and Poverty", Ninth Lal Bahadur Shastri Lecture, Indian Agricultural Research Institute.

Sundaram, K. (2001), "Employment and Poverty in 1990s: Further Results from NSS 55th Round Employment-Unemployment Survey, 1999-2000". Vol. XXXVI No. 32, August 11, 2001, Page 3039-3049, Economic and Political Weekly.

Sundaram, K and Suresh D Tendulkar, (2001), "NAS-NSS Estimates of Private Consumption for Poverty Estimation: A Disaggregated Comparison for 1993-94", Economic and Political Weekly, Jan. 13.

Sundaram, K and Suresh D Tendulkar, (2003a), "NAS-NSS Estimates of Private Consumption for Poverty Estimation: A Further Comparative Examination", ", Economic and Political Weekly, Vol. XXXVIII No. 4, January 25, 2003, Page 376-384.

Sundaram, K. and Suresh D Tendulkar, (2003b), "Poverty Has Declined in the 1990s: A Resolution of Comparability Problems in NSS Consumer Expenditure Data" Economic and Political Weekly, Vol XXXVIII, No. 4, January (25-31), pp 327-337.

Sundaram, K. and Suresh D Tendulkar, (2003b), "Poverty in India in the 1990s: An Analysis of Change in 15 Major States", Economic and Political Weekly, Vol XXXVIII, No 31 (August 2-8), pp 1385-93.

Tendulkar. D. Suresh, (1998), "Indian Economic Policy and Poverty: An Assessment", India's Economic Reforms and Development Essays for Manmohan Singh, Oxford University Press.

Thomas, Vinod, (2000), The Quality of Growth, World Bank, Oxford University Press, Washington.

Triplett, Jack E. 1997. "Measuring Consumption: The Post-1973 Slowdown and the Research Issues" Federal Bank Review (Federal Reserve Bank of Saint Louis), May/June: 9-42.

U.S. Department of Health, Education and Welfare (1979), "Dietary Intake Source Data, 1971-1974", National Center for Health Statistics, September.

United Nations, (1999), Human Development Report 1999, Oxford University Press

United Nations, (2002), Human Development Report, 2002: Deepening Democracy in an Integrated World. New York.

WIDER – U.N, (2001), "World Income Inequality Database", available at www.wider.unu.edu/wiid.

World Bank, (1990), *World Development Report: Poverty and Development*, Oxford University Press Washington DC.

World Bank. (1991). *Growth, Poverty Alleviation and Improved Income Distribution in Malaysia: Changing Focus of Government Policy Intervention* Report 8667-MA. Washington: World Bank.

World Bank, World Development Indicators, CD-ROMS, 1996-2001

World Bank, (1997), "India: Achievements and Challenges in Reducing Poverty", World Bank Country Study.

World Bank, (2000), "World Development Report: Attacking Poverty", Oxford University Press, Washington DC.

World Bank, (2001), "World Development Report 2000/2001: Attacking Poverty", Oxford University Press.

World Bank, (2002) *Globalization, Growth, and Poverty*, Oxford University Press, Washington DC.

World Bank. 2003. Global Economic Prospects. Investing to Unlock Global Opportunities, Oxford University Press.