Growth and Poverty in India and Bangladesh in the 1990s: what are the linkages? A Disaggregated Analysis

Summary and Final Report R8256 [1]

Summary

This project aimed to look at the relationships between growth and poverty in India and Bangladesh in the 1990s. Much poverty counting is of interest in itself to raise awareness of the scale of poverty; but poverty aggregates are also used to identify the geographic location of the poor, to assess trends over time, and to analyse the conditions and policies which are conducive to poverty and poverty reduction. This requires that the poverty aggregates are comparable in different domains[2], reflecting the same standard of living rather than differences in the yardsticks by which poverty is assessed. Progress in Poverty Reduction Strategies and the achievement of the Millennium Development Goals requires reliable, meaningful and comparable measures of poverty.

South Asia, where few can doubt that there is much poverty, provides important examples of poverty assessment for the purposes of policy analysis. In recent years there has been much controversy as to whether and to what extent poverty fell over the 1990s in India, framed by the changes in economic policy in the early 1990s (Deaton and Dreze, 2002; Sen and Himanshu, 2004a; Sen and Himanshu, 2004b, Bhalla and Das 2004, Deaton and Kozel 2004). And there has been considerable controversy over the methods of poverty calculation (in addition to the above, Deaton and Tarrozi, 1999; Deaton, 2003a & b; Patnaik. 2004; Rath, 2003; Meenakshi and Vishwanath, 2003; Ray and Lancaster, 2005; Saith, 2005). Recent work has found that agricultural growth seems to play a pre-eminent role in poverty reduction; in some works agricultural growth promoting poverty reduction has been based on initial conditions of irrigation development (Datt and Ravallion, 1998a), or hydro-geological and agro-ecological conditions conducive to

---

[2] A poverty domain is a specified social group (the rural population) in geographical area (a state in India) for a period of time (a survey period such as the calendar year 1983).

irrigation development (Palmer-Jones and Sen, 2003). But, other work has suggested that the highest returns in terms of poverty reduction to public investment comes from investments in rural infrastructure and agricultural research (Fan and Hazell, 2001). The same poverty measures are used in recent analyses of institutional and policy requirements for pro-poor agricultural growth (see Dorward, Fan, et al., 2004). The emphasis on infrastructure and policies supporting agricultural growth to promote poverty reduction has been receiving increasing attention in policy circles ((IFAD 2001), in contrast to a greater emphasis until recently on promoting health and education (World Bank, 2005). Clearly these arguments will be thrown into further doubt if the poverty figures used in them are misleading.

The poverty measures that are used in India have been constructed using Official Poverty Lines (OPL)[3] which have recently been criticised by Deaton and Tarrozi, 1999, as out of date and inappropriate[4] (see also Rath, 2003). Others have criticised the poverty lines largely on the grounds that households whose expenditure approximates current poverty lines no longer consume the normative calories on which these Indian poverty liens were originally based (Patnaik. 2004; Rath, 2003; Meenakshi and Vishwanath, 2003; Ray and Lancaster, 2005; see Sen, 2005).

Using Unit Value (UV)[5] Consumer Price Indexes (CPIs - UV CPIs) computed from National Sample Survey Organisation's household expenditure surveys Deaton produced new State Poverty Lines for the 43rd, 50th and 55th Rounds (1987-8, 1993-4 and 1999-00 financial years respectively) of the Indian National Sample Survey (NSS) (Deaton, 2003b). After making adjustments to the poverty counts in the 55th Round to account for changes in survey design in that round compared to the two earlier rounds, Deaton, 2003b, produced new estimates of poverty for rural and urban India. These estimates using the UV CPI PLs showed different spatial and temporal patterns of poverty compared to those based on OPLs. An over-all story of declining poverty in the 1990s, though less than the decline estimated by the Planning Commission using OPLs is still supported (Deaton and Dreze, 2002). However, these new poverty aggregates have not been reconciled with other assessments of development in India using a wider range of welfare indicators (Dreze and Sen, 2002) and the possibility exists that new patterns of poverty would lead to somewhat different policy conclusions.

The critique of Indian poverty lines on the grounds that they no longer support the normative calorie consumption on which they were based has been taken to imply that the official poverty lines are too low, since only at higher expenditures do households consume the normative calorie levels. Hence, according to these authors there is even more poverty, and less poverty decline in recent years. We argued in an earlier paper that this pattern might reflect increasing problems of data capture, but that anyway there might well not be a strong link between normative calorie levels and household welfare

---

[3] Datt and Ravallion 1998a; Datt and Ravallion, 1998b, and Fan, Hazell, and Haque, 2000; Fan and others 2000, and some others use slight adjustments to OPLs to allow for firewood prices.

[4] In Bangladesh different poverty lines have been proposed by authors associated with the World Bank and the poverty counts that arise from them vary by about 10% (GOB, 2005). These different poverty methods also give different trends in poverty.

[5] Unit Values are calculated by dividing total expenditure on an item by the total quantity consumed. Many household surveys provide these data for items that constitute a substantial proportion of total reported consumption. Unit Values are not prices, although they may approximate them.

as there seemed no strong evidence of decline in nutritional or health status such as one would expect if the poor were indeed getting poorer (Palmer-Jones and Sen, 2001).

This project aimed to re-estimate the UV CPIs, PLs and poverty aggregates over a longer time period and at a more spatially disaggregated level than Deaton, and then undertake the more detailed analyses of these poverty aggregates. UV CPIs can be computed for the 38th Round as well as the 43rd, 50th and 55th Rounds (as suggested by Deaton). The use of States as units of observation disguises considerable intra-state variation; UV CPIs may be calculated for NSS Regions (NSSR) which are clusters of districts within states, and poverty aggregates calculated using more disaggregated data may give somewhat different conclusions to those drawn from state level analysis (Palmer-Jones and Sen, 2003). It also aimed to assess the welfare levels of poor households by comparison with other indicators of welfare to assess whether calculated poverty lines supported a constant real standard of living by comparing poverty estimates with other indicators of well being such as infant and child mortality, and nutritional statuses.

The project carried out similar calculations for Bangladesh. In Bangladesh in all five methods have been used in recent years to compute poverty lines; two methods – Food Energy Intake and Direct Calorie Intake methods have been preferred by the Bangladesh Bureau of Statistics; the three other methods emanate from authors associated with the World Bank (Ravallion & Sen, 1996, Wodon, 1997; and World Bank, 2002a). All these methods, including those from the World Bank, give quite different levels of poverty, and in the case of the World Bank methods, by nearly 20% than 10% (or around 50 million people[6]). The latest method used by the World Bank is similar but not identical to that used by Deaton for India. The differences in poverty assessment methods which are nowhere justified, or explored, raise doubts about the reliability of the conclusions that have been drawn from them. The major policy issue concerns the apparently good performance in poverty reduction in the first half of the 1990s compared to the second half, notwithstanding the significantly better performance of agriculture in the second half, apparently contradicting the policy conclusion of a strong relationship between agricultural growth and poverty reduction. In Bangladesh, agriculture grew more strongly in the second half of the 1990s.

To further explore these ideas we proposed to:

1. recalculate poverty by various methods at the most disaggregated level possible in each country;

2. compare these poverty aggregates with other measures of well being;

3. build a disaggregated dataset of variables likely to be ultimate or proximate causes of poverty;

4. combine the poverty and infrastructure datasets to conduct regional analysis of the correlates and causes of poverty (and well being), with particular reference to changes over the 1990s.

Despite an over-run of more than a year, we have only accomplished stages 1 and 2, for reasons explained below[7]. The data for stage 3 have been collected but are yet to be

---

[6] That is between the World Bank, 2002 and 1998 methods for HIES 2000/1. The difference between the Ravallion and Sen method and the 2002 World Bank method is almost 10%.

[7] And in an accompanying letter.

organised. We hope to advance to stage 3 in the coming months and stage 4 towards the end of 2005. The main reason for our failure to accomplish the tasks we set out to complete is that the measures of poverty do not seem to be comparable rendering poverty analysis using these aggregates of doubtful value. This finding changes the approach that can be taken in stages 3 and 4, and exploring this claim has taken all the resources of the project and more.[8]

This summary report provides an overview of our findings and their implications for policy and research and an introduction to papers written so far. Firstly we[9] computed Unit Value Consumer Price Indexes (UV CPIs) (Annex Paper 1[10]). We then discuss the issues involved in setting the base or anchor for a set of spatial and temporal poverty lines and in using UV and other CPIs to compute poverty lines (Annex Paper 2). We present the poverty lines and poverty aggregates that arise from them and compare these with robust poverty measures, and with infant and child mortality and child and women's nutritional status (Annex Paper 3). We also explored Cost of Basic Needs Poverty Lines in Annex Paper 4. This method is put forward, for example, in the World Bank's Sourcebook for PRSP monitoring (World Bank, 2002b) as appropriate for estimating poverty lines, and are used in the World Bank poverty calculations in Bangladesh. Then we explore the methods used to adjust poverty counts when survey methods differ, especially in relation to the non-comparable 55th Round of the Indian NSS (Annex Papers 5, & 6[11]). Annex 7 explores poverty measurements including our and the World Bank's UVs and UV CPI poverty lines, and compares the poverty counts other indicators in of wellbeing in Bangladesh.

Our overall conclusion is that the methods of poverty assessment widely used or proposed for developing country practice will not generally produce comparable poverty measures (i.e. aggregates such as the head count, the poverty gap or poverty gap squared that are based on poverty lines that reflect the same standard of living), and are likely to be unreliable guides to policy. This goes beyond the conclusion that poverty measurement methods need to be specified because the different methods can produce very different results (Szeleky; Lustig; Cumpa, and Meija, 2004), since our conclusion is that even if the same methods are used the results will not usually be comparable. If comparable poverty aggregates cannot be computed then "explanations" of these non-comparable poverty measures such as we envisaged undertaking are unlikely to yield useful policy conclusions, and so stage 4 of our proposal has been abandoned for the time being. In future research such measures should not be the explanans, but part of the explanandum. In view of our overall conclusion we briefly comment on the differences in methods used to assess poverty in developed countries for policy purposes and those advocated for developing countries here, and in more detail in another draft working paper available from the author.

---

[8] Getting to this stage has taken at least twice the time that was budgeted in the original project.

[9] This document has been written by Richard Palmer-Jones, who is solely responsible for all errors etc.. The conclusions drawn from the work are not all shared by all collaborators in the project.

[10] In the rest of this paragraph where annex papers are referred to it should be understood that these are drafts of papers covering the material presented and discussed briefly in this summary.

[11] In a draft working paper not attached I also examine the stability between of food and UV items Engel curves; this stability is an assumption (or equivalent to) made in all the adjustment methods put forward. We reject inter-round stability for most states.

DRAFT for comment only

The final conclusion is that where poverty comparisons are to be made between significantly different domains, for the purposes of devising and monitoring PRSPs or in assessing the poverty component of the MDGs for example, considerable caution is needed. One step in that direction would be to more carefully consider the practises of poverty assessment in developed countries and their implications for practices in developing countries. UV CPIs, while useful as checks on official CPIs, can be no substitute for properly produced CPIs and monetary welfare aggregates that reflect a common equivalent standard of living.

Unit Value Consumer Price Indexes

Our calculations of UV based CPIs[12] for the 38th, 43rd, 50th and 55th rounds of the NSS for different geographic domains are given in Annex Paper 1. The domains for which UV CPIs are calculated include the rural and urban sectors of the major Indian States and for National Sample Survey Regions (NSSR)[13], for towns of different size within states and within NSS regions, for each of the major Household Expenditure Surveys. We do this for the whole population, for the four quartiles of the expenditure distribution, and for the inter-quartile group. Equivalent calculations for Bangladesh are given in Annex Paper 7, which comes to very similar conclusions about Unit Values and UV CPIs, so that they are not discussed in detail in this summary.

For the rural sector of Indian States our UV CPIs are very similar to Deaton's in the 43rd 50th and 55th Rounds, but for the urban sector there are significant differences revealing the sensitivity of UV CPIs to minor differences in computational strategies. Nevertheless our UV CPIs support Deaton's view that Official CPIs need careful re-examination. UV CPIs do differ by NSSR (i.e. within states) and in some cases are more similar to neighbouring NSSR in different states than to other NSSR in their own state. Our calculation of CPIs for towns of different size show smaller towns tending to have lower CPIs more similar to the rural CPIs than to those of larger towns. Our UV CPIs for different expenditure groups show some differences, due both to differences in Unit Values and in budget shares of items for different expenditure groups. The budget share differences between expenditure groups will become more significant as poverty falls.

Official CPIs may not be suitable for poverty line calculations but UV CPIs also have a number of flaws and it would seem unwise to unilaterally adopt them in preference. UVs are multi-modal, including variations in quality, form, outlet and other characteristics, and comprise a variable proportion of expenditure; CPIs for items of expenditure not included in the UV CPIS are likely to differ from the CPIs of UV items. UV CPIs differ by NSSR, by town size, and by expenditure group. State and sector level CPIs and CPIs computed using average population expenditure weights are not suitable for computing poverty lines and poverty especially where considerably less than half the population are likely to be poor.

---

[12] CPIs are computed using "prices" and weights. We use Unit Values as prices; UVs are computed from data on quantities purchased and total expenditure on items which comprise on average about 70% of total household expenditure. Budget shares are computed in the democratic manner (i.e the average of household budget shares). Throughout we report CPIs computed using the Tornqvist formula.

[13] NSSR are groups of Districts within states, smaller states are individual NSSRs as are the Union Territories. CPIs have been computed only for NSSR in major states.

From Unit Value CPIs to Poverty Lines?

Next, we discuss some of the issues involved in computing Poverty Lines using CPIs (UV or other). The orthodox method of computing poverty lines is to apply CPIs which adjust for the differences in costs of living between different social, spatial or temporal domains to a base poverty line. However, in addition to the deficiencies of UVs as prices there are several problems in this approach, such as where to anchor the PLs (e.g. set an initial poverty threshold), how to take account of items that are consumed but are not included in the UV CPIs, and the appropriate way to compute PLs for different sectors, geographic areas, or social groups which have differ expenditure patterns. For example the shares of total expenditure covered by items included in the UV CPIs differ and what prices or price indexes we have for the groups of items typically excluded from the UV CPIs are not generally the same as the UV CPIs. Another problem lies in differences in the "environment"[14] in different domains. When "environmental" variables differ between domains, the "standard of living" that can be attained for given real expenditure on goods will differ.

This discussion is elaborated in Annex Paper 2.

Poverty Lines, Poverty Counts, And Comparisons of Well-being

Some of the deficiencies in UV CPI PLs can be addressed and we present PLs and poverty aggregates derived using those adjustments we consider appropriate, and compare them with the results of others. Generally the spatial and temporal patterns do not differ greatly because differences in the distribution of household expenditure dominates over the differences in poverty lines. However, the levels of poverty do differ.

Given uncertainty about poverty lines "robust" poverty comparisons have been made using stochastic dominance tests (Atkinson, 1987). These robust measures fail to establish dominance between most pairs of states within sectors, but as a whole show similar spatial comparison to the simple comparisons of poverty aggregates, not adding much to our understanding. However, these robust measures do not address the lacunae of poverty lines which raise questions about their relative rather than absolute levels. We compare domains using different relative poverty lines, and show that the ranking of many domains (states and NSSR within rounds) is sensitive to their relative poverty lines cautioning against using poverty analysis based on current poverty lines.

We can explore these orthodox poverty counts with other indicators of well-being that we can expect to be closely, if contingently, related to poverty such as infant mortality rates, and children's and women's anthropometry. The poverty measures we compute using UV CPIs are not closely correlated with these indicators of well-being. Table 1 provides a crude summary of our calculations. With the exception of women's anthropometric status, the head count ratios of poverty for the rural populations of the 62 National Sample Survey Regions of major Indian states in the 50th and 55th rounds are not highly correlated (Pearson $r^2 > 0.5$) with the other indicators of well-being computed for the

---

[14] We use the term "environment" in the sense it is used in the Cost Of Living literature (ILO, 2004, Chapter 18), to cover public and other goods provided without cost, the environment as usually understood, and "culture". As argued below and on annex papers 2 & 3 these groups of variables can be expected affect the transformation of consumption into the standard of living or well-being and hence are essential to include if poverty lines and poverty counts are to be based on the same standard of living in the different domains being compared.

same domains. That monetary and non-monetary indicators of poverty do not agree is not a particularly novel conclusion, but that the poverty assessments are so seriously flawed as to be meaningless for the purpose of poverty comparisons does not seem to be the conclusion drawn by those who have emphasised these divergences (Baulch and Masset, 2004). Further, the correlations among these different (non-poverty) measures of well-being are not particularly high, raising questions about the use of any one type of mortality or anthropometric indicator alone as a substitute or complement for poverty in the assessment of ill-being (Sahn and Stifel, 2002), as well as about the reliability of these data.

These topics are discussed in Annex Paper 3.

These lines of argument led us to question the basis of poverty measurement and we explored reasons that can be found in the literature on Cost of Living Indexes and in work on poverty assessment in developed countries (see below). Important components of welfare are omitted from the expenditure survey based poverty calculations which are likely to affect the transformation of expenditure into well-being. When there are differences between domains in these variables comparisons of "real" consumption (i.e. consumption deflated by CPIs) will not provide comparable measures poverty (see annex paper 2).

Cost of Basic Needs Poverty Lines

Authors associated with the World Bank have suggested that the Cost of Basic Needs (CBN) methods can be used to establish comparable poverty lines (Ravallion, 1992; Ravallion, 1998; Ravallion and Bidani, 1994; Ravallion and Sen, 1996; see also Tarp, Simler, et al., 2002); the CBN method is proposed as a method that overcomes deficiencies in the popular and widely used Food Energy Intake (FEI) and Direct Calorie Intake (DCI) methods of setting poverty lines[15]. In many cases poverty lines are based in some way on normative calorie consumption calculations (c.f. World Bank. 2002b). We show in Annex Paper 4 that the CBN, FEI and DCI methods are in fact very similar, and when the FEI method is constrained in a similar way to the CBN method it yields essentially the same poverty lines. Building on the work of Svedberg, 2001, we develop a model of the transformation of calories into well–being that takes account of the "environmental" variables referred to above.

We conclude that comparable poverty lines in different domains cannot be anchored or updated by reference to normative calorie requirements. These CBN methods, which are proposed in the World Bank's Sourcebook for Poverty Reduction (World Bank, 2002b), do not appear to be reliable methods of computing comparable poverty or welfare aggregates and should not be used.

Poverty and Expenditure

Annex paper 5 takes up a technical problem in the explanation of poverty in terms of other household characteristics, namely the heteroscedastic structure of the data. Limited dependent variable methods produce biased estimates of regression coefficients and of marginal effects in the presence of heteroscedasticity unless appropriate estimation

---

[15] Recent work emphasising that micro-nutrients are crucial nutritional requirements (e.g. Ray et al. , 2005) does not overcome our criticisms of attempts to derive poverty lines from normative nutritional requirements.

strategies are employed. Household size is the main variable associated with heteroscedastic errors; in a working paper not attached to this report we (RPJ) draw attention to the unresolved problems related to household size and composition. Economies of scale in households, equivalence scales, and measurement errors may all be involved, and the present state of understanding seems to leave the issue unresolved between those who focus on estimation strategies (as in this paper) but ignore underlying data problems[16].

Comparable Poverty Counts from Non-Comparable Data

The surveys from which welfare aggregates – typically consumer incomes or expenditures – are calculated often differ in structure, form, content and implementation. These differences affect the responses meaning that the data are non-comparable. Recently many attempts have been made to compute poverty by making adjustments for these design changes. We briefly discuss the method used to adjust the Indian poverty statistics for the changes to the NSS questionnaire in the 55th round (e.g. Deaton 2003a; Tarrozi, 2004; Kijima and Lanjouw, 2003)).

Methods such as these of adjusting poverty counts in non-comparables surveys are discussed in Annex Paper 6[17]. We conclude that these methods using putatively comparable components of surveys that are not entirely comparable are not reliable and suggest that at present there are no methods that can be used to make allowances for such survey schedule changes or to adjust calculations based on non-comparable data sources (such as surveys and censuses). These arguments may also apply when the same survey instrument is applied to different domains since the responses recorded in surveys are likely to be contingent on the local context[18].

Poverty Calculations in Comparative Perspective

Finally, given the unjustifiable practices of poverty assessment in developing countries it is salutary to examine the practice of poverty calculation in developed countries[19]; in developed countries claims about poverty levels and trends are more contested by diverse social interests, and poverty assessments do not enter into policy debates without reference to social policies.

In UK and USA for example poverty assessments attempt to take account of differences in the costs of living for different types of household in different locations augmenting monetary measures of poverty computed from Household Expenditure Surveys and CPIs with other information (see Citro and Michael, 1995, for the USA and Lister, 2004, for the UK).

Failures of this type are likely to lead to serious misunderstandings of the effects of social and economic policies. As Glennerster, 2002, points out, money metric poverty tends to

---

[16] See Gibson, 2002.

[17] And in a further paper not attached to this report.

[18] A simple example is the treatment of tapioca in the NSS; tapioca is an important staple only in Kerala and does not receive close attention in the NSS survey schedules – for example not distinguishing between fresh and dry forms of tapioca. This may result in bias in the recording of staple food expenditure and calorie intake in Kerala.

[19] An early draft working paper on this is available from the author.

omit the effects of social policies[20]; consequently policy analyses based on money-metric measures will tend to miss or under-estimate the effects of social policies on well-being. One may speculate that money-metric poverty assessment of poverty over-estimate the effect of economic growth and of policies which augment the monetary components of consumption while ignoring those factors which contribute to well-being that are not recorded in consumer expenditure surveys, such as public goods and the environment, but this requires further research.

This is not equivalent to the view that a focus on money-metric poverty assessment minimizes he extent of the problems of human ill-being and is therefore of little value and possible dangerous, as argued, for example, by Saith, 2005; in any case this critique has been made before (e.g. Dreze and Sen, 1989), and is widely accepted as reflected in the various Human Development Reports. Nevertheless, monetary expenditure indicators of well-being have advantages (not least in being uni-dimensional and therefore readily understandable) and indeed play an important role in the Human Development Indexes, and will continue to be used; however, we do argue that the methods used to measure poverty do not do so in a coherent and well-founded manner, so that even for more restricted but valuable uses there is a great need to improve the manner in which they are produced.

Conclusions

Without welfare aggregates that we can be confident reflect the real differences in well-being in different domains (social, spatial, temporal) it is not possible to undertake analyses of policies which may be conducive to poverty reduction with such aggregates as dependent variables or as parts of dependent variables (such as Human Development or Human Poverty Indexes). Current best practice poverty assessment may not provide such aggregates, and health and nutrition indicators of well-being are not unproblematic alternatives, in part because they do not agree closely among themselves or among different sources[21].

Consequently, for the purposes of designing and assessing pro-poor interventions, including Poverty Reduction Strategies and the Millennium Development Goals, we urgently need to reconsider the theory and practice of measurement of poverty and well-being. This will most importantly include improving the collection of prices and the construction of consumer price indexes relevant for poverty analysis, and improved methods of household income and expenditure survey and analysis so that they provide sufficient welfare relevant information. Household expenditure[22] surveys, and health and

---

[20] For, as Deaton and Muellbauer, 1980, put it: "These concepts, which use money to measure changes in welfare, can only be applied where money and welfare are uniquely linked. This will not be the case where goods that are important for consumers' well-being are not purchased through the market: examples are health care, …" (p169).

[21] Our argument here is that we need to be cautious partly because we have not subjected data on other indicators of well-being to any sort of forensic analysis, and the divergencies among sources and indicators gives a prima facie evidence that such an investigation is required as much for health and nutrition indicators as for poverty aggregates.

[22] In most of our work we have been concerned only with expenditure/consumption surveys as the NSS does not measure income. The Bangladesh HIES does record income but income data have problems of their own in general (cf. Deaton and Grosh, 2002), as well as the particular problems of the BBS reports of incomes (Khan and Sen, 2001). We do not agree with all the comments of these authors., but in any case

nutrition surveys and analysis, and other indicators and assessments of well-being (say from properly conducted participatory poverty assessments) need more extensive triangulation and reconciliation. This is a conclusion that has some similarity with those of recent work on poverty in developed countries (Bradshaw and Finch, 2002; Lister 2004; Citro and Michael 1995; Iceland, 2004).

Thus the main policy conclusion is that poverty measurement and policy analyses based on them (such as those mentioned at the start of this report) need critical re-examination, especially if we are to be confident about progress towards MDG 1, and about policies such as "pro-poor" growth. This is particularly relevant in view of the possibility that money-metric poverty is likely to underemphasise the role of social and perhaps environmental policy in bringing about improvements in well-being as well as overemphasising the benefits of economic growth if this takes the form of increased expenditures on items that were previously provided "free", for example as public goods or services, or gathered from the environment.

Addressing these issues requires conceptual and empirical work with existing data, and, critically, improved production of price data for consumer price indexes, and of income or consumption survey data for welfare aggregates. Since conceptual issues in welfare are involved, and we are dealing with societies what are considerable different to the western industrialised countries for which established data production methods have been developed, we need involvement of a range of social sciences (economics, sociology, anthropology) in this task as well as statisticians who dominate the production of statistical data. It is perhaps unfortunate that over the past quarter of a century the empirical tradition in development economics has on the one hand become dominated by quantitative methods of analysis, and on the other has been denigrated or sidelined be enthusiasms for qualitative and participatory research methods.

There has often been much breast-beating about method in development studies especially regarding poverty assessments (see recent symposia in World Development, 30(3), 2002; the q^2 symposium (http://www.q-squared.ca/papers.html); and in Economic and Political Weekly, 40(40), October 1st, 2005). This is not the place to evaluate this literature, but it can be recognised that the deficiencies of official statistical work in the third world were well discussed quite a number of years ago (see Polly Hill, 1986). The question is why such poor practice persists; what is noticeable is that these debates are mostly characterised I terms of a sociology of development research and practice. A sociology of the development industry is clearly what is required if we are to better understand the persistence of unsatisfactory practices despite professionals knowing better. This might build on recent work in development anthropology[23], although this could perhaps be more reflective.

Development academics and their funders bear some responsibility for this situation. Perhaps the lack of good empirical studies in India referred to by Bardhan, 2005, is as much because of a brahminical distaste (especially among economists) for "the sweat, toil and tears involved in grubby empirical work" as a preference (and greater rewards) for

---

"income" aggregates will not reflect changes in the "environment" that are relevant to the transformation of income into well-being any more that the consumption aggregates with which we have been concerned.

[23] Gardner and Lewis, 1996;van Ufford and Giri, 2003; Mosse, 2004a and b

the "esoteric intricacies of a theoretical problem" (ibid.[24])? The sort of field (anthropological) economics that is required to develop understandings that are a precondition for formal and quantitative (and qualitative) work and the detailed examination of formal data and their comparative analysis and cross-referencing, are time consuming and risky in the sense that they may not deliver according to the log frames and time bound research plans imposed by funding agencies. Good research must go where its findings lead, not where it originally said it would go[25]. This does not fit well with the institutions of the development industry. Fieldwork and other long term research are seldom undertaken after the PhD., and such work by established academics is not readily financially supported. Quick, relaxed, comfortable participatory approaches egged on by allegations of "survey slavery" (Chambers, 1983), and desk analysis of existing data sets have become much more popular and fit better with the constraints and lifestyles of development academics and practitioners, and the agendas of development and research funding agencies. Notwithstanding the fashion driven nature of development and its often revolutionary aspirations, much activity seems to be rather like "normal science" (Kuhn, 1963).

---

[24] Ironically, but apparently without irony, Bardhan comments on the "relative abundance of household data on consumption and employment … [which] has fuelled the endless debates on measurement of poverty and inequality over the last four decades".

[25] Of course this does not fit well with the need to claim that the research will lead to benefits to stakeholders, which implies knowing results before the applying for funds (as Hill, 1986, also pointed out).

Attachments

Paper 1: Prices, Price Indexes and Poverty Counts in India during 1980s and 1990s: Calculation of UVCPIs

Abstract

This is first part of a three-part paper where we revisit the issues surrounding poverty calculations in India during the decades of 1980s and 1990s. Several recent papers have put forward levels of poverty that they suggest are more plausible than the official estimates released by the Indian Planning Commission (PC). In this paper we critically re-examine those calculations in three steps. Like others we use household level consumption expenditure data collected by the NSSO during four most recent quinquennial rounds of surveys. In this first part we explore the Unit Value Consumer Price Indexes (UV CPIs) that have been suggested are more realistic than those used by the PC to compute poverty lines (PL). In the second part we discuss whether it is reasonable to use these UV or other available CPIs to compute poverty lines for different geographical and temporal domains from a single base PL; and in the third part we explore the poverty counts that result from our "best" approach to poverty lines and compare them with those from "robust" poverty comparisons and other indicators of well-being.

This part addresses proceeds as follows; we show that (i) the unit values are multi-modal corresponding perhaps to different prices being paid by different population groups, for different qualities of produce, or at different times or places; (ii) unit values vary within states (specifically by the National Sample Survey Regions (NSSR)), by expenditure group, and by town size within the urban sector; (iii) the differences between rural and urban prices that are reported both by the PC and by other authors are implausible; (iv) UVs do not always correspond well with prices used by the PC for its poverty line calculations; (v) alternative methods of computing Unit Values do not overcome the problems identified. We argue that Unit Values computed from household expenditure surveys can be a useful check on prices obtained from markets and by quotation that are generally used in computing price indexes, but are no substitute. However, current practices of price collection and CPI in India need to be thoroughly overhauled to take account of the differences in costs of living in different domains and for different social groups. Weights for poverty line deflators should be regularly updated but are discussed in more detail in the next paper.

DRAFT for comment only

Paper 2:

Prices, Price Indexes and Poverty Counts in India during 1980s and 1990s: from CPIs to Poverty Lines?

Abstract

In the first of this series of three papers we criticised the consumer price indexes based on unit values calculated from the unit records of the NSS Consumer Expenditure Surveys (NSS CES) which have been used to calculated new poverty lines for Indian states by Deaton and Tarrozi, 1999, Deaton, 2003a. This second paper examines the calculation of poverty lines using these Unit Value Consumer Price Indexes (UV CPIs). We suggest that using UV CPIs to account for temporal change and spatial variation in prices in the production of poverty lines does not appear to be a good strategy. Here we point out what we see as a flaw in the method used to calculate Poverty Lines for different states and sectors from a single base Poverty Lines. Further, we argue that neither UV nor official price indexes represent true cost of living indexes because they ignore "environmental" variables that differ between domains and affect the transformation of consumption into well-being. This results in problems of comparability suggesting that the PLs that can be calculated from household expenditure surveys such as the NSS CES do not correspond to the same level of well-being in different domains and thus do not generate poverty measures that compare differences in ill-being rather than differences in the yardstick by which well-being is assessed. A thorough overhaul of poverty line calculations is required, but welfare comparable poverty lines cannot be based on normative calorie requirements. In the third paper in this series we give our "best" CPIs and those that arise from "robust" methods of poverty comparison using stochastic dominance techniques. Unfortunately, on theoretical grounds neither our poverty calculations nor the use of robust methods in their usual form overcome the problems identified here, and there we give evidence in support for this contention in that other indicators of well-being are not well correlated with these poverty counts and comparisons.

Paper 3

Prices, Price Indexes and Poverty Counts in India during 1980s and 1990s: from CPIs to Poverty

Abstract

In the first of this series of three papers we criticised the consumer price indexes based on unit values calculated from the unit records of the NSS Consumer Expenditure Surveys (NSS CES) which have been used to calculated new poverty lines for Indian states by Deaton and Tarrozi, 1999, Deaton, 2003a. This second paper examines the calculation of poverty lines using these Unit Value Consumer Price Indexes (UV CPIs). We suggest that using UV CPIs to account for temporal change and spatial variation in prices in the production of poverty lines does not appear to be a good strategy. Here we point out what we see as a flaw in the method used to calculate Poverty Lines for different states and sectors from a single base Poverty Lines. Further, we argue that neither UV nor official price indexes represent true cost of living indexes because they ignore "environmental" variables that differ between domains and affect the transformation of consumption into

well-being. This results in problems of comparability suggesting that the PLs that can be calculated from household expenditure surveys such as the NSS CES do not correspond to the same level of well-being in different domains and thus do not generate poverty measures that compare differences in ill-being rather than differences in the yardstick by which well-being is assessed. A thorough overhaul of poverty line calculations is required, but welfare comparable poverty lines cannot be based on normative calorie requirements. In the third paper in this series we give our "best" CPIs and those that arise from "robust" methods of poverty comparison using stochastic dominance techniques. Unfortunately, on theoretical grounds neither our poverty calculations nor the use of robust methods in their usual form overcome the problems identified here, and there we give evidence in support for this contention in that other indicators of well-being are not well correlated with these poverty counts and comparisons.

Paper 4

Can we set Poverty Lines using Calorie Norms in India or Bangladesh?[26]

Abstract

It has been common to anchor poverty lines in nutritional requirements, generally calorie norms. There are many ways in which these calculations are conducted, but broadly people in households are designated as poor if they are estimated not to command sufficient calories in their diet to meet their computed requirements. Various calorie based methods of computing poverty lines or poverty are calculated for India and Bangladesh for recent years, including Food Energy Intake and Cost of Basic Needs methods. These two methods are shown to be essentially similar once constraints are introduced on the cost per calorie of the FEI method. However, poverty aggregates based on these calorie anchored poverty lines do not show the same spatial or temporal patterns of ill-being as other indicators which are plausibly related closely with poverty. This paper argues that anchoring PLs in calories is not a reliable way to compute comparable poverty lines for different domains of social groups, geographical spaces, or time periods; that is they do not produce poverty lines which represent the same standard of living in these different domains, and consequently poverty comparisons based on these lines may be comparing not differences in poverty but differences in the standards by which poverty is assessed.

Paper 5

Probit Model And Heteroscedasticity

Abstract

This paper argues that in limited dependent variable models, when there is heteroscedasticity, a probit model with heteroscedasticity structure should be estimated.

Paper 6

Are the 2000 Poverty Estimates for India a Myth, Artifact or Real?

Abstract

The objective of this study is to assess whether the estimates of poverty provided by the Government of India for the year 1999/2000 are appropriate, as these estimates have generated a lot of controversy both in India and abroad. We examine this issue using nonparametric methods and provide alternate estimates of poverty for All-India and 16 major states. We compare our poverty estimates with those presented in the literature, such as Deaton (2001), which are widely discussed in the Indian economy. Our broad conclusion is that the different methods proposed for correcting poverty estimates in India are unlikely to yield even approximately correct estimates of poverty, or consensus on these estimates, when there are unknown measurement errors due to incomparable surveys.

Paper 7

Poverty Lines and Poverty Counts in Bangladesh

Abstract

Bangladesh has featured quite prominently in discussion of methodological issues involved in poverty calculation (Ravallion and Sen, 1996; Wodon, 1997; World Bank, 2002a), and yet the latest estimates of poverty and poverty trends diverge widely (BBS, 2004; GoB, 2005). This paper reviews the methods and data used in these and other recent calculations of poverty lines in Bangladesh. Poverty calculations for Bangladesh have been made using Food Energy Intake, Direct Calorie Intake, Cost of Basic Needs, and Unit Value based Consumer Price Index methods. A wide range of poverty lines and consequent poverty counts arises, with somewhat different spatial patterns and trends over time. Our implementation of the canonical Cost of Basic Needs methods, exploration of the different methods and data, and comparison with other measures of welfare suggests that we can have no confidence that current poverty calculations and the methods used provide welfare aggregates measured by a constant yardstick, rather than determined by variations in that yardstick. Hence, we do not know what has been happening to poverty, and cannot draw conclusions about whether policies have been pro-poor or not, based on these types of analysis.

DRAFT for comment only

DRAFT for comment only

Reference List

Atkinson, A. B., 1987, On the Measurement of Poverty, **Econometrica**, 749-64.

Baulch, B. and Masset, E., 2003, Do Monetary and Nonmonetary Indicators Tell the Same Story About Chronic Poverty? A Study of Vietnam in the 1990s. **World Development**, 31(3):441-53.

Bhalla, S. S. and Das, T., 2004Why be Afraid of the Truth? Poverty, Inequality and Growth in India, 1983-2000. New Delhi: Oxus Research and Investments.

Bradshaw, J. and Finch, N., 2002, Overlaps in Dimensions of Poverty, **Journal of Social Policy**, 32(4):513-25.

Bardhan, P., 2005 Oct 1, Theory or Empirics in Development Economics , **Economic and Political Weekly**, 40(40).

Chambers, Robert, 1983, **Rural Development: Putting the Last First**, London, Longman.

Citro, C. G. and Michael, R. T., 1995, **Measuring Poverty: a New Approach**, Washington, D.C., National Academy Press.

Datt, G. and Ravallion, M., 1998a, Farm Productivity and Rural Poverty in India, **Journal of Development Studies**, 34(4):62-85.

Datt, G. and Ravallion, M., 1998b, Why Have Some Indian States Done Better Than Others At Reducing Rural Poverty?, **Economica**, 65(257):17-38.

Deaton, A. and Grosh, M., 2000, Consumption, in, Grosh, M. and Glewwe, P., eds, **Designing Household Surveys for Developiong Countries**, Washington, D.C., International Bank for Reconstruction and Development, the World Bank, pp. 91-134.

Deaton A. and Dreze, J., 2002, Poverty and Inequality in India: a Re-Examination, **Economic and Political Weekly**, 38(36):3729-48.

Deaton, A., 2003a, Prices and Poverty in India, 1987-2000, **Economic & Political Weekly,** January 25th:362-8

Deaton, A., 2003b, Adjusted Indian Poverty Estimates for 1999-2000**. Economic & Political We**ekly. January 25th:322-6.

Deaton, A. and Kozel, V., 2004, Data and Dogma: the Great Indian Poverty Debate, pdf. http://www.wws.princeton.edu/~deaton/papers.html.

Deaton, A. and Muellbauer, J., 1980, **Economics of Consumer Behaviour**, Cambridge, Cambridge University Press.

Deaton, A. and Tarrozi, A., 1999, **Prices and Poverty in India**, Princeton, mimeo.

DRAFT for comment only

Dorward, A.; Fan, S.; Kydd, J.; Lofgren, H.; Morrison, J.; Poulton, C.; Rao, N.; Smith, L.; Tchale, H.; Thorat, S.; Urey, I., and Wobst, P., 2004, Institutions and Policies for Pro-Poor Agricultural Growth, **Development Policy Review**, 22(6):611-22.

Drèze, J. and Sen, A.K., 1989, **Hunger and Public Action**, Oxford, Clarendon Press.

Dreze, J. and Sen, A. K., 2002, **India: Development and Participation**, New Delhi, Oxford University Press.

Fan, S.; Hazell, P., and Haque, T., 2000, Targeting Public Investments by Agro-ecological Zone to Achieve Growth and Poverty Alleviation Goals in Rural India, **Food Policy**, 25(4):411-28.

Fan, S. and Hazell, P., 2001, Returns to Public Investments in Less-Favoured Areas of India and China, **American Journal of Agricultural Economics**, 83(5):1217-22.

Gardner, K. and Lewis, D., 1996, **Anthropology, Development and the Post-Modern Challenge**, London, Pluto Press.

Gibson, J., 2002, Why Does the Engel Method Work? Food Demand, Economies of Size and Household Survey Methods. **Oxford Bulletin of Economics and Statistics**, 64(4):341-59.

Glennerster, H., 2002, United States Poverty Studies and Poverty Measurement: the Past Twenty-five Years, **Social Service Review** (March):83-107.

Hill, Polly, 1986, **Development Economics on Trial: The Anthropological Case for a Prosecution**, Cambridge, Cambridge University Press.

Iceland, J., 2004, Experimental **Poverty Measures: Summary of a Workshop**. Washington D.C.: National Academy Press.

IFAD, 2001, **Rural Poverty Report, 2001: the Challenge of Ending Rural Poverty**. Oxford: Oxford University Press for the International Fund for Agricultural Development.

Khan A.R. and Sen., Binnayek, 2001, Inequality and its Sources in Bangladesh, 1991/2 to 1995/6: an Analysis based on Household Surveys, **Bangladesh Development Studies**, March(28):1.

Kijima, Y. and Lanjouw, P., 2003, Poverty in India in the 1990s: a regional Perspective. Washington: World Bank. World Bank Policy Research Paper 2003.

Kuhn, T., 1962, **The Structure of Scientific Revolutions**, Chicago, Chicago University Press.

Lister, Ruth, 2004, **Poverty**, Cambridge, Polity Press.

Meenakshi, J. V. and Vishwanathan, B., 2003, Calorie Deprivation in Rural India, **Economic and Political Weekly**, 38(4):369-275.

DRAFT for comment only

Mosse, D., 2004a, **Cultivating Development: An Ethnography of Aid and Practice**, London, Pluto Press.

Mosse, D., 2004b, Is Good Policy Unimplementable? Reflections on the Ethography of Aid Policy and Practice, **Development and Change**, 35(4):639-671.

Palmer-Jones, R. W. Sen K. K., 2001, On India's Poverty Puzzles and the Statistics of Poverty, **Economic and Political Weekly**, 36(3):211-7.

Palmer-Jones, R. W. and Sen, K. K., 2003, What has luck got to do with it? A regional analysis of poverty and agricultural growth in rural India, **Journal of Development Studies**, 40(1):1-31.

Patnaik. U., 2004, The Republic of Hunger, Public Lecture on the occasion of the 50th Birthday of Safdar Hashmi, organized by SAHMAT (Safdar Hashmi Memorial Trust) on April 10, 2004, New Delhi.

Rath, S., 2003, Poverty by Price Indicies, **Economic and Political Weekly**, October 4:4260-68.

Ravallion, M. and Bidani, B., 1994, How Robust is a Poverty Profile?, **World Bank Economic Review**, 8:75-102.

Ravallion, M., 1992, **Poverty Comparisons: a Guide to Concepts and Methods**. Washington: World Bank, LSMS Working Paper NO 88.

Ravallion, M., 1998, **Poverty Lines in Theory and Practice**, Washington, D.C., World Bank, LSMS Working Papers No 133.

Ray, R. and Lancaster, G., 2005, On Setting the Poverty Line Based on Estimated Nutrient Prices: Condition of Socially Disadvantaged Groups during the Reform Period. **Economic and Political Weekly.** 40(1):46-56.

Sahn, D. and Stifel, D., 2002, Robust comparisons of Malnutrition in Developing Countries, **American Journal of Agricultural Economics**, 84(3):716-35.

Saith, A., 2005, Poverty Lines Versus the Poor, **Economic and Political Weekly**, 40(43):4601-10.

Sen., Abhijit and Himanshu, 2004a, Poverty and Inequality in India - 1, **Economic and Political Weekly** (September 18th):4247-63.

Sen., Abhijit and Himanshu, 2004b, Poverty and Inequality in India - 2, **Economic and Political Weekly** (September 25th):4361-75.

Subramaniam, S., 2005, Unravelling a Conceptual Muddle India's Poverty Statistics in the Light of Basic Demand Theory , **Economic and Political Weekly**, 1/1/2005:57-66.

Svedberg, P., 2001, **Poverty and Undernutrition: Measurement and Policy**, New Delhi, Oxford University Press.

DRAFT for comment only

Szeleky, M.; Lustig, N.; Cumpa, M., and Meija, J., 2004, Do we know how much poverty there is?, **Oxford Development Studies**, 32(4):523-58.

Tarp, F.; Simler, K.; Matusse, C.; Heltberg, R., and Dava, G., 2002, The Robustness of Poverty Profiles Reconsidered, **Economic Development and Cultural Change**, 51:77-108.

Tarrozi, A., 2004, Calculating Comparable Statistics from Incomparable Surveys, with an Application to India, .pdf. Duke University, Processed.

van Ufford, P. Q. and Giri, A. K., eds. **A Moral Critique of Development: in Search of Global Responsibilities**, London: Routledge; 2003.

World Bank, 1998, Bangladesh: From Counting the Poor to Making the Poor Count, Washington, World Bank, Poverty Reduction and Economic Management Network, South Asia Division.

World Bank, 2002a, **Bangladesh: Progress in Poverty Reduction**, Washington, World Bank, background paper Bangladesh Development Forum, Paris, March.

World Bank, 2002B, **A Sourcebook for Poverty Reduction**, Washington D.C., World Bank.
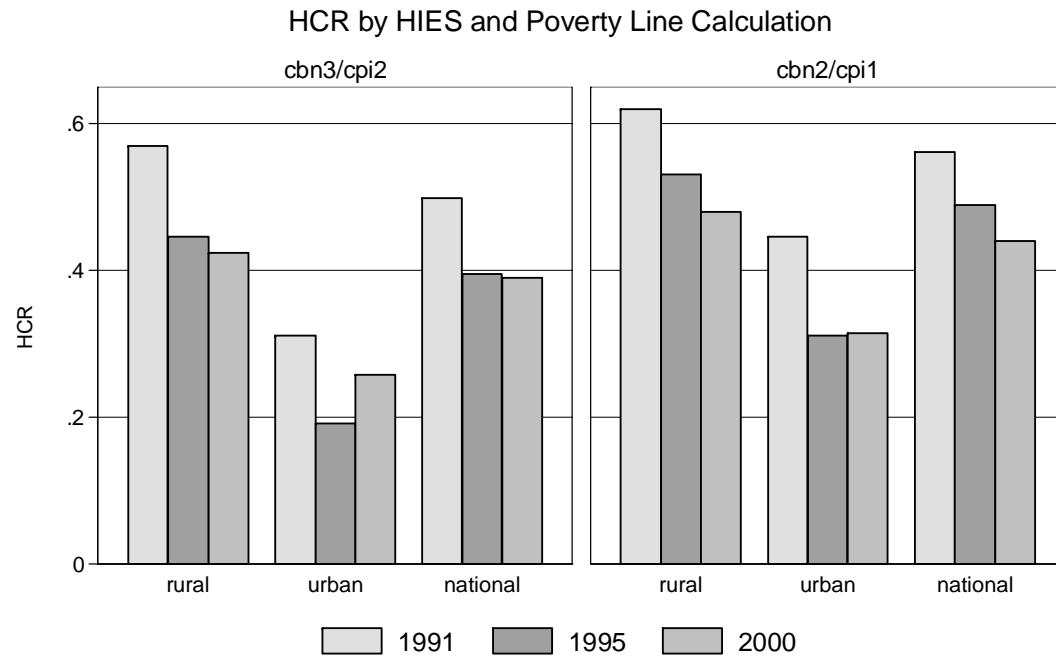
World Bank, 2005, Review of Development Effectiveness: The Bank's Contributions to Poverty Reduction. Washington, D.C.: The World Bank Operations Evaluation Department, May.

Table 1: Correlations among Poverty, the Anthropometric Status of Women and Children, and Child Mortality Rates
Pair wise Pearson Correlation Coefficients for the 62 NSSR in the major states of India

	Poverty		NFHS2		NFHS1				NFHS2				Census				NFHS1		NFHS2
	rpj (r&u)		Women's		Children's				Children's				1981		1991				
	hcr_rpj50	hcr_rpj55	bmi_	wt_ht	Ht/age	Wt/ht	<-2 sd	<-3sd	Ht/age	Wt/ht	<-2sd	<-3sd	imr	cmr	imr	cmr	imr	cmr	imr
hcr_rpj 50	1																		
hcr_rpj55	0.742*	1																	
Womens' bmi	-0.565*	-0.542*	1																
Wt/ht	-0.547*	-0.527*	0.990*	1															
Childrens Ht/age	-0.379	-0.365	0.374*	0.358	1														
' wt/ht	-0.349				0.303	1													
Ht<-2sd	0.353		-0.336	-0.303	-0.837*		1												
Ht<-3sd	0.407	0.357	-0.435*	-0.415*	-0.861*		0.807*	1											
Ht/age_sdt		-0.307	0.440*	0.375*	0.352	-0.417*		-0.522*	1										
Wt/ht	-0.349*		0.456*	0.494*		0.530*			-0.267	1									
Ht <-2			-0.544*	-0.504*					-0.670*		1								
Ht <-3			-0.484*	-0.433*				0.403*	-0.849*		0.815*	1							
Imr 81	0.291	0.271	-0.370*	-0.337*					-0.473*	-0.284	0.422*	0.434*	1						
Cmr 81	0.533*	0.381*	-0.574*	-0.514*	-0.395*	-0.306		0.402*	-0.560*	-0.330*	0.452*	0.492*	0.816*	1					
Imr 91	0.504*	0.459*	-0.517*	-0.470*	-0.354			0.379*	-0.531*		0.417*	0.519*	0.824*	0.842*	1				
Cmr 91	0.465*	0.390*	-0.495*	-0.440*	-0.339			0.392*	-0.524*		0.382*	0.515*	0.803*	0.877*	0.971*	1			
Imr nfhs1	-0.432*	-0.400*	0.434*	0.428*		0.540*			0.336*	0.25			-0.507*	-0.505*	-0.548*	-0.509*	1		
Cmr nfhs1	-0.431*	-0.445*	0.477*	0.436*	0.617*	0.310	-0.572*	-0.635*	0.587*		-0.274	-0.450*	-0.520*	-0.672*	-0.666*	-0.665*	0.635*	1	
Imr nfhs2			0.310*	0.285					0.338*		-0.303	-0.388*	-0.315*	-0.472*	-0.475*	-0.496*		0.519*	1
Imr nfhs2	-0.393*		0.551*	0.514*				-0.376*	0.455*	0.301	-0.549*	-0.539*	-0.488*	-0.756*	-0.611*	-0.645*		0.517*	0.651*

Notes: BMI: Body Mass Index; imr: infant mortality rate; cmr: child mortality rate
values are prited is p< 0.05 and starred if p<0.001

Sources: HCRs - author's calculations from NSS Consumer Expenditure Surveys; BMI & Ht/age from the National Family Health Surveys 1&2 (1998/9); imrs & cmrs - Indian Censuses and NFHS1 & 2

HCR by HIES and Poverty Line Calculation

source: wb_areas.do