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POVERTY AND INEQUALITY IN INDIA: A REEXAMINATION[*]

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Abstract

This paper presents a new set of integrated poverty and inequality estimates for India and Indian states for 1987-88, 1993-94 and 1999-2000. The poverty estimates are broadly consistent with independent evidence on per-capita expenditure, state domestic product and real agricultural wages. They show that poverty decline in the 1990s proceeded more or less in line with earlier trends. Regional disparities increased in the 1990s, with the southern and western regions doing much better than the northern and eastern regions. Economic inequality also increased within states, especially within urban areas, and between urban and rural areas. We briefly examine other development indicators, relating for instance to health and education. Most indicators have continued to improve in the nineties, but social progress has followed very diverse patterns, ranging from accelerated progress in some fields to slowdown and even regression in others. We find no support for sweeping claims that the nineties have been a period of "unprecedented improvement" or "widespread impoverishment".

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1. Introduction

Poverty trends in India in the nineties have been a matter of intense controversy.[1] The debate has often generated more heat than light, and confusion still remains about the extent to which poverty has declined during the period. In the absence of conclusive evidence, widely divergent claims have flourished. Some have argued that the nineties have been a period of unprecedented improvement in living standards. Others have claimed that it has been a time of widespread impoverishment.[2] Against this background, this paper presents a reassessment of the evidence on poverty and inequality in the nineties.

So far, the debate on poverty in the nineties has focused overwhelmingly on changes in the "headcount ratio" – the proportion of the population below the poverty line. Accordingly, we begin (in section 1) with a reassessment of the evidence on headcount ratios and related poverty indexes, based on National Sample Survey (NSS) data. In particular, we present a new series of internally consistent poverty indexes for the last three "quinquennial rounds" (1987-88, 1993-94 and 1999-2000). The broad picture emerging from these revised estimates is one of sustained poverty decline in most states (and also in India as a whole) during the reference period. It is important to note, however, that the increase in per-capita expenditure associated with this decline in poverty is quite modest, e.g. 10 percent or so between 1993-94 and 1999-2000 at the all-India level.

In section 2, we consider related evidence from three additional sources: the Central Statistical Organisation's "national accounts statistics", the "employment-unemployment surveys" of the National Sample Survey, and data on agricultural wages. We find that these independent sources are broadly consistent with the revised poverty

[1] See Datt (1999a), Gupta (1999), Bhalla (2000a, 2000b), Deaton and Tarozzi (2000), Drèze (2000), Lal, Mohan and Natarajan (2001), Nagaraj (2000), Ravallion (2000), Sen (2000), Sundaram and Tendulkar (2000, 2001, 2002), Visaria (2000), Sundaram (2001a, 2001b, 2001c), Chandrasekhar and Ghosh (2002), Datt and Ravallion (2002), among others.

[2] On the first position, see e.g. Bhalla (2000a), Bhagwati (2001), Das (2000). On the other side, see Mehta (2001), Sainath (2001a, 2001b), Shiva (2001a), among others.

estimates presented in section 1. In particular, real agricultural wages in different states (which are highly correlated with headcount ratios of rural poverty) have grown at much the same rate as the corresponding NSS-based estimates of per-capita expenditure in rural areas. While each of these sources of information, including the National Sample Survey, has important limitations, they tend to corroborate each other as far as poverty decline is concerned, and the combined evidence on this from different sources is quite strong.

The evidence on inequality is discussed in section 3, where we focus mainly on the period between 1993-94 and 1999-2000. Based on further analysis of National Sample Survey data and related sources, we argue that there has been a marked increase in inequality in the nineties, in several forms. First, there has been strong "divergence" of per-capita expenditure across states, with the already better-off states (particularly in the southern and western regions) growing more rapidly than the poorer states. Second, rural-urban disparities of per-capita expenditure have risen. Third, inequality has increased within urban areas in most states. The combined effects of these different forms of rising inequality are quite large. In the rural areas of some of the poorest states, there has been virtually no increase in per-capita expenditure between 1993-94 and 1999-2000. Meanwhile, the urban populations of most of the better-off states have enjoyed increases of per-capita expenditure of 20 to 30 percent, with even larger increases for high-income groups within these populations.

Section 4 takes up some qualifications and concerns. We pay special attention to the apparent decline of cereal consumption in the nineties, which is not obviously consistent with the notion that poverty has steadily declined during that period. We also consider the possibility of impoverishment among specific regions or social groups, in spite of the general improvement in living conditions. Finally, we comment on the unresolved puzzle of the "thin rounds".

In section 5, we argue for supplementing expenditure-based data with other indicators of living standards, focusing for instance on literacy rates, health

achievements, nutritional levels, crime rates, and the quality of the environment. This broader approach sheds a different light on poverty trends in the nineties. In particular, it prompts us to acknowledge that social progress has been uneven across the different fields. For instance, the nineties have been a period of fairly rapid increase in literacy and school participation. On the other hand, there has been a marked slowdown in the rate at which infant mortality has been declining, and a significant increase in economic inequality. An integrated assessment of changes in living conditions has to be alive to these diversities. We also discuss other implications of this broader approach to the evaluation of living standards, going beyond the standard poverty indexes.

The concluding section sums up the insights of this enquiry.

1. *Poverty Indexes in the Nineties*

1.1. *Official Estimates*

We begin with an examination of household per capita consumption and the associated poverty estimates. Consumption is only one element of wellbeing, but it is an important element, and much interest is rightly attached to the Planning Commission's periodical estimates of poverty based on National Sample Survey data. The most widely-used poverty indicator is the "headcount ratio" (hereafter HCR), i.e. the proportion of the population below the poverty line.

The latest year for which relatively uncontroversial HCR estimates are available is 1993-94, corresponding to the 50th Round of the National Sample Survey, a "quinquennial" round. This round was followed by a series of so-called "thin rounds", involving smaller samples and somewhat different sampling designs; indeed, in the last of these, the 54th Round, the survey was only in the field for six months rather than the customary year and is therefore most unlikely to be comparable with any previous survey. These thin rounds suggested not only that poverty remained more or less unchanged between 1993-94 and the first six months of 1998 (the reference period for the

54th Round), but also that average per-capita expenditure stagnated during this period of rapid economic growth. This is very difficult to square with independent evidence, e.g. from national accounts statistics. As things stand, we do not have a good understanding of why the thin rounds give what appear to be anomalous results, and until that puzzle is resolved, our confidence in our other results must remain qualified. We shall return to this issue in section 4.3, and ignore the thin rounds in the meantime.

In contrast to the thin rounds, the official counts from the latest quinquennial round (the 55th Round, pertaining to 1999-2000) suggest considerable poverty decline between 1993-94 and 1999-2000. According to official estimates, widely relayed, the all-India headcount ratio declined from 36 to 26 per cent over this short period. As is well known, however, the 55th Round is not directly comparable to the 50th Round, due to changes in questionnaire design.

Briefly, the problem is as follows. After the 50th Round, the National Sample Survey introduced an experimental questionnaire with different recall periods for different classes of goods, in addition to the traditional "30-day recall" questionnaire. The experimental questionnaire used a 7-day recall period for food, pan, and tobacco, as well as a 365-day recall period for less frequently purchased goods such as durables, clothing, footwear, educational and institutional medical expenditures. Prior to 1999-2000, the traditional "30-day recall" questionnaire and the experimental questionnaire were administered to *different* (and independent) samples of households. These alternative questionnaires produced two independent series of expenditure estimates, with a fairly stable "ratio" of the lower estimates based on the traditional questionnaire to the higher estimates based on the experimental questionnaire. In 1999-2000, the 30-day recall and 7-day recall periods for food, pan and tobacco were used for the *same* households, in two adjacent columns on the same pages of a single questionnaire. This effectively "new" questionnaire design led to a sudden "reconciliation" of the results obtained from the two different recall periods, perhaps reflecting efforts to achieve "consistency" on the part of investigators and/or respondents. This reconciliation is likely to boost the expenditure estimates based on 30-day data, and therefore to pull down the official poverty counts, which are based on these

30-day expenditures. In addition, only the 365-day questionnaire was used for the less frequently purchased items, and this abandonment of the traditional 30-day recall for durables and other items also brings down the poverty count. Indeed, most people report no such purchases over 30 days, but report something over 365 days. The bottom tail of the consumption distribution is thereby pulled up, reducing both poverty and inequality compared with the previous design. For this reason, as well as because of possible reconciliation between 7-day and 30-day reports, the latest headcount ratios are biased down compared with what would have been obtained on the basis of the traditional questionnaire.

There is another, quite different problem with the official estimates, which does not concern the 55th Round specifically. This relates to the state and sector specific poverty lines that are used by the Planning Commission to compute the poverty estimates. In several cases the poverty lines are implausible, particularly the very much higher urban than rural lines in several states. The source of the problem lies in the use of defective price indexes in adjustments of the poverty line over time and between states. In the next section, we discuss ways of overcoming this problem and other limitations of the official poverty estimates.

1.2. *Proposed Adjustments*

In this paper, we present a new series of consistent poverty estimates for the most recent quinquennial rounds (1987-88, 1993-94 and 1999-2000).[3] Essentially, these involve four major departures from the official estimates. First, an attempt is made to "adjust" the 55th-Round estimates to achieve comparability with the earlier rounds. Second, we use improved price indexes to update the "poverty line" over time, and to derive state-specific poverty lines from the all-India poverty line. Third, a similar procedure is used to derive an explicit estimate of the appropriate gap between rural and urban poverty lines (in contrast with the often implausible rural-urban gaps that are implicit in the official estimates). Fourth, in addition to corrected "headcount ratios", we

[3] These estimates build on earlier work by Deaton and Tarozzi (2000), Deaton (2001a, 2001b) and Tarozzi (2001).

present estimates of a potentially more informative poverty indicator, the "poverty-gap index". Each of these departures calls for further discussion.

The possibility of "adjusting" the 1999-2000 poverty estimates arises from the fact that the 55th Round questionnaire retained the "30-day recall" (and 30-day recall only) approach for a number of items such as fuel and light, non-institutional medical care, and large categories of miscellaneous goods and services. Further, it turns out that expenditure on this intermediate group of commodities is highly correlated with total expenditure.[4] Expenditures on these comparably surveyed goods can therefore be used to get an idea of trends in total expenditures, and hence, of trends in poverty.

This procedure is valid if two assumptions hold. The first is that reported expenditures on the intermediate goods, for which the recall period is unchanged, are unaffected by the changes elsewhere in the questionnaire. The second is that the relation between intermediate-goods expenditure and total expenditure is much the same in 1999-2000 as in 1993-94.[5] The second assumption would be undermined by a major change in relative prices of the intermediate goods relative to other goods in the late 1990s. It can be checked to some extent by applying the proposed method to the "thin rounds" instead of the 55th Round, and comparing the predicted distribution of total expenditure with the actual distribution. These checks suggest that the correction procedure works reasonably well (Deaton, 2001a, Tarozzi, 2001). However, this should not be regarded as a definitive validation of the proposed method, given the ambiguities associated with the thin rounds (see section 4.3 below). There are other possible approaches to adjustment that have not yet been explored, and further work may lead to different conclusions. Meanwhile, we regard our adjusted figures as the best currently available in terms of dealing with the

[4] In the 50th Round, the correlation between the logarithm of total household per-capita expenditure and the logarithm of per-capita expenditure on this subset of commodities is 0.79 and 0.86 in the rural and urban sectors, respectively.

[5] More precisely, and somewhat less restrictively, we require that the probability of being poor, given the amount of a household's expenditure on these intermediate goods, remains the same in the 55th Round as it was in the 50th. We require this on a state by state basis, one sector at a time, which allows the conditional probability to vary by state and by sector.

change in questionnaire design, without pretending that they represent the final word on the topic.

Turning to the price adjustments, one limitation of the price indexes that have been traditionally used to update poverty lines over time (e.g. the Consumer Price Index for Agricultural Labourers) is that they are based on fixed and frequently outdated commodity "weights". It is possible to calculate alternative price indexes using the information in the consumer expenditure surveys themselves. For more than 170 commodities, households report both quantities and expenditures, and the ratio of the latter to the former provides an estimate of the price paid. These prices can then be combined into consumer price index numbers that allow comparisons across states, and if we use data from different rounds, for states and the whole country at different points in time. One limitation of these price indexes is that their coverage of commodities is only partial (a little more than half the budget in the 55th Round, though more in earlier rounds), so that they cannot capture price changes in important items such as transportation, housing, most non-food goods, and services. However, CPIAL data suggest that the inflation rate for the uncovered items is not very different from that applying to the covered items.[6] The price indexes from the surveys have the advantage of being based on several million actual purchases in each round. They also make it possible to use formulas for superlative indexes, such as the Fisher ideal index or the Törnqvist index, that allow for substitution behaviour as households adapt to relative price changes over time.

The calculated Törnqvist indexes for the 43rd and 50th Rounds are reported in Deaton and Tarozzi (2000), and were updated to the 55th Round by Deaton (2001b).[7]

[6] In Deaton and Tarozzi (2000), it is shown that, between the 43rd and 50th Rounds, the component of the CPIAL for the uncovered items grew somewhat less rapidly than the component for the covered items. In consequence, if we were to supplement our price indexes for uncovered items from the CPIAL, the estimated rate of increase of consumer prices would come down, and correspondingly, there would be a faster decline in the poverty indexes, at least for the period falling between these two rounds (i.e. 1987-88 to 1993-94).

[7] The Törnqvist price index is a weighted geometric index with weights that are the average of the expenditure shares in the base and comparison periods. It is a superlative index in the sense of Diewert (1976).

These price indexes differ from the official indexes in a number of ways. In particular, they rise somewhat more slowly over time than do the official price indexes, especially in the rural sector. For example, the all-India rural Törnqvist index rises by 69.8 percent from 1987–88 to 1993–94 and by a further 54.5 percent from 1993–94 to 1999–2000, compared with 78.7 percent and 59.1 percent for the deflators implicit in the official all-India rural poverty line. For the urban sector over the two periods, the Törnqvist price indexes rise by 73.8 and 57.7 percent versus 73.5 and 61.4 percent for the implicit deflator of the urban poverty line. The price indexes for each state show rather modest differences from one state to another. They also differ from those implicit in the official poverty lines, although the two sets of deflators are correlated. This pattern is consistent with the fact that relative prices across states vary somewhat over time, and that the interstate prices used in the official deflators are outdated.

The third departure concerns the gap between rural and urban poverty lines. From the mid 1970s until the early 1990s, there were only two poverty lines for India, one for rural and one for urban. The urban line was around 15 percent higher than the rural line, and both were held fixed in real terms, with updating on the basis of approximate price indexes such as the Wholesale Price Index or the CSO's private consumption deflator. The initial rural-urban gap of 15 percent is anchored in 1973-74 calorie consumption data, but it is essentially arbitrary since the urban and rural "calorie norms" themselves (2,100 and 2,400 calories per person per day, respectively) have a fragile basis.[8] More recently, the Planning Commission has adopted a modified version of the poverty lines recommended by a 1993 Expert Group (Government of India, 1993). The Expert Group retained the original rural and urban lines, but adjusted them for statewise differences in price levels, separately for urban and rural sectors, using estimates of statewise price differences calculated from NSS data on expenditures and quantities using similar methods to those adopted in this paper. The Expert Group lines used the then best-

[8] For further details, see EPW Research Foundation (1993). On the conceptual and practical problems involved in defining "calorie norms", see Dasgupta and Ray (1990) and Osmani (1990), and the literature cited there. Note also that, if the calorie norms were to be reapplied today, they would not generate the same poverty lines. Updating calorie-norm based poverty lines for inflation does not preserve their calorie-norm status.

available information on price differences across states, both urban and rural, but the information was outdated, especially for the rural sector.

Because the statewise adjustments were done separately for urban and rural households, the price differences between the urban and rural sectors of each state were derived only implicitly, and some are rather implausible, particularly the very much higher urban than rural lines in several states. For example, the most recent urban poverty lines for Andhra Pradesh and Karnataka are around 70 percent higher than the corresponding rural lines, with the uncomfortable result that urban poverty is much *higher* than rural poverty in these two states (see Table 2 in the next section). In Assam, by contrast, the rural poverty line is actually *higher* than the urban line, and based on these odd poverty lines, Assam turns out to be one of India's highest-poverty states for rural areas but lowest-poverty states for urban areas. It is hard to accept these and other implications of the Expert Group poverty lines.

There are grounds, of course, for questioning whether it is even possible to derive comparable rural and urban poverty lines. Comparisons of living standards in rural and urban areas are inherently difficult, since there are large intersectoral differences not only in the patterns of consumption but also in lifestyles, public amenities, epidemiological environments, and so on. One way forward is to avoid such comparisons altogether, and to focus on sector-specific (rural or urban) poverty estimates. Yet there is a case for attempting to compare private consumption levels across sectors, bearing in mind that this is at best a partial picture of the relevant differences in living standards.[9] These comparisons can be made by anchoring poverty estimates in a single poverty line, adjusted where appropriate to take into account rural-urban price differences, using the same method as that described earlier for adjusting poverty lines over time and between states. Based on this procedure, the urban poverty line tends be about 15 percent higher than the rural poverty line, though there are variations across states. As it turns out, this

9 Similar issues arise, of course, in the context of inter-state comparisons, especially between states (e.g. Kerala and Uttar Pradesh) with radically different consumption patterns and social environments. In both cases, comparisons of living standards call for supplementing expenditure data with

rural-urban difference in poverty lines is broadly consistent with the original methodology used before the adoption of the Expert Group recommendations.

To recapitulate, the revised poverty lines used in this paper, which are presented in full in Table 4 of Deaton (2001b), are derived as follows. Our starting point is the official rural all-India poverty line for the 43rd Round (1987–88): 115.70 rupees per person per month.[10] Rural poverty lines for each state for the 43rd Round are obtained by multiplying this base poverty line by the rural price indexes for each state relative to all-India. The urban poverty lines for the 43rd Round, for each state as well as for all-India, are calculated from the rural poverty lines by scaling up by the respective urban relative to rural price indexes. In all cases, we use the relevant Törnqvist price indexes.[11] To move to the 50th Round, the original all-India rural line, 115.70 rupees, is scaled up by the Törnqvist index for all-India rural for the 50th Round relative to the 43rd Round, 1.698, to give an all-India rural poverty line for the 50th Round. This number is then used to generate rural and then urban poverty lines for each state, following exactly the same procedure as for the 43rd Round. Finally, poverty lines for the 55th Round are calculated in the same way from an all-India rural line, which is the 50th Round all-India rural line scaled up by the value of the Törnqvist index between the two surveys.[12]

The motivation for the fourth departure (or rather extension) arises from the limitations of the headcount ratio as an indicator of poverty. The headcount ratio has a straightforward interpretation and is easy to understand. In that sense it has much "communication value". Yet, the HCR has serious limitations as a poverty index. For

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other types of information, relating for instance to public amenities, health achievements, educational levels, etc.

[10] The official line is actually 115.20. We use 115.70 because this is the figure yielded by the official methodology when the calculations are based on the unit record data, as opposed to the interpolations used by the Planning Commission. See notes to Table 2 below.

[11] The case of Delhi is handled differently. Because there are few sample households in rural Delhi, it is not advisable to use the price index for rural Delhi as part of the calculations. The poverty line for urban Delhi is calculated from the all-India urban poverty line by multiplying it by the price index for urban Delhi relative to urban India.

[12] Note that this is not the *only* way of using the indexes; another (but only one other) possibility would be to update the poverty line for each sector of each state by its own inflation rate. Because we are dealing with price indexes, not prices, the different alternatives will give different answers.

one thing, it ignores the *extent* to which different households fall short of the poverty line. This leads to some perverse properties. For instance, an income transfer from a very poor person to someone who is closer to the poverty line may lead to a *decline* in the headcount ratio, if it "lifts" the recipient above the poverty line. Similarly, if some poor households get poorer, this has *no effect* on the headcount ratio.

A related issue is that changes in HCRs can be highly sensitive to the number of poor households near the poverty line (since changes in the HCR are entirely driven by "crossings" of the poverty line). If poor households are heavily "bunched" near the poverty line, a small increase in average per-capita income could lead to a misleadingly large decline in the headcount ratio. This "density effect" has to be kept firmly in view in the context of comparisons of poverty *change*, involving questions such as "has there been more poverty decline in Bihar than in Punjab during the nineties", or "has poverty declined faster in the nineties than in the eighties"? Often such questions are answered by looking at, say, the respective changes (absolute or proportionate) in headcount ratios. These changes, however, are difficult to interpret in the absence of further information about the initial density of poor households near the poverty line in each case.

One way forward is to use more sophisticated poverty indexes such as the Foster-Greer-Thorbecke (FGT) indexes or the Sen index. In this paper, we focus on the simplest member of the FGT class (other than the headcount ratio itself), the "poverty-gap index". Essentially, the poverty-gap index (hereafter PGI) is the aggregate shortfall of poor people's consumption from the poverty line, suitably normalized.[13] The PGI can also be interpreted as the headcount ratio multiplied by the mean percentage shortfall of consumption from the poverty line (among the poor). This index avoids the main shortcomings of the headcount ratio, is relatively simple to calculate, and has a straightforward interpretation.[14]

[13] More precisely, the poverty-gap index (PGI) calculates the total shortfall of consumption below the poverty line, per capita of the total population, and expressed as a percentage of the poverty line: $PGI \equiv (1/z)[(\Sigma (z-y_i)/n]$ where z is the poverty line, n is the population size, and y_i is the consumption level of the ith poor person.

[14] The poverty-gap index, however, retains one limitation of the headcount ratio: it is not sensitive to the distribution of per-capita expenditure below the poverty line. This limitation is overcome by higher-

1.3. ***Adjusted Estimates***

Table 1a presents official and adjusted estimates of the all-India headcount ratio. In each panel, the first row gives the official estimates; the second row retains the official poverty lines but adjusts the 1999-2000 estimates for the change in questionnaire design in the way described earlier; the third row gives fully-adjusted poverty estimates, which combine the adjustments for questionnaire design and for price indexes. Table 1b gives the corresponding poverty-gap indexes.

As the first two rows of each panel indicate, the official estimates are quite misleading in their own terms: the 1999-2000 poverty estimates are biased downward by the changes in questionnaire design. For headcount ratios, the estimates adjusted for changes in questionnaire design "confirm" about two-thirds of the official decline in rural poverty between 1993-94 and 1999-2000, and about 90 percent of the decline in urban poverty. For poverty-gap indexes, the corresponding proportions (62 percent and 77 percent) are lower, especially for the urban sector.

The fully-adjusted estimates in the last row of each panel show somewhat lower rural poverty estimates and much lower urban poverty estimates for 1999–2000 than even the official estimates. Note, however, that because we are recalculating the poverty lines back to the 43rd Round, a good deal of the decrease took place in the six years prior to 1993–94, not only in the six years subsequent to 1993–94. The fully-adjusted estimates for the headcount ratios and poverty gap indexes suggest that poverty decline has been fairly evenly spread between the two sub-periods (before and after 1993-94), in contrast with the pattern of "acceleration" in the second sub-period associated with the official estimates.

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order members of the FGT class, such as the "squared poverty-gap index" (SPGI), and also by the Sen index. While we have calculated the SPGI estimates, we confine ourselves here to the poverty-gap index, for two reasons. First, it is easier to interpret. Second, SPGIs are highly sensitive to measurement errors at the bottom of the per-capita expenditure scale, and their reliability calls for further scrutiny.

The rural-urban gaps in the poverty estimates are also of interest. Looking first at the base year (1987-88), the rural-urban gap based on adjusted estimates is much larger than that based on official estimates. Indeed, the latter suggest no difference between rural and urban poverty in that year. This is hard to reconcile with independent evidence on living conditions in rural and urban areas, such as a life-expectancy gap of about 7 years in favour or urban areas around that time.[15] Our low estimate of the urban headcount ratio relative to the official estimate (22.5 percent versus 39.1 percent), and similar differences in 1993-94 and 1999-2000, come from the fact that we take the *rural* poverty line in 1987–88 as our starting point, and peg the urban poverty lines about 15 percent higher than the rural poverty lines, in contrast to the much larger differentials embodied in the official lines.

Figure 1 shows the new estimates of the headcount ratios together with the official estimates going back to 1973-74. The fully adjusted figures are lower throughout because we treat the rural poverty line in the 43rd Round as our baseline so that, with larger rural-urban gaps in the poverty estimates, we estimate lower poverty overall. If instead, we had taken the urban poverty line as base, the adjusted figures would have been higher than the official figures. From 1987-88 to 1993-94, the adjusted headcount ratio falls more rapidly than the official headcount; this is because our price deflators are rising less rapidly than the official ones. From 1993-94, the adjusted figures fall more slowly because the effects of the price adjustment are more than offset by the correction for questionnaire design. The estimates for the thin rounds—which look very different—are included to remind us of the residual uncertainty about our conclusions, and will be discussed further in section 4.3 below.

[15] See Government of India (1993b), p. 16.

1.4. ***Regional Contrasts***

State-specific headcount ratios are presented in Table 2a.[16] The table has the same basic structure as Table 1a, except that we jump straight from official to fully-adjusted estimates. The latter suggest that the basic pattern of sustained poverty decline between 1987-88 and 1999-2000, discussed earlier at the all-India level, also applies at the level of individual states in most cases. The main exception is Assam, where poverty has stagnated in both rural and urban areas. In Orissa, there has been very little poverty decline in the second sub-period, with the result that Orissa now has the highest level of rural poverty among all Indian states, according to the adjusted 1999-2000 estimates.[17] Reassuringly, the "anomalies" noted earlier with respect to rural-urban gaps in specific states tend to disappear as one moves from official to adjusted estimates.

Table 2b shows the corresponding poverty-gap indexes. The general patterns are very much the same as with headcount ratios; indeed the PGI series are highly correlated with the corresponding HCR series, with correlation coefficients of 0.98 for rural and 0.95 for urban. Even the HCR and PGI *changes* between the 50th and 55th Rounds are highly correlated; the correlation coefficient between changes in HCR and changes in PGI is 0.95 for the rural sector, and 0.96 for the urban sector. Thus, in spite of its theoretical superiority over the headcount ratio, the poverty-gap index gives us very little additional insight in this case.

In interpreting and comparing poverty declines over time, it is useful to supplement the poverty indexes with information on the growth rate of average per-capita consumption expenditure (hereafter APCE). State-specific estimates of APCE growth between 1993-4 and 1999-2000 are shown in Table 3, where states are ranked in

[16] In Table 2 and elsewhere in this paper, the terms "Bihar", "Madhya Pradesh" and "Uttar Pradesh" refer to these states as they existed *prior* to the formation of Jharkhand, Chattisgarh and Uttaranchal in late 2000.

[17] In the first sub-period, the estimates suggest some increase in poverty in rural Haryana and Himachal Pradesh, and also in urban Himachal Pradesh, Punjab and Delhi. These patterns, however, should be interpreted with caution, given the relatively small sample sizes for these states and the possibility of transient fluctuations in poverty levels in specific years.

ascending order of APCE growth for rural and urban areas combined.[18] Here, a striking regional pattern emerges: except for Jammu and Kashmir, the low-growth states form one contiguous region made up of the eastern states (Assam, Orissa, and West Bengal), the so-called BIMARU states (Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh), and Andhra Pradesh. The high-growth states, for their part, consist of the southern states (except Andhra Pradesh), the western states (Gujarat and Maharashtra) and the north-western region (Punjab, Haryana and Himachal Pradesh). Further, it is interesting to note that this pattern is reasonably consistent with independent data on growth rates of per-capita "state domestic product" (SDP); these are shown in the last column of Table 3. With a couple of exceptions on each side, all the states in the "low APCE growth" set had comparatively low rates of per-capita SDP between 1993-94 and 1999-2000 (say below 4 percent per year), and conversely, all the states in the "high APCE growth" set had comparatively high annual growth rates of per-capita SDP (the correlation coefficient between the two series is 0.45).[19]

This broad regional pattern is a matter of concern, because the low-growth states also tend to be states that started off with comparatively low levels of APCE or per-capita SDP. In other words, there has been a growing "divergence" of per-capita expenditure (and also of per-capita SDP) across Indian states in the nineties.[20] The point is illustrated in Figure 2, which plots the average growth in APCE for each state between 1993-94 and 1999-2000 against the geometric mean of APCE in 1993-94.

It is worth asking to what extent these regional patterns, based on APCE data, are corroborated by regional patterns of poverty decline. One difficulty here is that there is no obvious way of "comparing" the extent of poverty decline across states. For instance,

[18] Here and elsewhere, it is useful to remember that the period between 1993-94 and 1999-2000 was one of "peak" economic growth for the Indian economy, with per-capita GDP growing at a healthy 4.4 percent per year.

[19] While the *relative* growth rates of APCE in different states are consistent with the corresponding relative growth rates of per-capita SDP, the *levels* of per-capita SDP growth tend to be higher than those of APCE growth. We shall return to this issue in the next section, with reference to the all-India figures.

[20] On the growing divergence of per-capita SDP in the nineties, see also Ahluwalia (2000) and Drèze and Sen (2002).

looking at absolute changes in (say) HCRs would seem to give an unfair "advantage" to states that start off with high levels of poverty, and where there tends be a large number of households close to the poverty line. To illustrate, the absolute decline of the rural HCR between 1993-94 and 1999-2000 was about twice as large in Bihar (7.4 percentage points) as in Punjab (3.8 points), yet over the same period APCE grew by only 6.9 percent in Bihar compared with 20.2 percent in Punjab, with virtually no change in distribution in either case.[21] The reason for this contrast is that Bihar starts off in 1993-94 with a very high proportion of households close to the poverty line, so that small increases in APCE can produce relatively large absolute declines in the headcount ratio.

An alternative approach is to look at proportionate changes in HCRs or PGIs. These turn out to be highly correlated with the corresponding growth rates of APCE. The point is illustrated in Figure 3, where we plot the proportionate decline in the rural headcount ratio in each state against the growth rate of APCE in rural areas. The correlation coefficient between the two series is as high as 0.91. This reflects the fact that poverty reduction is overwhelmingly driven by the growth rate of APCE, rather than by changes in distribution - we shall return to this point in section 3. From these observations, it follows that if we accept "proportionate change in HCR" (or PGI) as an index of poverty reduction, then the broad regional patterns identified earlier for the growth rate of APCE also tend apply to poverty reduction. In particular: (1) most of the western and southern states (with the important exception of Andhra Pradesh) have done comparatively well; (2) the eastern region has achieved very little poverty reduction between 1993-94 and 1999-2000; and (3) there is a strong overall pattern of “divergence” (states that were poorer to start with had lower rates of poverty reduction). This reading of the evidence, however, remains somewhat tentative, since there is no compelling reason to accept the proportionate decline in HCR (or PGI) as a definitive measure of poverty decline.

We end this section with a caveat. From Table 2 and Figure 1, it may appear that the “pace” of poverty decline in the nineties has been fairly rapid. It is important to note,

[21] For inequality indexes, see Table 5 in section 3.

however, that the associated increases in per-capita expenditure have been rather modest in most cases. For instance, the decline of 6.6 percentage points in the all-India HCR (from 29.2 percent to 22.7 percent) between 1993-4 and 1999-2000 is driven by an increase of only 10.9 percent in average per-capita expenditure - not exactly a spectacular improvement in living standards. Similarly, Table 2a suggests that Bihar achieved a large step in poverty reduction in the nineties, with the rural HCR coming down from 49 percent to 41 percent. Yet, as Table 3 indicates, average APCE in rural Bihar increased by only 7 percent between 1993-4 and 1999-2000.

Why are small increases in APCE associated with substantial declines in poverty indexes? It is tempting to answer that the *distribution* of consumer expenditure must have improved in the nineties. As discussed in section 3, however, this is not the case: indeed economic inequality has increased rather than decreased in the nineties. The correct answer relates to the "density effect" mentioned earlier (see section 1.2): when many poor households are close to the poverty line, modest increases in APCE can produce substantial declines in standard poverty indexes. One reason for drawing attention to this is that the official poverty estimates have sometimes been used to claim that the nineties have been a period of spectacular achievements in poverty reduction. In fact, when the relevant adjustments are made, and the poverty indexes are read together with the information on APCE growth, poverty reduction in the nineties appears to be more or less in line with previous rates of progress.

2. Further Evidence

2.1. National Accounts Statistics

There has been much discussion of the consistency between National Sample Survey data and the "national accounts" published by the Central Statistical Organisation (CSO).[22] The latter include estimates of "private final consumer expenditure", which is

[22] See particularly Bhalla (2000a), Kulsheshtra and Kar (2002), Ravallion (2000), Sen (2000), Sundaram and Tendular (2001).

frequently compared with NSS estimates of "household consumption expenditure". Over time, the CSO estimates have tended to grow faster than the NSS estimates, leading some commentators to question the reliability of National Sample Survey data.

It is important to note that these two notions of "consumer expenditure" are not exactly the same, and also that there are major methodological differences between the two sources. The NSS figures are direct estimates of household consumption expenditure. The CSO figures include several items of expenditure that are not collected in the NSS surveys; examples are expenditures by non-profit entreprises, as well as imputed rent by owner occupiers and "financial intermediation services indirectly measured" (the last item is essentially the net interest earned by financial intermediaries, which is counted as expenditures on intermediation services by households). According to Sundaram and Tendulkar (2002), who quote a recent cross-validation study by the National Accounts Department, the last two items account for 22 percent of the difference in levels between CSO and NSS estimates of consumer expenditure. Further, the CSO estimates are "residual" figures, obtained after subtracting other items from the national product. Leaving aside these comparability issues, there is indeed a gap between the CSO-based and NSS-based growth rates of consumer expenditure. According to CSO data, per-capita consumer expenditure has grown at much the same rate as per-capita GDP between 1993-94 and 1999-2000 – about 3.5 percent per year in real terms.[23] The corresponding NSS-based estimate associated with our "adjusted" APCE figures is around 2 percent.[24]

This is quite different from the situation that prevailed prior to the 55th Round, when consumer expenditure was hardly growing at all according to the NSS "thin rounds" but galloping forward according to the CSO data. Today, in the light of more

[23] Calculated from Central Statistical Organisation (2001), p. xxxii.

[24] In nominal terms, between 1993-94 and 1999-2000, consumer expenditure has been growing at about 11.5 percent per year according to CSO data, and 10 percent per year according to our NSS-based estimates. Both the CSO's implicit price deflator and our Törnqvist index have been growing at 8 percent per year or so during this period. Thus, differences in price deflators do not seem to help to resolve the CSO-NSS discrepancy in this case, even though price-index differences may have played a role in enhancing that discrepancy in earlier periods (see Sen, 2000).

recent estimates, the discrepancy looks much smaller. That discrepancy calls for further scrutiny and resolution, but meanwhile, it can hardly be regarded as an indictment of National Sample Survey data. For one thing, the reference categories are not the same. For another, there is no reason to believe that the CSO estimates are more accurate than the NSS estimates; indeed the cross-validation exercise raised serious questions about a number of the consumption categories in the CSO data.[25]

2.2. Agricultural wages

Agricultural wages provide an important source of further information on poverty. There are, in fact, two ways of thinking about the relevance of this information. First, real agricultural wages are highly correlated with standard poverty indexes such as headcount ratios: where poverty is higher, wages tend to be lower, and vice-versa. Based on this statistical association, real wages can be used to provide some information about other poverty indexes. Second, it is also possible to think about the real wage as a rough poverty indicator in its own right. The idea is that, if the labour market is competitive (at least on the supply side), then the real wage measures the "reservation wage", i.e. the lowest wage at which labourers are prepared to work. This has direct evidential value as an indication of the deprived circumstances in which people live (the more desperate people are, the lower the reservation wage), independently of the indirect evidential value arising from the statistical association between real wages and standard poverty indexes such as the headcount ratio.

Detailed information on agricultural wages is available from *Agricultural_Wages in India* (AWI), an annual publication of the Directorate of Economics and Statistics, Ministry of Agriculture. The data initially come in the form of district-specific money wages.[26] These are typically aggregated using the numbers of agricultural labourers in

[25] The NSS surveys, for their part, almost certainly disproportionately miss wealthy households at the very top of the distribution, and as Banerjee and Piketty (2001) have shown, there has been a marked rise in incomes among the very highest earners. Even so, they show that the total amount of these earnings is not enough to explain the increasing disparity between the NSS and the CSO estimates of consumption expenditure.

[26] For details, see e.g. Acharya (1989).

different districts as weights, and deflated using the Consumer Price Index for Agricultural Labourers (CPIAL). The quality of this information is not entirely clear, but available evidence suggests that it is adequate for the purpose of broad comparisons.[27]

As Figure 4 illustrates, real agricultural wages in different states are highly correlated with expenditure-based poverty indexes (here and elsewhere in this section, the focus is on *rural* poverty). The main "outlier" is Kerala, where real wages are far above the "regression line"; it seems that the power of labour unions in Kerala has raised agricultural wages well above the level found in any other Indian states, but that this does not translate into a correspondingly low level of rural poverty, possibly because high wages are partly offset by high unemployment, or because other determinants of rural poverty are also at work. In 1999-2000, the correlation coefficient between real wages and headcount ratios in different states was 0.79 in absolute value, rising to 0.91 if Kerala is excluded. In 1993-4, the correlation coefficient was 0.87 in absolute value, with or without Kerala. Interestingly, if "official" HCRs are used instead of our adjusted HCRs, the correlation coefficients come down quite sharply (e.g. from 0.91 to 0.73 in 1999-2000 and from 0.87 to 0.54 in 1993-4, without Kerala in both cases). This can be tentatively regarded as a further indication of the plausibility of the proposed adjustments.

Given the close association between real wages and rural poverty, the *growth rates* of real wages over time provide useful supplementary evidence on poverty trends. According to recent estimates based on AWI data, real agricultural wages were growing at about 5 percent per year in the eighties and 2.5 percent per year in the nineties.[28] Thus, real agricultural wages were growing considerably faster in the eighties than in the nineties. But even the reduced growth rate of agricultural wages in the nineties, at 2.5 percent per year, points to significant growth of per-capita expenditure among the poorer sections of the population and reinforces our earlier findings on poverty reduction. In fact, this reduced growth rate is a little *higher* than the growth rate of average per-capita

[27] See e.g. Jose (1988) and Sarmah (2000). Note that the "real wage" estimates used here ignore inter-state differences in price levels.

[28] See Drèze and Sen (2002), p. 328; on the slowdown of the growth rate of real agricultural wages in the nineties (compared with the eighties), see also Sarmah (2000, 2001).

expenditure (1.5 percent per year) that sustains our estimated declines of rural headcount ratios and headcount indexes between 1993-94 and 1999-2000.

The data on real wages also provide some independent corroboration of the state-specific patterns of poverty decline. This is illustrated in Figure 5, where we plot state-specific estimates of the growth rate of real agricultural wages in the nineties against the estimated proportionate decline in the headcount ratio (a very similar pattern applies to the poverty-gap index). Here the two main outliers are Punjab and Haryana, where the headcount ratio has declined sharply without a correspondingly sharp increase in real wages (indeed without any such increase, in the case of Punjab). Leaving out these two outliers, the association between the two series is remarkably close (with a correlation coefficient of 0.88).

An interesting sidelight emerging from Figure 5 is that a healthy growth of real agricultural wages appear to be a "sufficient" condition for substantial poverty decline in rural areas: all the states where real wages have grown at more than, say, 2.5 percent per year in the nineties have experienced a comparatively sharp reduction of the rural headcount ratio. Conversely, in states with low rates of reduction of the headcount ratio (say, 15 percent or less over six years), real wages have invariably grown at less than 2 percent per year. This applies in particular to the entire eastern region (Assam, Orissa, West Bengal and Bihar) and also to Andhra Pradesh and Madhya Pradesh.

Independent evidence on the growth rates of real wages has recently been presented by K. Sundaram (2001a, 2001b), based on the "employment-unemployment surveys" (EUS) of the National Sample Survey for 1993-4 and 1999-2000. For the present purpose, these surveys are comparable. Sundaram estimates that the real earnings of agricultural labourers have grown at about 2.5 percent per year between 1993-4 and 1999-2000. These are tentative estimates, based as they are on data for two years only. Yet it is reassuring to find that they are consistent with the AWI-based estimates.

2.3. The "Employment-Unemployment Surveys"

The National Sample Survey's 1993-4 and 1999-2000 employment-unemployment surveys (EUS) also include consumer expenditure data. These can be used for further scrutiny of poverty trends. This task has been undertaken in a recent paper by Sundaram and Tendulkar (2002). They note that the consumption survey in the 1999-2000 EUS uses the traditional 30-day reporting period, but differs from the standard questionnaire by only asking an abbreviated set of questions. However, the authors find that, in those cases where the questions have comparable coverage, the means from the EUS, using the traditional 30-day reporting period, are typically close to those from the 30-day questionnaire in the main consumption survey. Based on this correspondence, they argue that the 30-day questions in the main 1999-2000 survey were not much distorted by the 7-day questions that were asked alongside them. In this version of events, the major source of incomparability between the 55th and 50th Rounds is not the contamination of the 30-day questions, but rather the revised treatment of the low frequency items, for which the reporting period was 30 days in the 50th Round and 365 days in the 55th Round. As we have already noted, the 365-day reporting period for these items pulls up the lower tail of the consumption distribution, and thus biases down the headcount ratio compared with earlier methods. However, Sundaram and Tendulkar note that the 50th Round contained *both* 30-day and 365-day reporting periods for the low frequency items. Hence, by recalculating the *50th Round* headcounts using the 365-day responses, they can put the 50th and 55th Rounds on a roughly comparable basis. When they do this, they find that, in both rural and urban sectors, they can confirm a little more than three-quarters of the official decline in the headcount ratios between the two rounds (Sundaram and Tendulkar, 2002, Table III.8). These calculations are not identical to our first-step adjustments (see Table 1a), but they are close enough to inspire some confidence that both sets of results are in the right range.

To sum up, the all-India poverty indexes presented earlier in this paper are broadly consistent with independent evidence from the national accounts statistics and the employment-unemployment surveys, as well as with related information on

agricultural wages. There is also some congruence between the inter-state contrasts emerging from NSS data and independent information on state-specific growth rates of "state domestic product" and real agricultural wages. The combined evidence from these different sources is fairly strong, even though each individual source has significant limitations.

3. Economic Inequality in the Nineties

3.1. Growth, Poverty and Inequality

It is possible to think about poverty decline, as captured by standard poverty indexes, in terms of two distinct components: a growth component and a distribution component. The growth component reflects the increase of average per-capita expenditure. The distribution component captures any change that may take place in the distribution of per-capita expenditure over households.

This decomposition exercise is pursued in Table 4, with reference to the headcount ratio (very similar results apply to the poverty-gap index). The first column repeats the headcount ratio for 1993–94 from Table 2. The second column (labeled "Derivative with respect to growth") shows our estimate of the percentage-point reduction in HCR associated with a distribution-neutral, one-percent increase in APCE in the relevant state. To illustrate, in rural Andhra Pradesh a one percent increase in APCE in 1993-94, with no change in distribution, would have led to a decline of 0.9 percentage points in the rural headcount ratio. [29] This derivative depends positively on the fraction of people who are at or near the poverty line, which is typically larger in the poorer states. The figures in column 2 vary from –1.27 in rural Assam to –0.15 in urban Jammu and Kashmir. Column 3 reproduces the total percentage growth between 1993-94 and 1999-2000 from Table 3.

[29] Note that these derivatives are *not* elasticities in the usual sense, and are not the same as the elasticities sometimes quoted, which are the derivative of the *logarithm* of the headcount ratio with respect to the logarithm of mean per capita expenditure.

If we multiply the second column (the derivative with respect to growth) by the third column (the amount of growth), we get an estimate of the amount of poverty reduction that we would expect from growth alone, in the absence of any change in the shape of the distribution. This is an approximation, because the derivative is likely to change as the headcount ratio falls. In column 4, we report a more precise calculation: an estimate of what the headcount ratio would have been in 1999–2000 if the distributions of consumption in each state were identical to those in 1993–94, but had been shifted upwards by the amount of growth in real per capita expenditure that actually took place. This can be readily calculated by reducing the 1993–94 poverty lines by the amount of growth, and re-estimating the headcount ratios from these adjusted lines and the 1993-94 expenditure data. These hypothetical changes can then be compared with the *actual* reductions in the headcount ratios, shown in the final column. The difference between these last two columns is the change in the headcount ratio that is attributable to changes in the shape of the consumption distribution.

It is important to note that the last two columns are highly correlated. The correlation coefficients across the states are 0.97 (rural) and 0.93 (urban), so that growth alone can predict much of the cross-state pattern of reduction in HCRs. Nevertheless, the estimates are far from identical. In particular, the all-India calculations show that "growth alone" would have reduced the poverty rate by *more* than actually happened, implying that there was an increase in inequality that offset some of the effects of growth, or put differently, that APCE growth among the poor was less than the average. These inequality effects vary somewhat from state to state and are much weaker in rural than in urban areas. In urban India, increasing inequality moderated the decline in the headcount ratio in all states except Delhi, Maharashtra, and Jammu and Kashmir. In some cases, such as urban Kerala and Madhya Pradesh, the "moderating effect" is pronounced, with actual rates of reduction only a little over half those predicted by the growth in the mean.

For the urban sector as a whole (the last row of the table), the actual decline in the HCR is one and a half points lower (5.9 versus 7.4 percent) than would have been the case had growth been equally distributed within each state. This estimate, which is the

population-weighted average of the corresponding numbers for each state, calculates what would have happened if each household in each state had experienced the average growth for that state. An alternative, and equally interesting, counterfactual is what would have happened if, between 1993-94 and 1999-2000, each household in the country had experienced the country-wide growth rate of 10.9 percent. Such a calculation yields an all-India HCR of 21.4 percent (for rural and urban areas combined), compared with an actual all-India HCR of 22.7 percent based on the 55th Round. In other words, the all-India HCR in 1999-2000 was 1.3 percentage points higher than it would have been (with the same growth rate of APCE) in the absence of any increase in inequality.

3.2. Aspects of Rising Inequality

Three aspects of rising economic inequality in the nineties have come up so far in our story. First, we found strong evidence of "divergence" in per-capita consumption across states. Second, our estimates of the growth rates of per-capita expenditure between 1993-94 and 1999-2000 (see Table 3) point to a significant increase in rural-urban inequalities at the all-India level, and also in most individual states. Third, the decomposition exercise in the preceding section shows that rising inequality within states, particularly in the urban sector, has moderated the effects of growth on poverty reduction.

Table 5 provides more systematic evidence on recent changes in consumption inequality within each sector of each state using two different measures of inequality. We show the logarithm of the difference of the arithmetic and geometric means (approximately the fraction by which the arithmetic mean exceeds the geometric mean), as well as the variance of the logarithm of per-capita expenditure.

The table shows that the correction for questionnaire design is critical for understanding what has been happening. (Note that the correction for prices has no effect within sectors and states.) The direct use of the unit record data in the 55th Round, with no adjustment, shows a substantial *reduction* in inequality within the rural sectors 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 have been marked increases in within-state urban inequality. We suspect that the main reason why the unadjusted data are so misleading in this context is the change from 30 to 365 days in the reporting period for the low frequency items (durable goods, clothing and footwear, and institutional medical and educational expenditures). The longer reporting period actually reduces the *mean* expenditures on those items, but because a much larger fraction of people report *something* over the longer reporting period, the bottom tail of the consumption distribution is pulled up, and both inequality and poverty are reduced. Whether 365-days is a better or worse reporting period than 30-days could be argued either way, but the main point here is that the 55th and 50th Rounds are not comparable, and that the former artificially shows too little inequality compared with the latter. Once the corrections are made, we see that, in addition to increasing inequality between states, there has been a marked increase in consumption inequality within the urban sector of nearly all states.

Two further pieces of evidence are worth mentioning in this context. First, our findings on rising economic inequality within the urban sector are consistent with recent work by Banerjee and Piketty (2001), who use income tax records to document very large increases in income among the very highest income earners. They show that, in the 1990s, real incomes among the top one percent of income earners increased by a half in real terms, while those of the top one percent of one percent increased by a factor of three in real terms.

Second, it is interesting to compare the growth rate of real wages for agricultural labourers with that of public-sector salaries. As we saw earlier, real agricultural wages have grown at 2.5 percent or so in the nineties. Public-sector salaries, for their part, have grown at almost 5 percent per year during the same period.[30] Given that public-sector employees tend to be much better off than agricultural labourers, this can be taken as an instance of rising economic disparities between different occupation groups. Since agricultural labourers and public-sector employees typically reside in rural and urban

[30] Calculated from Government of India (2002), p. S-51. There have been further major increases in public-sector salaries after 1999-2000, with the gradual implementation of the recommendations of the Fifth Pay Commission by many state governments.

areas, respectively, this finding may just be another side of the coin of rising rural-urban disparities. Even then, it strengthens the evidence presented earlier on aspects of rising economic inequality in the nineties.

To sum up, except for the absence of clear evidence of rising intra-rural inequality within states, we find strong indications of a pervasive increase in economic inequality in the nineties. This is a new development in the Indian economy: until 1993-94, the all-India Gini coefficients of per-capita consumer expenditure in rural and urban areas were fairly stable.[31] Further, it is worth noting that the rate of increase of economic inequality in the nineties is far from negligible. For instance, the compounding of inter-state "divergence" and rising rural-urban disparities produces very sharp contrasts in APCE growth between the rural sectors of the slow-growing states and the urban sectors of the fast-growing states (see Table 3). This is further compounded by the accentuation of intra-urban inequality, which is itself quite substantial, bearing in mind that the change is measured over a short period of six years (see Table 5).

It might be argued that a temporary increase in economic inequality is to be expected in a liberalizing economy, and that this trend is likely to be short-lived. Proponents of the "Kuznets curve" may even expect it to be reversed in due course. However, China's experience of sharp and sustained increase in economic inequality over a period of more than twenty years, after market-oriented economic reforms were initiated in the late 1970s, does not inspire much confidence in this prognosis.[32] It is, in fact, an important pointer to the possibility of further accentuation of economic disparities in India in the near future.

[31] See Drèze and Sen (2002), Statistical Appendix, Table A.6; also Datt (1999a, 1999b).

[32] On rising income inequality in China in the post-reform period, see Bramall and Jones (1993), Griffin and Zhao Renwei (1993), Yao Shujie (1999), Khan and Riskin (2001), among others.

4. Qualifications and Concerns

4.1. Food consumption

There have been major changes in India's food economy in the nineties. The eighties were a period of healthy growth in agricultural output, food production, and real agricultural wages. During the nineties, however, productivity increases slowed down in many states. The quantity index of agricultural production grew at a lame 2 per cent per year or so. The growth of real agricultural wages slowed down considerably. And cereal production barely kept pace with population growth.[33]

The virtual stagnation of per-capita cereal production in the nineties has been accompanied by a gradual switch from net imports to net exports, and also by a massive accumulation of public stocks. Correspondingly, there has been no increase in estimated per-capita "net availability" of cereals (see Table 6). If anything, net availability declined a little, from a peak of about 450 grams per person per day in 1990 to 420 grams or so at the end of the nineties. This is consistent with independent evidence, from National Sample Survey data, of a decline in per-capita cereal consumption in the nineties. Between 1993-94 and 1999-2000, for instance, average cereal consumption per capita declined from 13.5 kg per month to 12.7 kg per month in rural areas, and from 10.6 to 10.4 kg per month in urban areas.[34] This comparison is based on the "uncorrected" 55th Round data, and the "true" decline may be larger still, given the changes in questionnaire design (see section 1.1).

The reduction of cereal consumption in the nineties may seem inconsistent with the notion that poverty has declined during the same period. Indeed, this pattern has been widely invoked as evidence of "impoverishment" in the nineties. If cereal consumption is declining, how can poverty be declining?

[33] On these and related trends, see Drèze and Sen (2002), chapter 9. On the growth of foodgrain production, see Government of India (2002), pp. S-21 and S-22.

[34] See Shariff and Mallick (1999), Table 5, and National Sample Survey Organisation (2001), pp. A-101 and A-134.

It is worth noting, however, that the decline of cereal consumption is not new. A similar decline took place (according to National Sample Survey data) during the seventies and eighties, when poverty was certainly declining. Hanchate and Dyson's (2000) recent comparison of rural food consumption patterns in 1973-74 and 1993-94 sheds some useful light on this matter. As the authors show, during this period per-capita cereal consumption in rural areas declined quite sharply on average (from 15.8 to 13.6 kgs per person per month), but *rose* among the poorest households. The decline in the average is driven by reduced consumption among the *higher* expenditure groups.[35]

The average decline is unlikely to be driven by changes in relative prices; indeed, there has been little change in food prices, relative to other prices, in the intervening period. Instead, this pattern appears to reflect a substitution away from cereals to other food items as incomes rise (at least beyond a certain threshold). The consumption of "superior" food items such as vegetables, milk, fruit, fish and meat did rise quite sharply over the same period, across all expenditure groups. Seen in this light, the decline of average cereal consumption may not be a matter of concern per se. Indeed, average cereal consumption is inversely related to per-capita income across countries (e.g. it is lower in China than in India, and even lower in the United States), and the same applies across states within India (e.g. cereal consumption is higher in Bihar or Orissa than in Punjab or Haryana).

Food intake data collected by the National Nutrition Monitoring Bureau (NNMB) shed further light on this issue. Aside from detailed information on food intake, the NNMB surveys include rough estimates of household incomes. These are used in Figure 6 to display the relation between per-capita income and food intake, for different types of food. The substitution from cereals towards superior food items with rising per-capita income emerges quite clearly. This pattern, if confirmed, would fit quite well with the

[35] For similar observations based on a comparison of 1972-73 and 1993-94 NSS data, see Rao (2000).

data on change over time.[36] It also implies that the decline of average cereal consumption in the nineties is not inconsistent with our earlier findings on poverty decline.[37]

4.2. Localised Impoverishment and Hidden Costs

The overall decline of poverty in the nineties does not rule out the possibility of impoverishment among specific regions or social groups. That possibility, of course, is not new, but it is worth asking whether its scope has expanded during the last decade. As the economy gives greater room to market forces, uncertainty and inequality often increase, possibly leading to enhanced economic insecurity among those who are not in a position to benefit from the new opportunities, or whose livelihoods are threatened by the changes in the economy. The increase of economic inequality in the nineties, noted earlier, suggests that tendencies of this kind may well be at work in India today. Adverse trends in living standards could take several distinct forms, including: (1) impoverishment among specific regions or social groups, (2) heightened uncertainty in general, and (3) growing "hidden costs" of economic development.

In connection with the first point, we have already noted that some of the poorer states, notably Orissa and Assam, have not fared well at all in the nineties. It is quite possible that the poorer regions within these states have done even worse, to the point of absolute impoverishment for substantial sections of the population. In the case of Orissa, there is some independent evidence of localised impoverishment in the poorer districts, due inter alia to the destruction of the local environmental base and to the dismal failure of state-sponsored development programmes (Drèze, 2001).[38]

[36] Unlike NNMB data, National Sample Survey data suggest that per-capita cereal consumption rises monotonically with per-capita expenditure. The contradiction between nutritional food intake and expenditure surveys is neither uncommon nor fully understood; for two different interpretations of the Indian case, see Subramanian and Deaton (1996) and Subramanian (2001).

[37] Also worth noting in this context is NNMB evidence of recent improvement in nutritional indicators such as the "body mass index"; on this, see Vaidyanathan (2002).

[38] It should also be noted, however, that Orissa was hit by a devastating cyclone in October 1999, around the middle of the 55th Round survey period. The 1999-2000 poverty estimates for Orissa are therefore likely to be somewhat "above trend".

Similarly, the overall improvement of living standards may hide instances of impoverishment among specific occupation groups. The nineties have been a period of rapid structural change in the Indian economy, leading in some cases to considerable disruption of earlier livelihood patterns. Examples include a deep recession in the powerloom sector, a serious crisis in the edible-oil industry after import tariffs were slashed, periodic waves of bankruptcy among cotton growers, the displacement of traditional fishing by commercial shrimp farms, and a number of sectoral crises associated with the abrupt lifting of quantitative restrictions on imports in mid-2001.[39] The destruction of local environmental resources is another common cause of disrupted livelihoods in many areas.

A related issue is the possibility of "hidden hardships" associated with recent patterns of economic development. To illustrate, there is much evidence that, in many of the poorer regions of India, further impoverishment has been avoided mainly through seasonal labour migration.[40] The latter often entails significant social costs that are poorly captured, if at all, in standard poverty indexes or for that matter in the other social indicators examined in this paper. Examples of such costs include irregular school attendance, the spread of HIV/AIDS, the disruption of family life, and rising urban congestion.[41] Similarly, involuntary displacement of persons affected by large development projects such as dams and mines tends to have enormous human costs. These, again, are largely hidden from view in income-based analyses of poverty. In fact, the incomes of displaced persons often rise (with "cash compensation") even as their lives are being shattered.[42] The "informalisation" of labour markets is another example of economic change with substantial hidden costs (e.g. longer working hours, higher

[39] For insightful case studies of localised economic crises in the nineties, see e.g. Roy (1999), Breman (2001a), Krishna (2001), Jhabvala and Sinha (2002), Samal (2002), and Dabir-Alai (2002).

[40] See Rodgers and Rodgers (2000), Rogaly et al. (2001), Sharma (2001), Institute for Human Development (2002), among others.

[41] On the other hand, labour migration can also have positive roles, such as facilitating the diffusion of knowledge (Maharatna, 2001) and enabling the disadvantaged castes to "escape from the clutches of the prevailing caste discrimination in the village" (Sharma, 2001, p. 18).

[42] For a telling case study of the human costs of involuntary displacement, see Bhatia (1997).

insecurity, lower status, and deteriorating work conditions).[43] These issues are not new, but it is important to acknowledge the possibility that the hidden costs of economic growth have intensified in the nineties.

This acknowledgement helps to reconcile the survey-based evidence reviewed earlier with widespread media reports, in recent years, of sectoral economic crises and localised impoverishment.[44] This issue calls for further scrutiny, based on more focused analysis of survey data as well as on micro-studies.

4.3 The "thin" rounds: an unresolved puzzle?

We have so far said very little about the "thin" rounds, and the poverty estimates that can be calculated from them. Yet Figure 1 shows that the recent thin rounds, from the 51st through the 54th Round, generate poverty estimates that are hard to reconcile with the quinquennial "thick" rounds. If we were to connect up these points with the official HCR estimates, we would get a series in which poverty rose between 1993-4 and 1994-5, fell from 1994-5 to the end of 1997, rose very sharply in the first half of 1998, and then fell with extraordinary rapidity in 1999-2000. As we have seen, the official estimate for 1999-2000 is too low, and the last thin round, the 54th Round, ran for only the first six months of 1998, and may therefore not be fully comparable with other rounds. Even so, and with due allowance for corrections, it is very hard to integrate the poverty estimates based on the thin rounds with the picture that emerges from the thick rounds as well as from other sources surveyed in this paper.

The story is further complicated by the fact that these thin rounds were run in two versions, one of which resembled the standard questionnaire up to and including the 50th Round, and one of which—the experimental questionnaire—had different reporting periods for different goods. Headcount ratios based on the experimental questionnaire

[43] On this, see particularly Breman (2001a, 2001b).

[44] See e.g. Sainath (2001a, 2001b, 2001c, 2001d), Breman (2001b), Drèze (2001), Mehta (2001). We are not referring here to media reports of short-term hardship associated with the recent drought (in 2000 and 2001), but to stories of sustained impoverishment.

(not shown in Figure 1) are lower than those from the standard questionnaire, because the experimental questionnaire generated higher reports of per-capita expenditure. However, they also show *rising* HCRs from the 52nd through the 54th Rounds, and the increase continues into the 55th Round if we use comparable reporting periods from that round. Based on the experimental questionnaire, a case could be made that the all-India HCR has been rising since 1995-96 (see Sen, 2000). As we have seen, there are good grounds for distrusting the experimental questionnaire in the 55th Round, because of the juxtaposition of the 7-day recall and 30-day recall data for food-pan and tobacco. Quite likely, the "reconciliation effect" (see section 1.1) pulled down the estimates of per-capita expenditure from the experimental questionnaire, thus exaggerating poverty by this count. Even so, if poverty were genuinely falling, there is no obvious explanation why the experimental questionnaire should show a rise in poverty from 1995 through 1998.

The Planning Commission has never endorsed poverty counts from the thin rounds. In part, this has been because of the smaller sample sizes. The Planning Commission needs estimates of HCRs, not just for all-India, but for individual states, and the thin rounds are not large enough to support accurate estimates for some of the smaller (of the major) states. But inadequate sample size generates variance, not bias, and in any case, the thin round sample sizes are perfectly adequate to generate accurate estimates for the all-India HCRs. The discrepancies in Figure 1 cannot be explained by inadequate sample sizes.

There are other differences between thick and thin rounds. For example, the sampling frame for the 51st, 53rd, and 54th Rounds was not the census of population, but the "economic" census. In the population census, each household is asked if it has a family business or enterprise, and only such households are included in the first-stage sampling from the economic census when "first-stage units" are drawn with probability proportional to size. This means that a village with few or no such households has only a small or no chance of being selected as a first-stage unit. Even so, when the team reaches the village, *all* households are listed and have a chance of being in the sample, so it is unclear that this choice of frame makes much difference. Indeed, comparison of various

socio-economic indicators (e.g. literacy rates, years of schooling, landholding, or family size) from the surveys suggests no obvious breaks between the 51st and 53rd Rounds on the one hand, and the 52nd Round (which used the population census) on the other. Conversations with NSS and Planning Commission staff sometimes suggest that there may be other (non-documented) differences in the sampling structure of the thin rounds. Certainly, a tabulation of the population sizes of the first-stage units shows that the 52nd Round contained relatively few large units compared with the 51st, 53rd, 54th, and 55th rounds; this is a different issue from the use of the economic rather than population census (both the 52nd and 55th Rounds use the latter), and the finding suggests that the first-stage units in the 52nd Round were selected differently from other rounds in some way that is not documented. Moreover, the measurement of consumption is not the main purpose of any of these thin rounds, all of which have some other objective, so it is possible that consumption is not so fully or carefully collected as in the quinquennial rounds.

In short, there are grounds for scepticism about the validity of the thin rounds for poverty estimation purposes, and this is all the more so if we remember that aside from indicating no poverty decline in the late nineties, the thin rounds also suggest that *average* per-capita expenditure was stagnating during that period – something that is very hard to reconcile with other evidence. Having said this, we have not been able to identify any "smoking gun" that would point to a specific problem with any of these rounds and explain their apparently anomalous poverty estimates. Until that puzzle is resolved, we see the evidence from the thin rounds as casting a shadow of doubt over the interpretation of the poverty estimates presented earlier in this paper. Perhaps the thin rounds in the next five years will offer some useful clues.

5. Beyond Poverty Indexes

The decline of poverty in the nineties, as captured in the indicators examined so far, can be seen as an example of *continued progress* during that period. Whether the rate of progress has been faster or slower than in the eighties is difficult to say, and the answer

is likely to depend on how the rate of progress is measured. There is, at any rate, no obvious pattern of "acceleration" or "slowdown" in this respect.

It is important to supplement the evidence reviewed so far, which essentially relates to purchasing power, with other indicators of well-being relating for instance to educational achievements, life expectancy, nutritional levels, crime rates, and various aspects of social inequality. This broader perspective reveals that social progress in the nineties has followed very diverse patterns, ranging from accelerated progress in some fields to slowdown and even regression in other respects. The point is illustrated in Figure 7, where simple measures of the progress of different social indicators in the nineties are compared with the corresponding achievements in the eighties.

Elementary education provides an interesting example of accelerated progress in the nineties.[45] This trend is evident not only from census data on literacy rates, but also from National Family Health Survey data on school participation. To illustrate, school participation among girls aged 6-14 jumped from 59 percent to 74 percent between 1992-3 and 1998-9.[46] The regional patterns are also instructive. It is particularly interesting to note evidence of rapid progress in Madhya Pradesh and Rajasthan, demarcating them clearly from Bihar and Uttar Pradesh, the other two members of the so-called BIMARU set.[47] There is an important pointer here to the relation between public action and social achievements. Indeed, Madhya Pradesh and Rajasthan are two states where there have been many interesting initiatives in the field of elementary education in the nineties (on the part of government as well as non-government institutions), in contrast with Bihar and Uttar Pradesh where schooling matters continue to be highly neglected. The fact the

[45] For further discussion, see Drèze and Sen (2002), chapter 5.

[46] See Drèze and Sen (2002), p. 148; also International Institute for Population Sciences (1995, 2000), for further details.

[47] To illustrate, looking at the percentage reduction in illiteracy between 1991 and 2001, Madhya Pradesh and Rajasthan did better than any other major state except Himachal Pradesh; Uttar Pradesh is very close to the all-India average; and Bihar ranks second from the bottom (calculated from census data given in Government of India, 2001b). The comparison is particularly instructive because all four BIMARU states started off with similar (very low) levels of literacy in 1991. On the "schooling revolution" in Himachal Pradesh (an even more remarkable example of successful promotion of elementary education), see PROBE Team (1999), chapter 9.

literacy rates and school participation have surged in the more "active" states is an encouraging indication of the possibility of effective public intervention in this field.

Turning to instances of "slowdown", we have already referred to the slackening of the growth rate of real agricultural wages in the nineties. Another important example is the slowdown of infant mortality decline. During the eighties, India achieved a reduction of 30 per cent in the infant mortality rate - from 114 deaths per 1,000 live births in 1980 to 80 per 1,000 in 1990. During the nineties, however, the infant mortality rate declined by only 12.5 per cent - from 80 to 70.[48] In fact, in the second half of the nineties, India's infant mortality rate has remained virtually unchanged. In some states, notably Rajasthan, the infant mortality rate has stagnated for as long as ten years. These worrying trends have received astonishingly little attention in policy debates, and even in the debate on "poverty in the nineties".

Finally, there have also been some areas of "regression" in the nineties. The increase of economic inequality, discussed earlier, can be seen in those terms. Given the adverse social consequences of economic inequality (ranging from elitist biases in public policy to the reinforcement of other types of inequality), this accentuation of economic disparities is not a trivial matter. Another example of adverse development in the nineties is the decline in the female-male ratio among children, from 945 girls per 1,000 boys (in the 0-6 age group) in 1991 to 927 girls per 1,000 boys in 2001.[49] This decline appears to be driven by the spread of prenatal sex-determination technology and sex-selective abortion, but this does not mean that it is a "technological" phenomenon, unrelated to other recent economic and social trends. Economic growth, in particular, may facilitate the spread of sex-selective abortion, by making the use of sex-determination technology more affordable. In this connection, it is worth noting that the largest declines of the female-male ratio among children between 1991 and 2001

[48] See Government of India (1999a), Table 1, and *Sample Registration Bulletin*, April 2001; also UNICEF (2001) and Mari Bhat (2002). The comparison with Bangladesh is also instructive: Bangladesh's infant mortality rate was much higher than India's in 1990 (91 and 80 per 1,000, respectively), but by 1999 it had come down to 61 as against India's 71. See *World Development Indicators 2001*, pp. 16-17.

[49] On this and related issues, see Drèze and Sen (2002), chapter 7.

occurred in five states (Gujarat, Haryana, Himachal Pradesh, Punjab and Delhi) that are relatively well-off economically, and have also experienced comparatively high rates of growth of per-capita expenditure in the nineties (see Table 3).[50]

A detailed assessment of the progress of development indicators in the nineties is beyond the scope of this paper. However, a few general observations can be made on the basis of these illustrations. First, as noted already, poverty is not unidimensional. The poverty indexes used in the first part of this paper are useful indicators of inadequate purchasing power, but on their own do not do justice to the range of deprivations we ought to be concerned with. Following on this, it is important to acknowledge that recent progress in eliminating poverty and deprivation has been quite uneven in different fields. The debate on "poverty in the nineties" has often overlooked this basic point.

Second, this recognition is also important in assessing the relation between poverty decline and economic growth. As noted earlier, the decline of poverty in the nineties, as captured by conventional indexes such as the headcount ratio or the poverty-gap index, has been overwhelmingly driven by the growth of average per-capita expenditure. From this it may seem that the reduction of poverty is mainly a question of economic growth. However, there is an element of circularity in this argument: if poverty is defined as lack of income, it is not surprising that the growth of income plays a key role in reducing it. When the multidimensional nature of poverty is acknowledged, this relation appears in a different light. To illustrate, consider child mortality as an aspect of the deprivations associated with poverty. There is, of course, a significant (negative) relation between child mortality and purchasing power. But child mortality is also strongly influenced by other factors such as educational levels, fertility rates, public health provisions (including clean water and vaccinations), and various aspects of gender relations. Looking at inter-state contrasts in India, the correlation between child mortality and average per-capita expenditure (or even poverty indexes) is actually quite weak.

[50] The relevant female-male ratios are given in Government of India (2001b), pp. 92-94.

Other factors, particularly female literacy, are often more important.[51] Similar comments apply in the context of elementary education: the nineties have demonstrated the possibility of rapid progress in this field through public intervention, with or without rapid economic growth. In short, the standard focus on headcount ratios and other expenditure-based poverty indexes tends to foster a simplistic view of the relation between economic growth and poverty decline.

Third, it is also interesting to reexamine the issue of trends in inequality, in the light of this broader perspective. As discussed in section 3, there is much evidence of rising economic inequality in the nineties, in the form of a widening rural-urban gap, enhanced inter-state disparities, and also growing inequality within urban areas in most states. What about other types of social inequality, involving other dimensions of well-being (e.g. educational levels or life expectancy) and other bases of disadvantage (e.g. gender or caste)? The decline of the female-male ratio among children illustrates the fact that the phenomenon of rising inequality in the nineties is not confined to standard economic inequalities: "natality inequality" between males and females is also rising.[52] But this is not to say that inequality has risen across the board. Even within the field of gender inequality, there are changes in the other direction, such as the emergence of a substantial gender gap in life expectancy in favour of *women*, overturning India's long history of female disadvantage in this respect. Similarly, it is interesting to note that while economic disparities between rural and urban areas have sharply risen in the nineties, there are trends in the opposite direction as well. The rural-urban gap in life expectancy, for instance, has declined from 10 years or so in the late 1970s to 7 years or so today, and rural-urban differentials in school participation have also narrowed.[53] Here

[51] Across states, the correlation coefficient between child mortality and per-capita expenditure is 0.4 (in absolute value), compared with 0.8 for the correlation coefficient between child mortality and female literacy. After controlling for female literacy, per-capita expenditure bears no significant association with child mortality at the state level. For further discussion, see Drèze and Sen (2002), pp. 87-89. On the determinants of mortality and fertility in India, see also Murthi, Guio and Drèze (1995) and Drèze and Murthi (2001), and further studies cited there.

[52] On "natality inequality" and its significance, see Sen (2001).

[53] See e.g. Government of India (1999), p. 16, and Drèze and Sen (2002), p. 148.

again, the picture is more diverse (and more interesting) than it appears on the basis of purchasing-power indicators alone.

Fourth, the broad approach explored here calls for a correspondingly broad reading of the causal influences underlying the identified changes. In the debate on "poverty in the nineties", there has been a tendency not only to view development trends in unidimensional terms, but also to attribute these trends in a somewhat mechanical manner to the economic reforms initiated around 1991. At one end of the spectrum, it has been claimed that the last decade has been a period of unprecedented improvement in living standards, thanks to liberalization.[54] At the other end, the nineties have been described as a period of widespread "impoverishment", attributed to liberalization.[55] Clearly, these readings fail to do justice to the diversity of recent trends. But in addition, they ignore the diversity of causal influences that have a bearing on these trends. The accelerated progress of elementary education in the nineties, for instance, has little to do with liberalization, and the same applies to the slowdown of infant mortality decline, not to speak of the decline of the female-male ratio among children. Much else than liberalization has happened in the nineties, and while issues of economic reform are of course extremely important, so are other aspects of economic and social policy.

6. Concluding Remarks

A number of useful lessons emerge from this reexamination of the evidence on poverty and inequality in the nineties. First, there is consistent evidence of continuing poverty decline in the nineties, in terms of the "headcount ratio". The extent of the

[54] To illustrate: "Economic reforms initiated in 1991 have led to a radical transformation in the well being of the bottom half of the population. From an approximate level of 38 percent in 1987, poverty level in India in 1998 was close to 12 percent." (Bhalla, 2000b, p. 7)

[55] To illustrate: "Both under the World Bank structural adjustment, and from the Finance Ministry -- it's feet might be in India, but it's head is in Washington -- and then under the World Trade Organisation obligations, we're basically getting a fundamental destruction of notions of the rights of citizens… Very vital resources we need both for survival -- drinking water, all the resources people need for livelihoods -- are just disappearing so rapidly that life is becoming impossible…we really have a very, very major crisis of survival at hand...." (Shiva, 2001b). For further contributions on both sides of the debate, see the literature cited in footnote 2.

decline, however, remains somewhat uncertain at this time. Given the methodological changes that took place between the 50th and 55th Rounds of the National Sample Survey, the official figures (implying a decline from 36 percent to 26 percent in the all-India headcount ratio between 1993-94 and 1999-2000) are, strictly speaking, invalid. We have discussed alternative estimates, based on comparable data from the two surveys. As it turns out, these adjusted estimates suggest that a large part of the poverty decline associated with official figures is "real", rather than driven by methodological changes. While further corroboration and investigation of the adjustment procedure is required, the results have been supported by one independent study using an entirely different methodology (Sundaram and Tendulkar, 2002). Further, the adjusted figures fit reasonably well with related evidence from the national accounts statistics, the employment-unemployment surveys, and data on agricultural wages.

Second, we have discussed some important limitations of the headcount ratio as an index of poverty (even within the standard expenditure-based approach), and argued for wider adoption of alternative poverty indexes such as the poverty-gap index. The main argument for using headcount ratios is that they have good "communication value", in so far as they are relatively easy to understand and interpret. However, this transparency is to some extent deceptive, and much caution is required in interpreting poverty trends on the basis of headcount ratios. For the purpose of the poverty comparisons examined in this paper, the headcount ratio turns out to be no less informative than the poverty-gap index. Yet it was important to calculate the PGIs, if only to discover that this refinement does not, after all, make much difference in this particular context.

Third, growth patterns in the nineties are characterised by major regional imbalances. Broadly speaking, the western and southern states (Andhra Pradesh excluded) have tended to do comparatively well. The low-growth states, for their part, form a large contiguous region in the north and east. This is a matter of concern, since the northern and eastern regions were poorer to start with. Indeed, National Sample Survey data suggest a strong pattern of inter-regional "divergence" in average per-capita

expenditure (APCE): states that started off with higher APCE *levels* also had higher *growth rates* of APCE between 1993-94 and 1999-2000. In some of the poorer states, notably Assam and Orissa, there has been virtually zero growth of average per-capita expenditure (and very little reduction, if any, in rural poverty) between 1993-94 and 1999-2000. These regional patterns are at least broadly consistent with independent estimates of the growth rates of state domestic product (SDP).

Fourth, the intensification of regional disparities is only one aspect of a broader pattern of increasing economic inequality in the nineties. Two other aspects are rising rural-urban disparities in per-capita expenditure, and rising inequality of per-capita expenditure within urban areas in most states. Further, the real wages of agricultural labourers have increased more slowly than per-capita GDP, and conversely with public-sector employees, suggesting some intensification of economic inequality between occupation groups.

Fifth, we have argued for assessing changes in living standards in a broader perspective, going beyond the standard focus on expenditure-based indicators. In that broader perspective, a more diverse picture emerges, with areas of accelerated progress in the nineties as well as slowdown in other fields. For instance, there is much evidence of rapid progress in the field of elementary education, but the rate of decline of infant mortality has slowed down. These and related trends deserve greater attention than they have received so far in the debate on "poverty in the nineties".

Sixth, the case for going beyond expenditure-based indicators applies also to the assessment of inequality. While expenditure-based data suggest rising disparities in the nineties, the same need not apply to other social indicators. For instance, while economic disparities between rural and urban areas have increased in the nineties, there has been some narrowing of the rural-urban gap in terms of life expectancy and school participation.

Finally, we have argued against reading these trends simply as evidence of the impact (positive or negative) of "liberalization". For one thing, the impact of liberalization is a "counterfactual" question, and much depends on how the alternatives are specified. For another, much else has happened in the nineties, other than liberalization. The evidence we have reviewed is of much interest in its own right, independently of the liberalization debate. Much work remains to be done in terms of identifying the causal relations underlying the trends we have identified.

References

Acharya, Sarthi (1989), "Agricultural Wages in India: A Disaggregated Analysis", *Indian Journal of Agricultural Economics*, 44.

Ahluwalia, Montek S. (2000), "Economic Performance of States in Post-reforms Period", *Economic and Political Weekly*, 6 May.

Banerjee, A., and Piketty, T. (2001), "Are the Rich Growing Richer: Evidence from Indian Tax Data," MIT, Cambridge MA, and CEPREMAP, Paris, processed. Available at *http://www.worldbank.org/indiapovertyworkshop*.

Bhagwati, Jagdish (2001), "Growth, Poverty and Reforms", *Economic and Political Weekly*, 10 March.

Bhalla, Surjit (2000a), "Growth and Poverty in India: Myth and Reality", mimeo, Oxus Research and Investments, New Delhi.

Bhalla, Surjit (2000b), "FAQ's on Poverty in India", mimeo, Oxus Research and Investments, New Delhi.

Bhatia, Bela (1997), "Forced Evictions in the Narmada Valley", in Drèze, J.P., Samson, M., and Singh, S. (eds.) (1997), *The Dam and the Nation: Displacement and Resettlement in the Narmada Valley* (New Delhi: Oxford University Press).

Bramall, Chris, and Jones, Marion (1993), "Rural Income Inequality in China since 1978", *Journal of Peasant Studies*, 21(1).

Breman, Jan (2001a), "An Informalised Labour System: End of Labour Market Dualism", *Economic and Political Weekly*, 35(52).

Breman, Jan (2001b), "The State of Poverty in Urban India at the Beginning of the 21st Century", Sukhamoy Chakravarty Memorial Lecture, Delhi School of Economics, 16 November.

Central Statistical Organisation (2001), *National Accounts Statistics 2001* (New Delhi: CSO).

Chandrasekhar, C.P., and Ghosh, J. (2002), *The Market that Failed: A Decade of Neoliberal Economic Reforms in India* (New Delhi: Leftword Books).

Dabir-Alai, Parviz (2002), "The Socio-Economics of Street Vending: A Case Study of Vulnerability for Delhi in the 1990s", mimeo, Richmond School of Business, London

Das, Gurcharan (2000), *India Unbound* (New Delhi: Penguin).

Dasgupta, Partha, and Ray, Debraj (1990), "Adapting to Undernourishment: The Biological Evidence and Its Implications", in Drèze and Sen (1990), vol. i.

Datt, Gaurav (1999a), "Has Poverty Declined since Economic Reforms?", *Economic and Political Weekly*, 11-17 December.

Datt, Gaurav (1999b), "Poverty in India: Trends and Decompositions", mimeo, World Bank, Washington, DC.

Datt, Gaurav, and Ravallion, Martin (2002), "Is India's Economic Growth Leaving the Poor Behind?", mimeo, World Bank, Washington, DC.

Deaton, Angus (2001a), "Adjusted Indian Poverty Estimates for 1999-2000," Princeton, Research Program in Development Studies, processed. Available at *http://www.wws.princeton.edu/~rpds*.

Deaton, Angus (2001b), "Computing Prices and Poverty Rates in India, 1999-2000," Princeton, Rsearch Program in Development Studies, processed. Available at *http://www.wws.princeton.edu/~rpds*.

Deaton, Angus, and Tarozzi, Alessandro (2000), "Prices and Poverty in India", Princeton, Research Program in Development Studies, processed. Available at *http://www.wws.princeton.edu/~rpds*.

Diewert, W. Erwin (1976), "Exact and Superlative Index Numbers," *Journal of Econometrics*, 4.

Drèze, Jean (2000), "Poverty: Beyond Head-count Ratios", *The Hindu*, 9 September.

Drèze, Jean (2001), "No More Lifelines: Political Economy of Hunger in Orissa", *Times of India*, 17 September.

Drèze, Jean, and Murthi, Mamta (2001), "Fertility, Education, and Development: Evidence from India", *Population and Development Review*, 27.

Drèze, Jean, and Sen, Amartya (eds.) (1990), *The Political Economy of Hunger* (Oxford: Clarendon).

Drèze, Jean, and Sen, Amartya (2002), *India: Development and Participation* (New Delhi: Oxford University Press).

EPW Research Foundation (1993), "Poverty Levels in India: Norms, Estimates and Trends", *Economic and Political Weekly*, August 21.

Government of India (1993a), *Report of the Expert Group on Estimation of Proportion and Number of Poor* (New Delhi: Planning Commission).

Government of India (1993b), *Sample Registration System: Fertility and Mortality Indicators 1990* (New Delhi: Office of the Registrar General).

Government of India (1999), *Compendium of India's Fertility and Mortality Indicators 1971-1997* (New Delhi: Office of the Registrar General).

Government of India (2001a), *Economic Survey 2000-2001* (New Delhi: Ministry of Finance).

Government of India (2001b), "Provisional Population Totals", Census of India 2001, Series 1 (India), Paper 1 of 2001, Office of the Registrar General, New Delhi.

Government of India (2002), *Economic Survey 2001-2002* (New Delhi: Ministry of Finance).

Griffin, K., and Zhao Renwei (eds.) (1993), *The Distribution of Income in China* (London: Macmillan).

Gupta, S.P. (1999), "Tricle Down Theory Revisited: The Role of Employment and Poverty", V.B. Singh Memorial Lecture, 41st Annual Conference of the Indian Society of Labour Economics, 18-20 November, Mumbai.

Hanchate, A., and Dyson, T. (2000), "Trends in the Composition of Food Consumption and their Impact on Nutrition and Poverty in India", mimeo, London School of Economics.

Institute for Human Development (2002), "Dynamics of Poverty, Employment and Human Development in Bihar", project report; to be published as a monograph.

International Institute for Population Sciences (1995), *National Family Health Survey 1992-93: India* (Mumbai: IIPS).

International Institute for Population Sciences (2000), *National Family Health Survey 1998-99 (NFHS-2): India* (Mumbai: IIPS).

Jhabvala, R., and Sinha, S. (2002), "Liberalisation and the Woman Worker", *Economic and Political Weekly*, 25 May.

Jose, A.V. (1988), "Agricultural Wages in India", *Economic and Political Weekly*, 25 June.

Khan, A.R., and Riskin, C. (2001), *Inequality and Poverty in China in the Age of Globalization* (New York: Oxford University Press).

Krishna, Sridhar (2001), "Phasing Out of Import Licensing: Impact on Small-scale Industries", *Economic and Political Weekly*, 7 July.

Kulshreshtha, A.C., and Kar, A. (2002), "Estimates of Food Consumption Expenditure from Household Surveys and National Accounts", paper presented at the joint Planning Commission/World Bank workshop on poverty measurement, Delhi, January. Available at *http://www.worldbank.org/indiapovertyworkshop*.

Lal, D., Mohan, R., and Natarajan, I. (2001), "Economic Reforms and Poverty Alleviation: A Tale of Two Surveys", *Economic and Political Weekly*, 24 March.

Maharatna, Arup (2001), "On the 'Brighter Side' of Seasonal Migration: A Case Study of Fertility Transition in Tribal Population in Rural West Bengal, India", mimeo, Gokhale Institute of Politics and Economics, Pune.

Mari Bhat, P.N. (2002), "Has the Decline in Infant Mortality Rate Slowed Down? A Review of SRS Eveidence", paper presented at a national workshop on "Infant Mortality: Levels, Trends and Interventions" held at New Delhi on April 11-12, 2002

Mehta, Jaya (2001), "Give Poverty a Face Please!", in *Alternative Economic Survey 2000-2001* (Delhi: Rainbow Publishers).

Murthi, M., Guio, A.C., and Drèze, J.P. (1995), "Mortality, Fertility and Gender Bias in India", *Population and Development Review*, 21.

Nagaraj, R. (2000), "Indian Economy since 1980: Virtuous Growth or Polarisation?", *Economic and Political Weekly*, 5 August.

National Nutrition Monitoring Bureau (1999), *Report of Second Repeat Surveys 1996-97* (Hyderabad: National Institute of Nutrition).

National Sample Survey Organisation (2001a), "Level and Pattern of Consumer Expenditure in India 1999-2000", Report 457, National Sample Survey Organisation, New Delhi.

National Sample Survey Organisation (2001b), "Consumption of Some Important Commodities", Report 461, National Sample Survey Organisation, New Delhi.

Osmani, Siddiq R. (1990), "Nutrition and the Economics of Food: Implications of Some Recent Controversies", in Drèze and Sen (1990), vol. i.

PROBE Team (1999), *Public Report on Basic Education in India* (New Delhi: Oxford University Press).

Rao, C.H. Hanumantha (2000), "Declining Demand for Foodgrains in Rural India: Causes and Implications", *Economic and Political Weekly*, 22 January.

Ravallion, Martin (2000), "Should Poverty Measures be Anchored to the National Accounts?", mimeo, ARQADE, Univerty of Toulouse.

Rodgers, Gerry, and Rodgers, Janine (2000), "Semi-Feudalism Meets the Market: A Report from Purnia", Working Paper 6, Institute for Human Development, New Delhi.

Rogaly, B., Biswas, J., Coppard, D., Rafique, A., Rana, K., and Sengupta, A. (2001), "Seasonal Migration, Social Change and Migrants' Rights: Lessons from West Bengal", *Economic and Political Weekly*, 8 December.

Roy, Tirthankar (1999), "Growth and Recession in Small Scale Industry: A Study of Tamil Nadu Powerlooms", *Economic and Political Weekly*, 30 October.

Sainath, P. (2001a), "Will the Real National Calamity Please Stand Up?", *The Hindu*, 25 February.

Sainath, P. (2001b), "It's the Policy, Stupid, not Implementation" (2 parts), *The Hindu*, September.

Sainath, P. (2001c), "Mass Media: Disconnected from Mass Reality", *The Hindu*, 2 September.

Sainath, P. (2001d), "Where Stomachaches are Terminal", *The Hindu*, 29 April.

Samal, K.C. (2002), "Shrimp Culture in Chilika Lake: Case of Occupational Displacement of Fishermen", *Economic and Political Weekly*, 4 May.

Sarmah, Sasanka (2000), "Agricultural Wages: Trends and Determinants", M.Phil. thesis, Delhi School of Economics.

Sarmah, Sasanka (2001), "Agricultural Wages in India: An Analysis of Regions and States", mimeo, Centre for Development Economics at the Delhi School of Economics; forthcoming in *Indian Journal of Labour Economics*.

Sen, Abhijit (2000), "Estimates of Consumer Expenditure and its Distribution", *Economic and Political Weekly*, 16 December.

Sen, Amartya (2001), "Many Faces of Gender Inequality", *Frontline*, 27 October, 2001.

Shariff, A., and Mallick, A.C. (1999), "Dynamics of Food Intake and Nutrition by Expenditure Class in India", *Economic and Political Weekly*, 3 July.

Sharma, Alakh (2001), "Agrarian Relations and Socio-Economic Change in Bihar", paper presented at a conference on "Labour and Capitalist Transformation in Asia" held at the Centre for Development Studies, Thiruvananthapuram, 13-15 December.

Shiva, Vandana (2001a), "India: Corporatisation of Agriculture Disastrous", *The Guardian*, 7 March.

Shiva, Vandana (2001b), "Is Globalization Killing the Environment?", interview with Frederick Noronha; available at *http://www.onweb.org/archive/features/shiva/shiva.html*.

Subramanian, A. (2001), "Are Income-Calorie Elasticities Really High in Developing Countries? Some Implications for Nutrition and Income", mimeo, National Council of Applied Economic Research, New Delhi.

Subramanian, Shankar and Angus Deaton, 1996, "The demand for food and calories," *Journal of Political Economy*, 104, 133-62.

Sundaram, K. (2001a), "Employment-Unemployment Situation in Nineties: Some Results from NSS 55th Round Survey", *Economic and Political Weekly*, 17 March.

Sundaram, K. (2001b), "Employment and Poverty in 1990s: Further Results from NSS 55th Round Employment-Unemployment Survey, 1999-2000", *Economic and Political Weekly*, 11 August.

Sundaram, K. (2001c), "Poverty in India: Some Issues in Measurement and Database", mimeo, Delhi School of Economics, Delhi.

Sundaram, K., and Tendulkar, S. (2000), "Poverty in India: An Assessment and Analysis", draft report for the Asia Development Bank; mimeo, Delhi School of Economics, Delhi.

Sunaram, K., and Tendulkar, S. (2001), "NAS-NSS Estimates of Private Consumption for Poverty Estimation: A Disaggregated Comparison for 1993-94", *Economic and Political Weekly*, 13 January.

Sundaram, K., and Tendulkar, S., (2002), "Recent Debates on Data Base for Measurement of Poverty in India", Delhi School of Economics, processed. Presented at joint GOI/World Bank poverty workshop, Delhi, January 2002. Available at *http://www.worldbank.org/indiapovertyworkshop*.

Tarozzi, Alessandro, 2001, "Estimating comparable poverty counts from incomparable surveys: measuring poverty in India," Research Program in Development Studies, Princeton University, processed. Available at *http://www.wws.princeton.edu/~rpds*.

UNICEF (2001), "GOI-UNICEF Country Programme of Cooperation 2003-2007", mimeo, UNICEF, New Delhi.

Vaidyanathan, A. (2002), "Food Consumption and Nutrition Status: A Re-examination Based on Indian Evidence", mimeo, Madras Institute of Development Studies, Chennai.

Visaria, Pravin (2000), "Alternative Estimates of Poverty in India", *Economic Times*, 27 June.

Yao Shujie (1999), "Economic Growth, Income Inequality and Poverty in China under Economic Reforms", *Journal of Development Studies*, 35.

Table 1a
All-India Headcount Ratios (%)

	1987-88	1993-94	1999-00
Rural			
Official estimates	39.4	37.1	26.8
Adjusted estimates:			
Step 1: Adjusting for changes in questionnaire design	39.4	37.1	30.0
Step 2: Revising the poverty lines	39.4	33.0	26.3
Urban			
Official estimates	39.1	32.9	24.1
Adjusted estimates:			
Step 1: Adjusting for changes in questionnaire design	39.1	32.9	24.7
Step 2: Revising the poverty lines	22.5	17.8	12.0

Source: Planning Commission, Press Releases (11 March, 1997, and 22 February, 2001), Deaton (2001a, b), and Table 2a below.

Table 1b
All-India Poverty-gap Indexes

	1987-88	1993-94	1999-00
Rural			
Estimates from unadjusted data and official poverty lines	9.4	8.4	5.2
Adjusted estimates:			
Step 1: Adjusting for changes in questionnaire design	9.4	8.4	6.4
Step 2: Revising the poverty lines	9.4	7.0	5.2
Urban			
Estimates from unadjusted data and official poverty lines	10.4	8.3	5.2
Adjusted estimates:			
Step 1: Adjusting for changes in questionnaire design	10.4	8.3	5.9
Step 2: Revising the poverty lines	4.8	3.7	2.3

Source: Authors' calculations from unit record data from the 43rd, 50th, and 55th Rounds of the NSS.

Table 2a
State-specific Headcount Ratios (%)

	Official Methodology			Adjusted Estimates		
Rural	1987–88	1993–94	1999–00	1987–88	1993–94	1999–00
Andhra Pradesh	21.0	15.9	10.5	35.0	29.2	26.2
Assam	39.4	45.2	40.3	36.1	35.4	35.5
Bihar	53.9	58.0	44.0	54.6	48.6	41.1
Gujarat	28.6	22.2	12.4	39.4	32.5	20.0
Haryana	15.4	28.3	7.4	13.6	17.0	5.7
Himachal Pradesh	16.7	30.4	7.5	13.3	17.1	9.8
Jammu & Kashmir	25.9	30.4	4.7	15.3	10.1	6.1
Karnataka	32.6	30.1	16.8	40.8	37.9	30.7
Kerala	29.5	25.4	9.4	23.8	19.5	10.0
Madhya Pradesh	42.0	40.7	37.2	43.7	36.6	31.3
Maharashtra	41.0	37.9	23.2	44.3	42.9	31.9
Orissa	58.7	49.8	47.8	50.4	43.5	43.0
Punjab	12.8	11.7	6.0	6.6	6.2	2.4
Rajasthan	33.3	26.4	13.5	35.3	23.0	17.3
Tamil Nadu	46.3	35.9	20.0	49.0	38.5	24.3
Uttar Pradesh	41.9	42.3	31.1	34.9	28.6	21.5
West Bengal	48.8	41.2	31.7	36.3	25.1	21.9
All India Rural	39.4	37.1	26.8	39.0	33.0	26.3
Urban						
Andhra Pradesh	41.1	38.8	27.2	23.4	17.8	10.8
Assam	11.3	7.9	7.5	13.6	13.0	11.8
Bihar	51.9	34.8	33.5	38.1	26.7	24.7
Gujarat	38.5	28.3	14.8	16.4	14.7	6.4
Haryana	18.4	16.5	10.0	11.8	10.5	4.6
Himachal Pradesh	7.2	9.3	4.6	1.7	3.6	1.2
Jammu & Kashmir	15.0	9.3	2.0	3.8	3.1	1.3
Karnataka	49.2	39.9	24.6	26.0	21.4	10.8
Kerala	39.8	24.3	19.8	21.0	13.9	9.6
Madhya Pradesh	47.3	48.1	38.5	20.7	18.5	13.9
Maharashtra	40.3	35.0	26.7	21.2	18.2	12.0
Orissa	42.6	40.6	43.5	20.8	15.2	15.6
Punjab	13.7	10.9	5.5	6.6	7.8	3.4
Rajasthan	37.9	31.0	19.4	19.8	18.3	10.8
Tamil Nadu	40.2	39.9	22.5	26.2	20.8	11.3
Uttar Pradesh	44.9	35.1	30.8	29.3	21.7	17.3
West Bengal	33.7	22.9	14.7	22.3	15.5	11.3
Delhi	15.1	16.1	9.2	4.7	8.8	2.4
All India Urban	39.1	32.9	24.1	22.5	17.8	12.0

Source: Authors' calculations based on NSS unit record data from 43rd, 50th, and 55th Rounds.

Table 2b
State-specific Poverty-gap Indexes

	Official Methodology			Adjusted Estimates		
Rural	1987–88	1993–94	1999–00	1987–88	1993–94	1999–00
Andhra Pradesh	4.4	2.9	1.8	8.0	5.8	4.8
Assam	7.4	8.3	8.5	6.5	5.7	6.1
Bihar	12.9	14.7	8.7	13.2	10.7	8.5
Gujarat	5.5	4.1	2.2	8.4	6.8	3.8
Haryana	3.6	5.6	1.3	2.8	3.0	0.7
Himachal Pradesh	2.6	5.6	1.0	2.1	3.0	1.5
Jammu & Kashmir	4.5	5.6	0.6	2.4	1.6	0.7
Karnataka	7.9	6.3	2.7	10.5	8.6	6.4
Kerala	6.4	5.6	1.5	4.8	3.9	1.7
Madhya Pradesh	10.6	9.5	7.7	11.2	8.2	6.6
Maharashtra	9.6	9.3	4.4	10.8	11.2	7.6
Orissa	16.3	12.0	11.7	13.0	9.7	10.5
Punjab	2.0	1.9	0.8	1.0	1.0	0.3
Rajasthan	8.6	5.2	2.1	9.2	4.4	3.0
Tamil Nadu	12.6	7.3	3.8	13.7	9.1	4.6
Uttar Pradesh	9.9	10.4	5.8	7.5	5.8	3.9
West Bengal	11.6	8.3	6.5	7.7	4.2	3.5
All India Rural	9.4	8.4	5.2	9.2	7.0	5.2
Urban						
Andhra Pradesh	10.6	9.3	5.6	4.9	3.4	1.9
Assam	1.5	0.9	1.5	2.0	2.0	1.9
Bihar	13.0	7.9	6.7	8.2	5.6	5.0
Gujarat	8.2	6.2	2.4	2.8	2.6	1.0
Haryana	3.6	3.0	2.0	2.3	1.9	0.7
Himachal Pradesh	0.7	1.2	0.6	0.2	0.5	0.2
Jammu & Kashmir	2.4	1.2	0.2	0.5	0.5	0.2
Karnataka	14.1	11.4	5.6	5.7	4.5	2.1
Kerala	10.4	5.5	3.9	4.5	2.7	1.7
Madhya Pradesh	13.6	13.4	9.5	4.1	3.5	2.6
Maharashtra	12.3	10.1	6.7	5.3	4.6	2.8
Orissa	11.1	11.4	11.1	4.2	3.0	3.0
Punjab	2.3	1.7	0.6	1.0	1.1	0.4
Rajasthan	9.6	7.0	3.4	4.0	3.2	1.7
Tamil Nadu	11.5	10.2	4.8	6.2	4.5	2.0
Uttar Pradesh	12.2	9.0	6.6	6.3	4.6	3.3
West Bengal	7.4	4.5	2.5	4.2	2.9	1.9
Delhi	2.8	3.9	1.5	0.7	1.7	0.4
All India Urban	10.4	8.3	5.2	4.8	3.7	2.3

Source: Author's calculations using unit record data from the 43rd, 50th, and 55th Rounds of the NSS.

Notes to Table 2:

Table 2a. The headcount ratios labelled "official methodology" are computed from the unit record data using the official poverty lines, as well as the official procedures for assigning poverty rates (or poverty lines) to small states. We have also followed the official treatment of Jammu and Kashmir. The All India poverty rates are computed by adding-up the number of poor in each state and dividing by the total population. Because the Planning Commission uses interpolation rather than computations from the unit record data, there are minor differences between these numbers and those published in the official releases. The adjusted estimates are computed as described in the text (and more fully in Deaton and Tarozzi, 2001, and Deaton, 2001b); they use price indexes computed from the unit record data, and correct for the changes in questionnaire design in the 55th Round. The final column is a somewhat refined version of the corresponding column in Deaton (2001b). The estimates for Jammu and Kashmir are calculated directly, and not by assuming the poverty line or poverty rate for any other state (as in the official methodology).

Table 2b. The poverty-gap indexes labelled "official methodology" are computed from the unit record data using the official poverty lines, and using rules for assigning poverty-gap indexes to small states (and to J&K) that mirror the rules used by the Planning Commission for computing the official headcount ratios. The adjusted indexes use the recomputed price indexes to update the poverty lines, and correct for the changes in questionnaire design in the 55th Round. All numbers are directly computed from poverty lines and unit record data for each state, and the All India estimates are calculated as weighted averages of the state estimates.

Table 3

Growth Rates of APCE and per-capita SDP, 1993-94 to 1999-2000

	Six-year growth of APCE ("adjusted"), 1993-94 to 1999-2000			Annual growth rate of per-capita SDP, 1993-94 to 1999-2000
	Rural	Urban	Combined	
Assam	0.9	8.8	1.7	0.58
Orissa	1.4	-0.0	3.3	2.34
West Bengal	2.1	11.5	3.3	5.48
Jammu & Kashmir	5.4	8.0	5.3	2.49
Bihar	6.9	4.8	7.1	2.10
Madhya Pradesh	6.6	14.1	7.8	2.78
Andhra Pradesh	2.8	18.5	8.3	3.57
Rajasthan	7.0	15.4	8.6	4.60
Uttar Pradesh	8.3	10.1	9.0	2.99
INDIA	8.7	16.6	10.9	4.36
Karnataka	9.5	26.5	14.0	5.82
Maharashtra	14.1	16.7	15.9	3.53
Gujarat	15.1	20.9	16.8	4.88
Himachal Pradesh	16.2	28.5	17.6	5.06
Tamil Nadu	15.7	25.1	18.9	5.39
Kerala	19.6	18.2	19.6	4.01
Punjab	20.2	17.9	19.9	2.74
Haryana	31.0	23.0	29.2	3.05
Delhi	-	30.7	30.7	5.69

Note: The states are arranged in ascending order of the growth rate of APCE for rural and urban areas combined.

Sources: For APCE: Authors' calculations from unit record data for the 50th and 55th Rounds of the National Sample Survey. For SDP: Authors' calculations based on unpublished data kindly supplied by the Planning Commission. The figures in the last column should be taken as indicative, given the significant margin of error involved in SDP estimates.

Table 4
Growth and the Headcount Ratio, 1993–94 to 1999–2000

	HCR_{50}	Derivative with respect to growth	Six year growth	Change in HCR_{55}, inequality fixed	Change in HCR_{55}, actual
Rural					
Andhra Pradesh	29.2	–0.90	2.8	–2.5	–3.0
Assam	35.4	–1.27	0.9	–1.4	0.1
Bihar	48.6	–1.06	6.9	–8.2	–7.4
Gujarat	32.5	–0.91	15.1	–12.1	–12.4
Haryana	17.0	–0.63	31.0	–12.9	–11.3
Himachal Pradesh	17.1	–0.75	16.2	–8.3	–7.3
Jammu & Kashmir	10.1	–0.50	5.4	–2.6	–4.0
Karnataka	37.9	–0.91	9.5	–9.0	–7.2
Kerala	19.5	–0.62	19.6	–10.3	–9.5
Madhya Pradesh	36.6	–0.93	6.6	–6.5	–5.3
Maharashtra	42.9	–0.81	14.1	–10.9	–11.0
Orissa	43.5	–1.04	1.4	–1.2	–0.5
Punjab	6.2	–0.34	20.2	–4.0	–3.8
Rajasthan	23.0	–0.78	7.0	–5.5	–5.7
Tamil Nadu	38.5	–0.90	15.7	–13.3	–14.1
Uttar Pradesh	28.6	–0.79	8.3	–6.6	–7.2
West Bengal	25.1	–0.97	2.1	–2.0	–3.2
All India	33.0	–0.88	8.7	–6.8	–6.7
Urban					
Andhra Pradesh	17.8	–0.62	18.5	–9.0	–6.9
Assam	13.0	–0.64	8.8	–3.1	–1.2
Bihar	26.7	–0.79	4.8	–4.0	–2.0
Gujarat	14.7	–0.55	20.9	–8.7	–8.3
Haryana	10.5	–0.47	23.0	–6.3	–6.0
Himachal Pradesh	3.6	–0.26	28.5	–2.9	–2.4
Jammu & Kashmir	3.1	–0.15	8.0	–0.4	–1.8
Karnataka	21.4	–0.60	26.5	–12.9	–10.6
Kerala	13.9	–0.46	18.2	–7.1	–4.2
Madhya Pradesh	18.5	–0.63	14.1	–8.0	–4.6
Maharashtra	18.2	–0.45	16.7	–6.1	–6.2
Orissa	15.2	–0.54	0.0	0.1	0.4
Punjab	7.8	–0.38	17.9	–4.9	–4.4
Rajasthan	18.3	–0.59	15.4	–8.4	–7.5
Tamil Nadu	20.8	–0.66	25.1	–12.9	–9.6
Uttar Pradesh	21.7	–0.59	10.1	–6.0	–4.4
West Bengal	15.5	–0.56	11.5	–5.8	–4.3
Delhi	8.8	–0.26	30.7	–5.7	–6.4
All India	17.8	–0.56	16.6	–7.4	–5.9

Source: Authors' calculations from the unit record data of the 43rd, 50th, and 55th Rounds of the NSS. Note that the hypothetical All India figures are calculated on the counterfactual asssumption that each household received the state growth rate. They therefore do not show what would have happened had growth been more equally distributed across the states: see the text for this alternative calculation.

Table 5
Inequality Measures

	logAM - logGM[a]			Variance of logs		
	50th Round	55th Round	55th Round adjusted	50th Round	55th Round	55th Round adjusted
Andhra Pradesh	0.14	0.09	0.13	0.24	0.17	0.22
Assam	0.05	0.07	0.06	0.10	0.13	0.11
Bihar	0.08	0.07	0.08	0.16	0.13	0.16
Gujarat	0.10	0.09	0.11	0.17	0.18	0.18
Haryana	0.16	0.10	0.23	0.28	0.19	0.31
Himachal Pradesh	0.13	0.10	0.14	0.22	0.17	0.24
Jammu & Kashmir	0.10	0.06	0.07	0.16	0.12	0.14
Karnataka	0.12	0.10	0.12	0.21	0.18	0.22
Kerala	0.15	0.14	0.16	0.26	0.24	0.27
Madhya Pradesh	0.13	0.10	0.12	0.22	0.18	0.22
Maharashtra	0.16	0.11	0.16	0.27	0.20	0.28
Orissa	0.10	0.10	0.12	0.18	0.18	0.21
Punjab	0.13	0.10	0.14	0.22	0.19	0.24
Rajasthan	0.12	0.07	0.10	0.20	0.14	0.18
Tamil Nadu	0.16	0.14	0.15	0.27	0.23	0.24
Uttar Pradesh	0.13	0.10	0.12	0.23	0.18	0.21
West Bengal	0.11	0.09	0.08	0.17	0.15	0.15
All India Rural	0.14	0.11	0.14	0.23	0.21	0.24
Andhra Pradesh	0.17	0.16	0.17	0.30	0.29	0.33
Assam	0.13	0.16	0.14	0.25	0.30	0.27
Bihar	0.15	0.17	0.17	0.27	0.30	0.30
Gujarat	0.14	0.14	0.14	0.25	0.25	0.26
Haryana	0.13	0.14	0.15	0.24	0.27	0.28
Himachal Pradesh	0.38	0.16	0.42	0.37	0.29	0.40
Jammu & Kashmir	0.13	0.09	0.12	0.24	0.16	0.21
Karnataka	0.16	0.18	0.17	0.31	0.32	0.34
Kerala	0.20	0.17	0.22	0.31	0.32	0.37
Madhya Pradesh	0.18	0.17	0.18	0.29	0.29	0.33
Maharashtra	0.21	0.21	0.21	0.40	0.36	0.40
Orissa	0.15	0.14	0.16	0.29	0.26	0.29
Punjab	0.13	0.14	0.14	0.23	0.25	0.25
Rajasthan	0.14	0.13	0.14	0.25	0.23	0.26
Tamil Nadu	0.21	0.27	0.20	0.39	0.34	0.35
Uttar Pradesh	0.17	0.18	0.19	0.31	0.31	0.34
West Bengal	0.19	0.20	0.19	0.34	0.31	0.35
Delhi	0.29	0.21	0.30	0.43	0.39	0.46
All India Urban	0.19	0.20	0.21	0.34	0.34	0.37
All India	0.17	0.18	0.19	0.29	0.29	0.32

[a] AM is the arithmetic mean and GM is the geometric mean: the difference in their logarithms is the mean relative deviation, a measure of inequality.

Table 6

Cereal Availability in the Nineties

(grams per person per day)

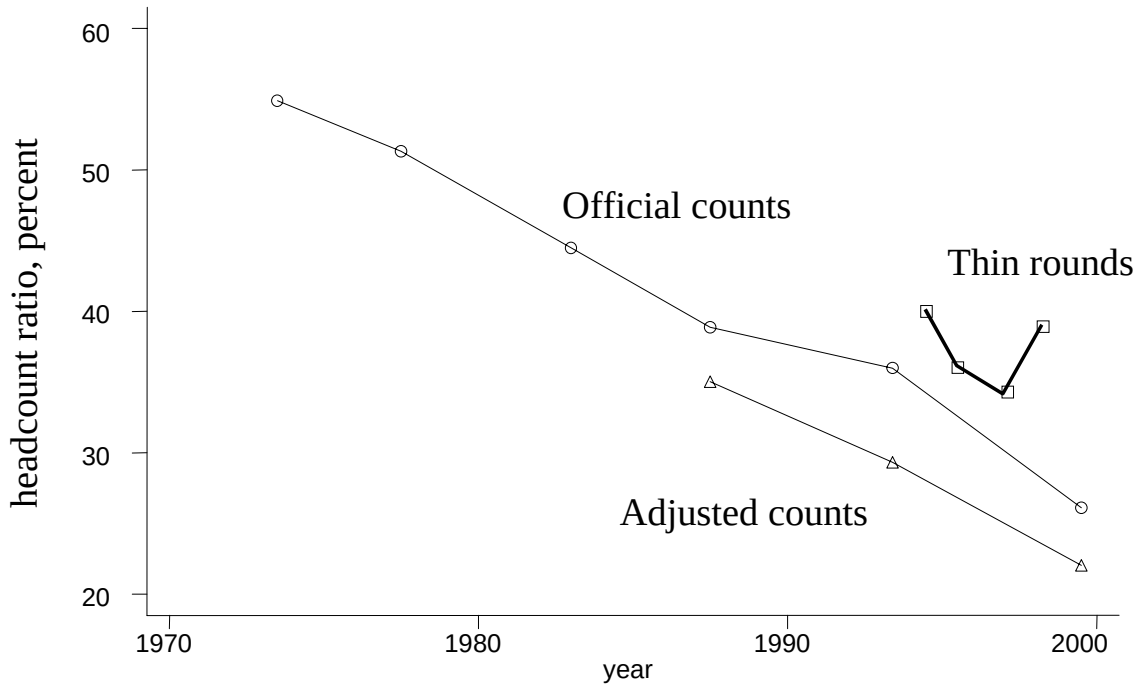
	Net production	***Net imports***	Net change in public stocks	"Net availability" (1+2-3)
1985-89	422.7	2.0	-5.3	430.1
1990	456.9	0.3	5.0	452.1
1991	447.9	-1.4	0.4	446.1
1992	446.8	1.3	4.2	443.8
1993	446.4	2.5	16.6	432.3
1994	456.3	0.2	16.6	439.9
1995	448.6	-5.9	-2.3	445.1
1996	451.7	-6.9	-11.7	456.4
1997	445.5	-6.7	-4.2	443.0
1998	455.3	-4.7	11.0	439.6
1999	456.3	-5.4	25.3	425.6
2000	452.7	-5.2	30.7	416.8

Note: All figures (except first row) are three-year averages centred at the year specified in the first column.

Source: Calculated from Government of India (2002), p. S-21.

Figure 1

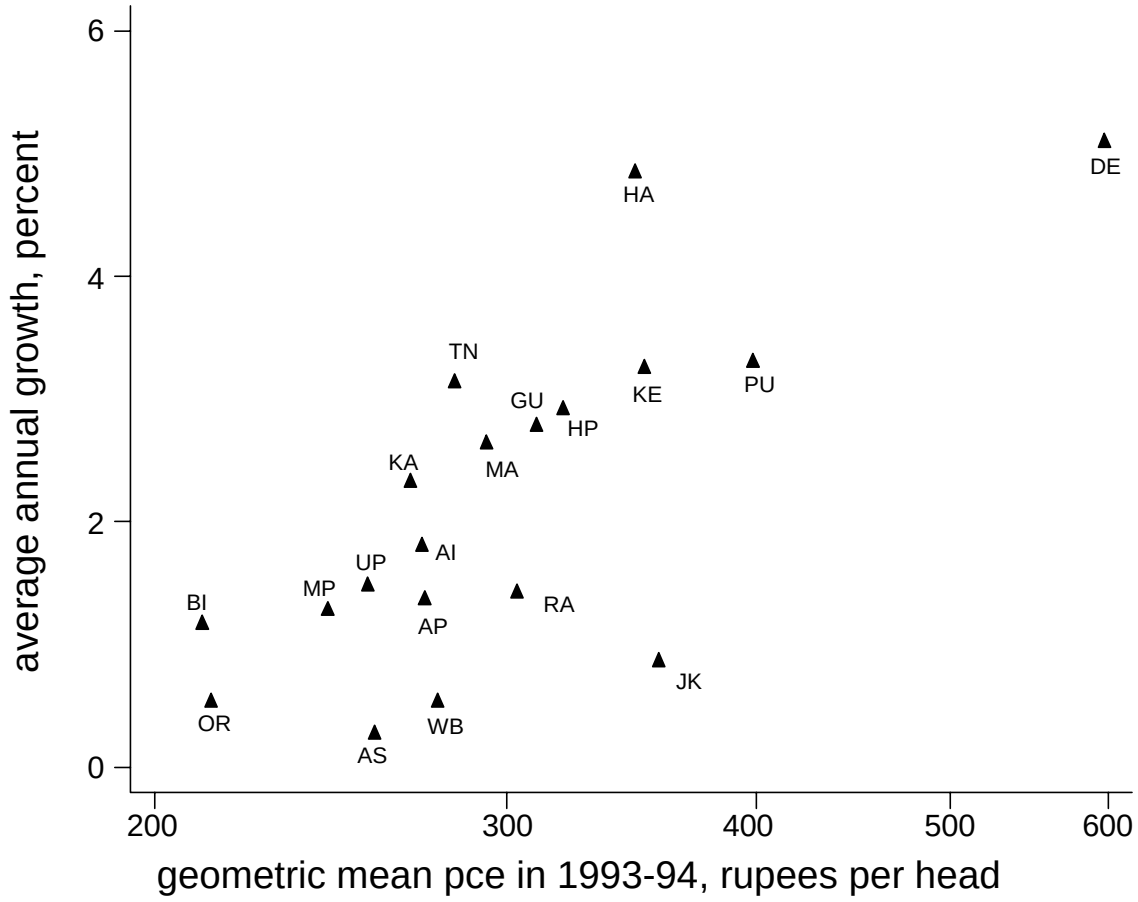
Official and Adjusted Headcount Ratios



Source: Planning Commission, Press Releases (11 March, 1997, and 22 February, 2001), Deaton (2001a, b), and Table 2a of this paper.

Figure 2

"Divergence" of Per-capita Expenditure Across States, 1993-94 to 1999-00



Source: Authors' calculations using unit record data from the 50th and 55th Rounds of the National Sample Survey.

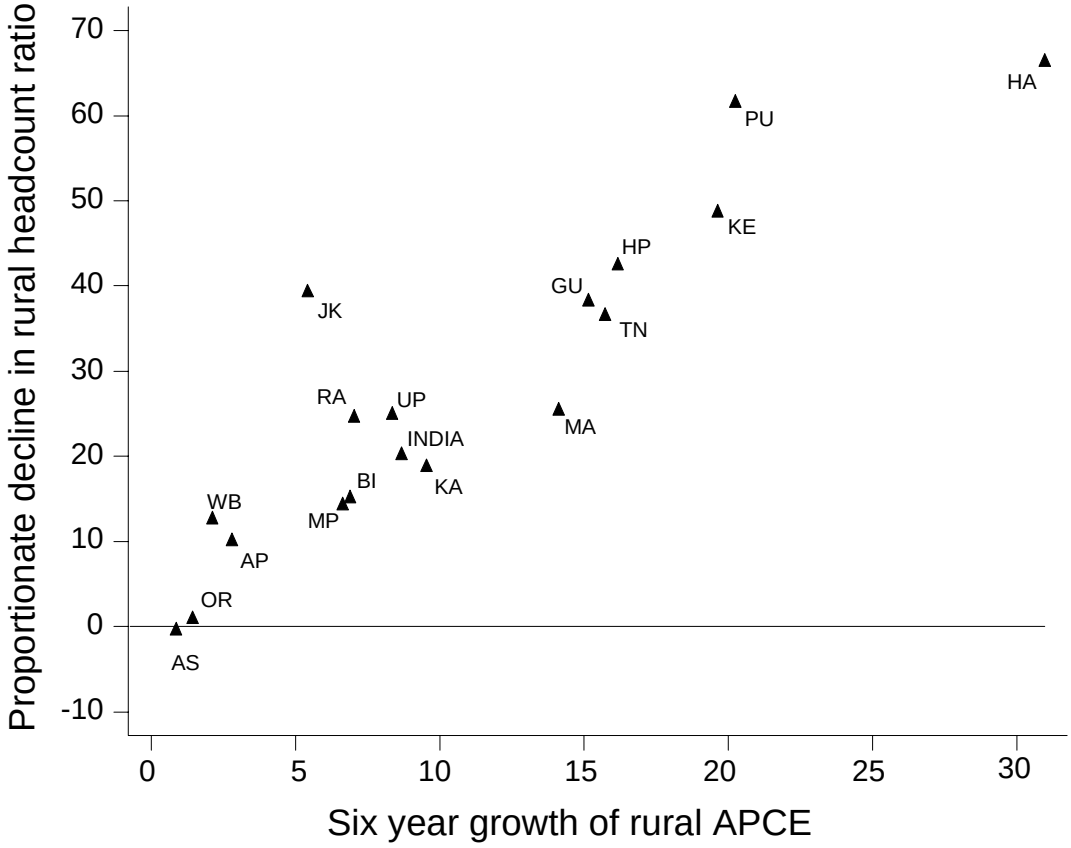
AI = All India

AP = Andhra Pradesh; AS = Assam; BI = Bihar; DE = Delhi; GU = Gujarat; HA = Haryana; HP = Himachal Pradesh; JK = Jammu & Kashmir; KA = Karnataka; KE = Kerala; MA = Maharashtra; MP = Madhya Pradesh; OR = Orissa; PU = Punjab; RA = Rajasthan; TN = Tamil Nadu; UP = Uttar Pradesh; WB = West Bengal.

Figure 3:

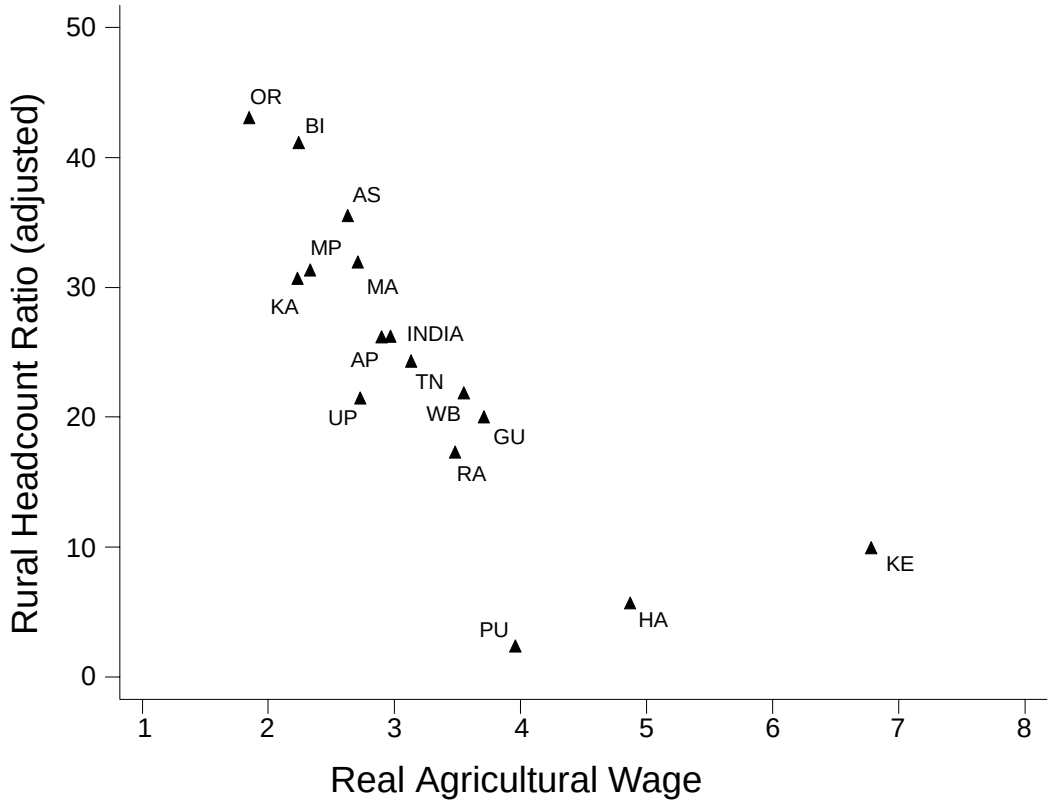
HCR declines and APCE growth, 1993-94 to 1999-2000

(rural)



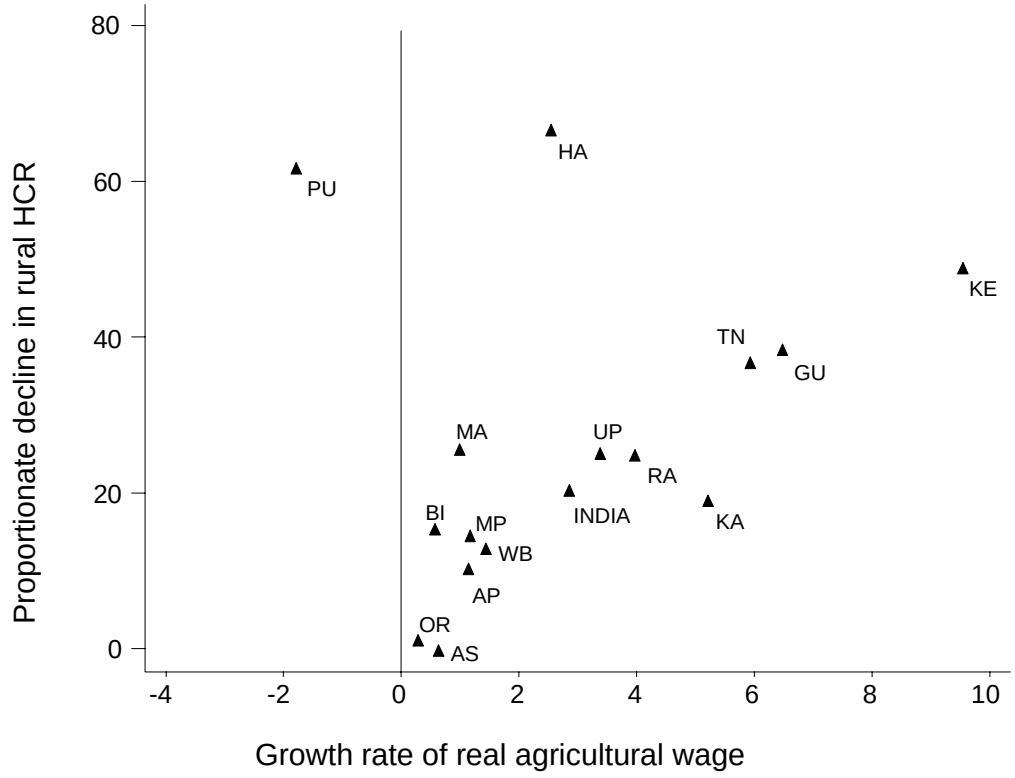
Source: Tables 2a and 3.

Figure 4: Agricultural wages and Rural Poverty, 1999-2000



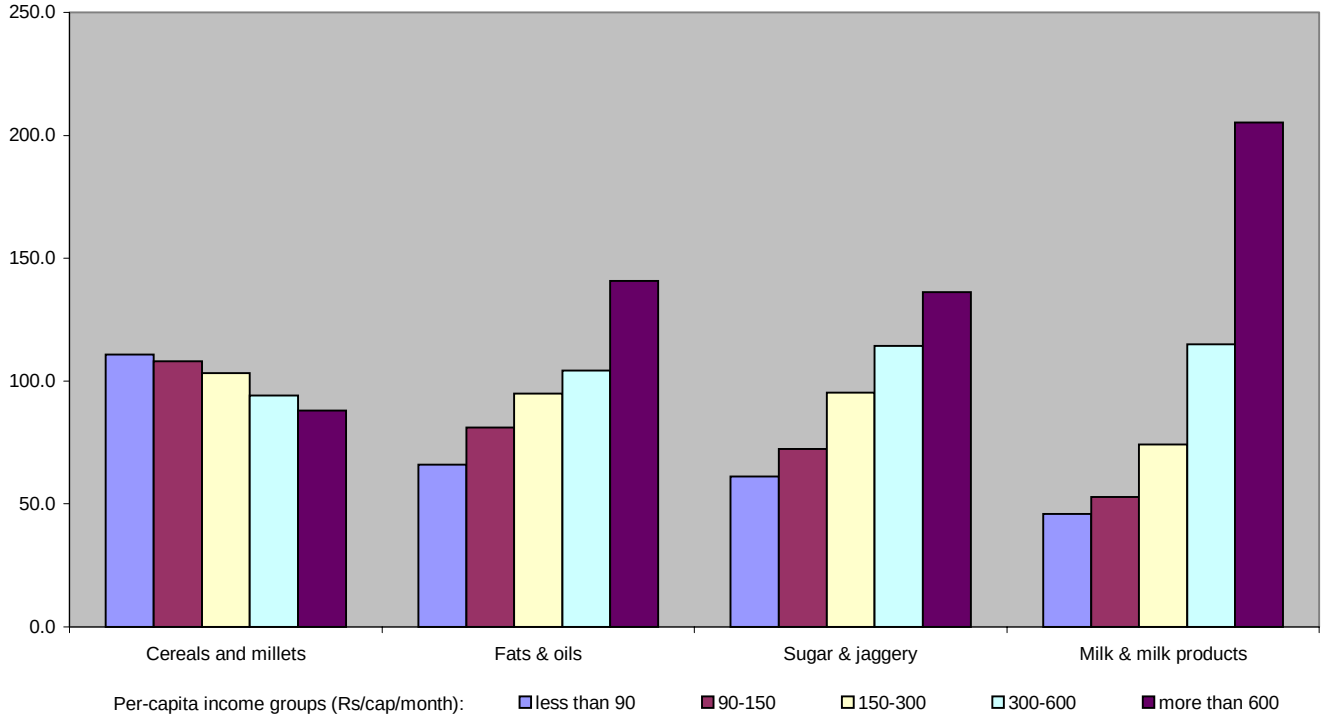
Source: Drèze and Sen (2002), Statistical Appendix, Table A.3, and Table 2a of this paper. The "real agricultural wage" is a three-year average ending in 1999-2000.

Figure 5: Wage growth and Poverty Decline, 1993-94 to 1999-2000



Source: See Figure 4.

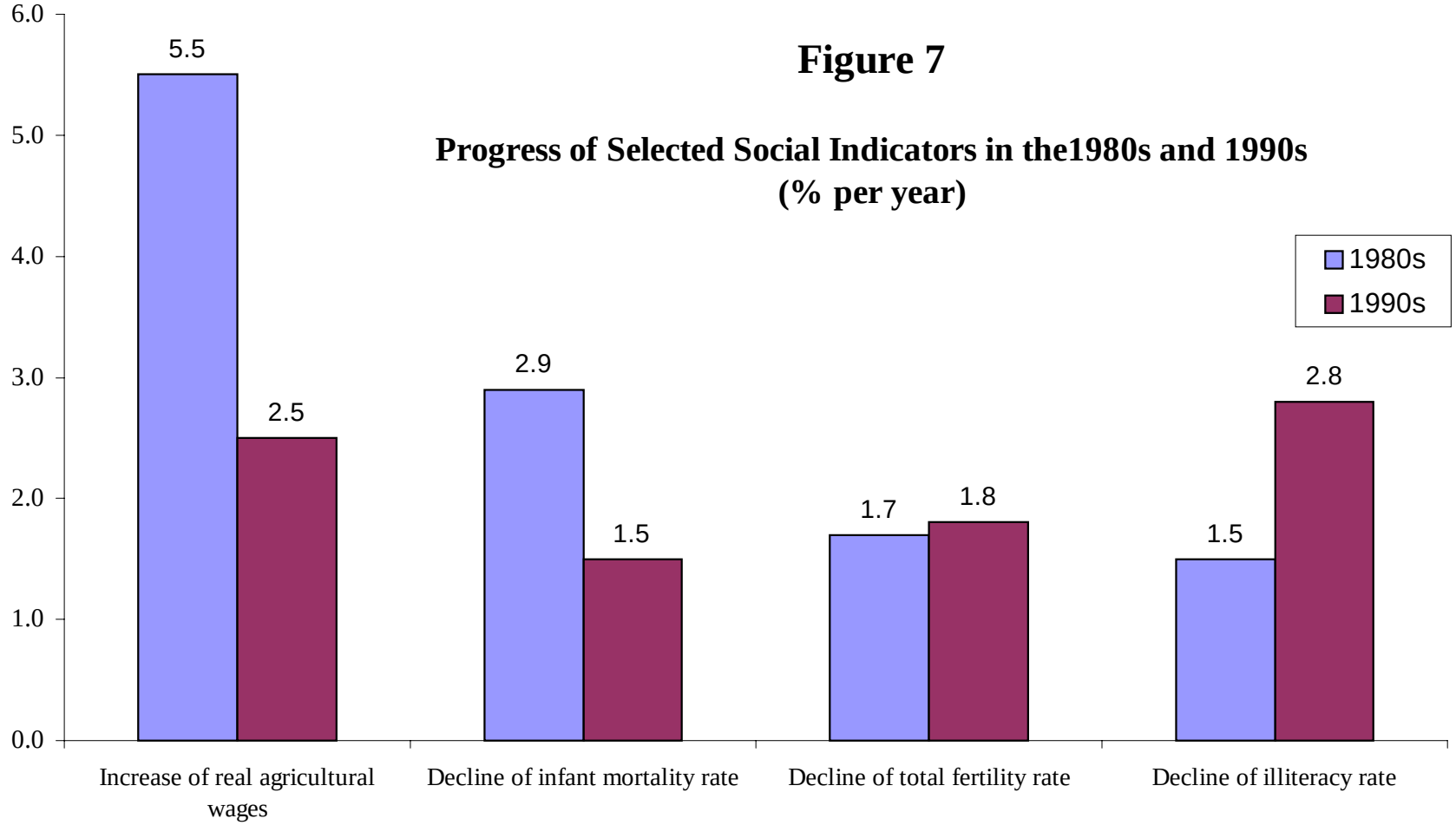
Figure 6: Food intake for different per-capita income groups, as a proportion (%) of average intake (1996-97)



Source: Calculated from National Nutrition Monitoring Bureau (1999), Table 6.9. The data relate to rural areas.

Figure 7

Progress of Selected Social Indicators in the1980s and 1990s (% per year)



Source: Drèze and Sen (2002), chapter 9.