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REFLECTIONS ON POVERTY[1]

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I am indebted to the members of the Indian Econometric Society for reposing faith in me to presiding over its 48th Annual Conference of TIES. We are sad to miss Professor Suresh D. Tendulkar, the President-elect of this year's conference, who has suddenly made a journey to his heavenly abode, and we dedicate this year's conference to his memory. I am privileged to step into the shoes of my eminent predecessors and share with you my thoughts on a very important theme on poverty analysis, which is of paramount importance in the contemporary discourse of development, and which is an area in which Professor Tendulkar has made pioneering contributions in the context of our economy.

Poverty is perhaps the worst calamity of human civilization, and alleviation of poor people from the deprivations constitutes a major challenge to development planners and policy makers in developing countries. Even the World Bank recognises it to be a serious problem of contemporary world society and has renewed emphasis on poverty removal across the globe and the need for global governance to help this process. According to the World Development Report (2000), of the world's 6 billion people, 2.8 billion live on $2 a day, and 1.2 billion live on less than $1 a day, with 44 percent living in South Asia. The infant mortality rate in poorest of countries average more than 20 per cent and as many as 50 per cent of their children are malnourished, while in the rich nations , the corresponding percentages are paltry small. Thus deep poverty amidst plenty, and the alarming inequality in income, opportunities, access and amenity, and in social and economic power continue to exist among large segments of world's population, particularly in developing nations in Asia and Africa.

The concentration of world's poor is in South Asia, Africa and Latin America, who suffer from associated deprivations like malnutrition, hunger, lack of shelter, health and educational facilities, and even lack of access to safe drinking water . In India despite the long history of running anti-poverty programmes by the governments, the number of poor people have not diminished significantly even after six decades since her political independence.

Poverty is a complex phenomenon, with multiple dimensions, which cannot be captured by a single definition applicable to all societies and regions at all times. According to Ravallion(1994), poverty can be said to exist in a given society when individuals/households do not attain a level of material well-being deemed to constitute a reasonable minimum by the standards of that society. Thus poverty is a phenomenon of relative deprivation where people are regarded as poor if they do not have access to diets, comforts and other entitlements that are customary in that society. Therefore, although for some specific purposes, we may define absolute poverty corresponding to a specific absolute or average norm, the phenomenon in all its dimensions has relative connotations. The inherent pluralism in the concept of poverty has given

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rise to differences in conceptualization and measurement of the deprivations which have not only income, but also social, cultural, political and even physiological dimensions, relevant for a given society or region. The UNDP in its successive annual reports on human development have emphasized the need to comprehend alternative indicators of deprivations based on poor access to education, health, drinking water, sanitation, gender inequality, and even inadequate societal and institutional arrangements for ventilating the freedom of the people. One therefore gets concepts like Human Poverty Index, Gender Empowerment Index and Human Development Index, apart from the traditional notions like the HC ratio, and the Gini Coefficient in poverty studies. Attempts to quantify the incidence of poverty naturally involve a study of the level and pattern of individuals' personal consumption as well as their access to provisions to social interventions that together determine the entitlements through which his/her basic needs can be met and capabilities enhanced. There are alternative estimates of poverty and related deprivations, depending on the criterion used, and sometimes use of single criterion may not be enough .There are differences of opinions regarding the exact estimates of the incidence and severity of income poverty, depending on the choice of the location of the cut-off level of expenditure, and the indices chosen, so that controversies are unavoidable in the estimates of poverty and poverty comparisons. When multiple criteria are used to arrive at composite measures of poverty and deprivations, choice of weights becomes problematic because valuation of alternative indicators of deprivations from the view point of societal welfare remains ad hoc and subjective. For example, whether educational deprivations or sanitational deprivations are more important than income deprivations or human rights violation and therefore be given higher weightage in the construction of composite indicator of deprivations in a given society/state or region cannot be decided *a priori* and hence cannot be used to depict the policy targets.

In this address, I would like to flag off the major issues of poverty studies, with special reference to the Indian debates on poverty measurement and public action. Some of these issues are general in nature, and some are peculiar to India. The issues of measurement is related to the choice of the appropriate indices and the nature of data available and their characteristics, while actions to alleviate poverty rest crucially on the nature of the delivery mechanisms designed and their efficiency in the context of institutional settings. There is also an issue of poverty comparisons and convergence on which we shall reflect in this address. Sections 1, 2 and 3 discuss issues in measurement, decomposition and multi-dimensionality, while section 4 deals with public policies for poverty alleviation. Section 5 concludes.

1. Measurement Issues

The issue of measuring the extent and depth of poverty and thereby of well-being is a difficult and complicated task. First major issue has been due to the distinction between poverty and inequality – while the former measures the absolute levels of living, the second is about disparities in levels of living. With the explicit objective of halving the number of world's poor by 2015, the Millennium Development Goals (MDGs) set out the task of defining the world's poor exactly and debates have surfaced over what should the appropriate cut-off to be adopted by all countries which makes the comparison at the world scale possible. Given that in most countries, the available data are about distribution of monthly consumption expenditure rather than income distribution, the choice of the poverty cut-off basically helps to distinguish between the poor from the non-poor in terms of certain level of mean consumption expenditure, popularly known as the

poverty line, and the estimate is called the head count ratio (HCR). One major issue in the literature on poverty measurement has been the nutritional adequacy of the food content of a poverty line, which is required to measure the extent of poverty. Since there have been inter-personal and intra-personal variations of nutritional requirements and such variations also differ from region to region and country to country, the estimation of minimum nutritional requirement is difficult to be exact. Average requirement as distinct from minimal requirement is often used to estimate the poverty line, but even in that case the exact composition of food intakes that support such requirement becomes bizarre. There is also the suggestion that since we do not have matching of the estimates of undernourishment and poverty based on a nutritional norm based poverty line, it is sufficient to take the mean consumption expenditure of the distribution as the cut-off to differentiate the poor and the non-poor. A related issue is the appropriateness of measures of average per capita monthly consumption expenditure as obtained from the National income accounts data rather than the household consumption expenditure data obtained from sample surveys. There are issues of overestimation in case of NAS data, and underestimation in case of sample survey based household consumption expenditure data. Since choice of the poverty line involves valuation of a basket of goods that nutritionally or otherwise adequate, the use and hence choice of the price indices assumes importance. In India, as opposed to the GDP deflator, the preferred choice of price indices happen to be CPIAL for rural poverty and cost of living indices for urban manual employees for urban poverty , although there are other variants too. The justification for the use of one set of price indices as against another should not be in terms of the close proximity of the estimates using it with other estimates and that whether or not such estimates are overestimates or underestimates. The real test of its use should be in terms of its appropriateness to be judged from its representative nature. Since agricultural labourer constituted only 30% of the rural poor, it would not be theoretically sound to use a price index relevant for them only to map the estimate of poverty of the entire rural population. Poverty estimates should take into account the average retail prices paid by the consumers of various occupation groups and in fact would be sensitive to their variations over time. Use of average retail prices for various expenditure groups as obtained from the NSS data would therefore, be more appropriate in defining poverty line compared to CPIAL , national income deflator or wholesale price indices, whatever be the nutritional minimum chosen as the minimum biological requirement for subsistence. In fact, we can argue that prices actually paid by the consumers reflect their true command over goods and services and the capabilities that such a command generates. Therefore retail prices, which vary between states in case of India, should be used in valuating bundles to determine the poverty line and the head count ratio. It should be recognized that inflation in food prices as well as in other articles would influence the estimates of poverty, as command over goods and hence functioning would alter, and in fact, shrink in that case. Thus, the issue is the choice of the price factor to valuate the cost of the diet actually used – wholesale or retail, which base for which prices and so , and also the inter-temporal variations in prices paid by consumers, particularly of the low income group. Since the composition of food basket and dietary patterns undergo changes over time, adjusting the poverty line with the inflation rate may, however, introduce overestimation bias.

The issues get magnified when we move to the question of figuring out the internationally applicable benchmark level of cut-off to estimate the extent of poverty and their homes in different countries. Apart from the relation of such a globally chosen poverty cut-off with the nutritionally adequate metrics, the PPP conversions are also required to make such international comparisons

possible. Ravallion (2010) has outlined the World Bank's methodology of estimating global poverty on the basis of a uniform cut-off of $1 a day and thereafter modified to $ 1.25 a day as the global poverty line to estimate the number of poor in the world. Martin Ravallion (2008) has sought to introduce a global perspective in measurement of poverty in India by choosing the World Bank benchmark figure of $1.25 per capita per day as the poverty line with PPP adjustments by taking a weighted average of poverty lines of 15 most poor nations of the world. The rationale for using a PPP rather than the market exchange rate stems from the Balassa - Samuelson effect in international economics, which recognises that market exchange rates, while tending to equate purchasing power in terms of internationally traded goods, are deceptive for measuring real incomes in developing countries, given that some commodities are not traded; this includes not only services but also many goods, including some food staples. The new international poverty line for 2005 chosen was $ 1.25, and , according to him, in 2005, one in three of the world's population who consumed less than $ 1.25 a day (at 2005 purchasing power parity) lived in India, accounting for about 40 per cent of India's population, which were 60 per cent in 1980 below the same real poverty line. While this indicates progress of poverty reduction, the decline in percentages were not enough to reduce the number of people living below $ 1.25, which rose from 421 to 456 million. T.N. Srinivasan (2010), however, among others, has been critical of a global poverty line as suggested by the World Bank and argues that poverty should be a multi-dimensional concept, and if it is measured in terms of a monetary metric, then it should at the national rather than at the global level.

Secondly, there is an important issue regarding national accounts statistics vis a vis household expenditure survey data on private consumption and well-being , and comparability of these data between countries. The problem gets compounded as we extend beyond measurement of expenditure poverty to include multi-dimensional deprivations like in health, education, shelter and drinking water and try to arrive at multi-dimensional poverty measures and rank countries accordingly. In the absence of comparable time series data on household level consumption expenditures and that too presence of non-uniform recall period of the household responses in different countries, estimation of global aggregative poverty cut-off is difficult to obtain and use. At the centre of the debate on the new consensus to end endemic deprivations in the new millennium, the issues on measurability has surfaced to the fore as the consequent actions are dependent on our assessment of the magnitude of world's poor. While the extent of poverty has changed over the years, the different dimensions of poverty has also undergone significant changes over time and space such that the measurement issues are now extremely complex. With different countries adopting different methods of data collection and preservation, comparability on a global scale becomes extremely difficult, yet to achieve the target of halving the number of world's poor by 2015, one needs to identify the extent of global poverty.

Measuring Indian Poverty

Since the National Planning Committee headed by Jawaharlal Nehru and set up in 1936 by Subhash Chandra Bose, the then Congress President, had for the first time set a goal of a minimum standard of living to get rid of the appalling poverty of the masses, and set a norm of minimum food and housing, measurement of the extent of poverty and initiation of programmes for poverty alleviation have remained in the forefront of public policies in India. As early as 1962, the perspective planning diversion of the Planning Commission under the leadership of Pitambar

Pant, estimated that about 50% of Indian population lived in abject poverty and maintained that a per capita consumption expenditure of Rs.240 per annum for rural areas and Rs.300 per annum for urban areas, evaluated out 1960-61 prices (excluding expenditure on health and education) should be deemed as national average minimum level of consumption expenditure for bare existence. Their exclusion of expenditure on health and education on the ground that state governments had constitutional obligations to provide them free was symptomatic of our planners relative neglect of quality of life in the formulation of our long-term developmental strategies and was also highly unrealistic and ill conceived. Moreover, they did not distinguish between alternative price indices (wholesale, retail and price index for various income and occupation groups) as having significant bearing on the estimate of poverty cut-off point and did not relative their estimate to any calorie-intake criteria explicitly. Their acceptance of the then existing inequality in income distribution as a necessary pre-condition for growth and the emphasis on rapid growth as a possible solution to poverty of the masses reflected the belief in 'trickle down' or 'percolation' mechanism by our planners in the early days of economic planning and in the country.

The seminal work by Dandekar and Rath (1971) constituted the basis of many of the debates on poverty measurement in India during the 1970s and 1980s. According to them, the NSS estimate of average per capita consumption expenditure in 1967-68 was an underestimate. They assumed a daily intake of 2250 calories per adult male as the required minimum intake for subsistence. This estimate was obtained by Professor Sukhatme for Indian conditions and was somewhat lower than the intake recommended by the Nutrition Advisory Committee of the Indian Council of Medical Research. Dandekar and Rath made some adjustments in the NSS data, based their estimates of poverty on a method which was closer to the one used by Ojha, but with two major differences. Firstly, they used the NSS estimates of consumption of food grains (and substitutes) without any correction. Secondly, they assured a yield of 2250 calories per capita per day from other items of food. They found that for rural areas in 1960-61, an annual per capita consumer expenditure of Rs. 170.80 was needed to afford a diet equivalent to 2250 calories per capita per day. For a number of reasons, the urban consumers would typically need to spend a higher amount Rs. 271.70 to purchase the same amount of nutrition. Urban consumers, Dandekar and Rath argued, would need to spend regularly 59% more than their rural counterparts, to attain the same level of nutrition, while the average urban income was only 37% higher than the rural income on an average.

According to the estimates of Dandekar and Rath, in 1960-61, roughly 40% of the rural population and a little under 50% of the urban population lived below the poverty line. In 1967-68, allowing for adjustments in price levels, they considered Rs. 324 in rural areas and Rs. 486 in urban areas per capita per annum as necessary for the minimum level of living defined in terms of nutritional forms. On the basis of this norm, in 1968-69, roughly 40% (as against 54% in Bardhan's estimates) of the rural population and 50% of the urban population were found to be living below the poverty line. In so far as the rural population is concerned, Dandekar and Rath estimates, therefore, lie in between the Minhas and Bardhan estimates, in that they found no significant change in the proportion of the people living below poverty line in the late 1960s. They argued, however, that the extent of urban poverty had deepened in the intervening period, although average urban income still exceeded the average rural income, albeit by a smaller margin than before. Whereas all but the bottom 5% of the rural population had shown some

improvements in real income, no less than the bottom 40% of the urban population had suffered a decline in their real standard of living.

The poverty estimates of Dandekar and Rath have received widespread criticism on several grounds. Let us briefly mention some of the major ones. Firstly, their study was based on NSS data which is collected only once a year, and do not give the round-the-year information about the consumption pattern of rural poor. The consumption pattern of rural poor is directly related to the cropping pattern of each region. Further, their estimates of the changes in the incidence of poverty during the sixties depend critically upon the revisions to NSS consumption expenditure data for the year1967-68. Dandekar and Rath themselves found the NSS data for 1967-68 unreliable for a number of reasons (a) they noted that the NSS estimate of rural per capita consumption in 1967-68 (deflated by the national income deflator with 1960-61 base) was about 7% below the corresponding NSS estimate in 1960-61 and about 11% below the corresponding estimate in 1967-68 derived from official national accounts data (published by CSO); (b) they found (using the national income deflator) that the average per capita consumption of the lowest 5% rural fractile group in 1967-68 estimate was only 73% of that in 1960-61 – such a large differential fall in the per capita consumption of the richest 5% was against their a priori judgment about the extent of inequality in income distribution. They therefore proposed a revision of per capita consumption expenditure data obtained from the NSS for different sections of the rural population to conform to the official estimates. This was objected to by many economists who feel that without an intensive study of the discrepancies between the two series of consumption data, it is not proper to conclude in favour of either. Therefore, one should carefully analyze the sources of discrepancy before either accepting or modifying a series and the poverty estimates would definitely be sensitive to such arbitrary modification.

Dandekar and Rath's use of national income deflator also came up for sharp criticism. Since national income includes both consumption and investment goods, it is not appropriate to use the GDP deflator to estimate poverty for the rural population whose consumption baskets do not reflect equi-proportional weightage to all types of agricultural and manufactured items. Since the weight of manufactured consumables in the budget of the rural poor is likely to be much lower than the national average (which includes both the rich and the poor, the urban as well as the rural sections), the GDP deflator is very much likely to have understated the extent of rise in prices paid by the rural poor. Even within the class of agriculture commodities, particularly cereals, the Mahalanobis Committee had already estimated that the average price paid by the poor rose at a faster rate than that by the rich. Therefore, as we have argued earlier, the use of national income deflator in poverty calculation, remains arbitrary and unrepresentative.

Dandekar and Rath's average calorie requirement of a reference man as the minimum dietary requirement for calculation of the poverty line had attracted severe criticisms. Firstly, average requirement is not the same as the minimum requirement. Secondly, while assessing whether a man is undernourished or poor, one should take into account the different requirements for different age-groups, sex, body-weights and heights and allow for inter-individual as well as intra-individual variations in calorie requirement. Use of all India average requirements seems to ignore these facts. Thirdly, Dandekar and Rath, while keeping in view the extent of price variations in rural and urban areas due to which they are required it spend different amounts of income to purchase the same minimum nutritional requirement of 2250 calories per capita per day for both the rural and urban population had not taken into account the type, nature and level

of activities which people from rural and urban areas are actually engaged in. This had led them to the overestimation of people living below the poverty line in urban areas and under estimation of poor people in rural areas. There had been an intense debate between V.K.R.V. Rao and P.V. Sukhatme on the one hand, and Dandekar on the other, on these aspects of using nutritional norms for poverty calculation, but that need not detain us here. E shall come to some of these in somewhat details in another chapter dealing with Malnutrition. Suffice it to say at this stage that although the two concepts of poverty and under nutrition are closely related, they do not propose to identify the same phenomenon and one need not confuse between the two. As Dandekar (1981), rightly observed," When a population is classified on the basis of a certain income or expenditure however determined, provided it is sufficiently low, we are defining poverty and sorting out poor and not poor so defined. On the other hand, if we classify a population by its energy intake, we are trying to identify under nutrition. Want of adequate income, howsoever defined, is poverty; deficiency of energy appropriately defined, is under nutrition". While we acknowledge the above distinction between poverty and under nutrition (we often call it malnutrition), we would like to make one incidental observation on Dandekar's qualification, underlined by us in the above quotation. The expression 'howsoever defined' indicates Dandekar's own admission that his calculation of the poverty line, like those of others, is totally arbitrary and hence suspect. While it is true that it is the cut-off level of expenditure, and not its exact composition, that determines the proportion of the population living in poverty, one should also have some justification for arriving at that expenditure level on the basis of some well-perceived norms and that is the context where the concept of minimum dietary intake assumes significance. In general, one may find that all undernourished people are poor, but not that all poor are undernourished.

As argued by Ravallion (2002), replacement of NSS data by the NAS data is likely to create serious distortions into our analysis of poverty measurement and poverty comparisons, for three reasons. Firstly, the measure of average consumption in the NSS data is based on reported expenditures (cash plus own stocks) in household interviews, whereas the bulk of private consumption in the NAS is identified as residual, and it lumps together all the errors crept in the estimation of other components of national accounts with guarantee of their canceling out in the aggregation. Secondly, the private consumption figures in India's NAS do not strictly conform to household consumption per se, as the expenditures of non-profit enterprises like NGOs, political parties, religious and charitable organizations are clubbed together with the household sector in the NAS. Naturally , the differences in the estimates from the two sets of data arise due to the difference in their conceptual frames, and replacing one part of the data by another while retaining the NSS distribution would only be ad hoc and meaningless. Thirdly, there seems to be a rising trend of consumption inequality between urban and rural areas in the 1990s, and the national Gini-coefficient are fluctuating around a rising trend. Comparing the decade-wise break-up of the trends and shares of consumption spending during 1980s and 1990s, Ravallion has identified that upper 20 per cent of the income distribution has gained considerably from economic growth during the period, while the consumption by bottom 20 per cent remained more or less flat, so that the overall inequality in income distribution exhibited an upward trend. Therefore, the presumption that consumption – growth in India is distribution neutral in invalid and such presumption would definitely be inconsistent with the strong correlation across states of India between the NSS mean per capita consumption expenditure (MPCE) and the state level NSDP per capita, and if underestimation due underreporting takes place in NSS Consumption

surveys, it is more likely to occur for household consumptions above the poverty line rather for households below it.

Poverty studies in India since 1970s have been based on the choice of a ***poverty line*** expenditure level to distinguish the poor from the non-poor as that observed level of expenditure per capita per month on all goods and services, whose food expenditure component provided daily rural energy intake of 2400 calories per capita and an urban intake of 2100 calories per capita per day. Instead of uniform calorie norm, the Task force adopted an average intake norm by suitably aggregating intake differences across age groups. An indirect method of price index adjustment to a base year poverty line has been followed, without any reference to the current cost of obtaining the nutrition norm, even though information on this was regularly available from the quinquennial surveys. This amounts to computing a Laspeyers index in which the quantities consumed in that base year are held unchanged over time, adjustment being made only for price change. The current consumption basket purchasable at prevailing poverty line used by the Planning Commission cannot however, access the nutrition norm of 2400 calories 2100 calories per capita per day respectively for rural and urban consumers. . The crucial fact is that at the poverty line of Rs 328 for all-India, food giving only 1890 calories daily could be purchased, over 500 calories below the required dietary allowance (RDA). Rohini Nayyar (1991), and Jaya Mehta and Shanta Venktraman (2000) discussing the 50^{th} round, 1993-94 had drawn attention to the inability of the price-adjusted poverty lines to capture the current cost of reaching the nutrition norm. The gap between the official poverty lines and the actual cost of accessing the nutrition norm, was small to begin with, but has been widening fast as the base year of the fixed consumption basket, gets further back in time. The poverty lines derived by bringing forward the 1973-74 rural poverty line Rs 49 using the CPIAL came to Rs 56 in 1977-78, Rs 86 in 1983, Rs 206 in 1993-94 and Rs 328 in 1999-2000.The official poverty line for 2004-05 is Rs 356.3. The NSS consumption data have thus been rendered irrelevant for deriving the official poverty lines. The price index adjustment to a base year basket obviously has not only failed to capture the actual current cost of accessing minimum nutrition at each point of time, additionally the extent of failure has been increasing fast over time.

S Subramanian (2005) has analyzed the impact of relative food price rise, and the loss of common property resources on the demand for food, using the theory of consumer demand to show, that at an income level which the official methodology equates with the poverty line, it would not be compatible with optimizing behaviour to consume food at its calorifically normative level, and secondly, the level of income required to induce optimal consumption of the calorific norm would be greater than the officially stipulated poverty line. He has rejected the official procedure of taking an invariant base-year consumption basket, as assigning arbitrarily a normative value to the consumption pattern of one particular year. J V Meenakshi and B Viswanathan (2003) have used the statistical technique of kernel density functions to estimate the distribution of persons by calorie intake. They have conceptually de-linked nutritional levels from consumer expenditure and given a different name “calorie deprivation” to their estimates. Utsa Patmaik (2007), while checking the nutritional equivalence of the poverty lines for rural and urban India, has argued that on average , 2400 and 2100 calories per day per capita was worked out to be the required daily allowance (RDA) for energy intake for rural and urban areas respectively, and all persons unable to access this through their actually observed expenditure were to be judged as poor. While there are differences between rural and urban nutritional norms because of

the engagement of more unskilled labour in physically intensive works than in urban areas, **o**bserved actual intake of calories in rural India was higher than intake in urban areas of India from 1950s to 1990s, after which rural intake declined and urban intake rose, and the position was reversed in 1999-2000. The NSS reports present the percentage distribution of persons and average expenditure on food and non-food, by monthly per capita expenditure groups, and also provide the calorie intake per capita per diem by expenditure groups, although the latter is published after a lag.

The official poverty line employed in India by the Planning Commission's 1979 'Task Force on Projections of Minimum Needs and Effective Consumption Demand' was based on the consumer expenditure of the particular section of the all-India population surveyed in that time period which consumed foods possessing a calorie content equivalent to a selected calorific norm (2,400 kcal per day in rural areas and 2,100 kcal per day in urban areas). The calorific norms were weighted averages based on the prevailing age-sex-occupational structure of the rural and urban populations projected forward to 1982-83 and calorie allowances previously identified for each of these age-sex-occupational groups. Allowances for non-food expenditures of the rural and urban sub-populations were thus provided implicitly in this method. The 1993 expert group endorsed this approach to the construction of national rural and urban poverty lines, while recommending procedures for the construction of retrospective state-specific poverty lines that could be deemed equivalent to these national poverty lines in the base year (1973-74), and for the updating of these state-specific price indices based on the Consumer Price Index for Agricultural Labourers for the rural poverty line, and on a weighted average of the Consumer Price Index for non-Manual Employees for the urban poverty line).The Expert group argued that "some degree of arbitrariness is inherent in the choice of any base year" and stated that since "much systematic work has already been done with the base year 1973-74, the group was in favour of continuing it as a base year for estimating the poverty line. It is important to note that the view that there is considerable degree of arbitrariness in the selection of the poverty line. Let us now contrast the following two approaches to the setting of a poverty line: (1) apply as the poverty line in a specific time period, **t**, the consumer expenditure of the particular section of the population surveyed. in that same time period which consumed foods possessing a calorie content equivalent to a selected calorific norm. Refer to the resulting poverty line as **z(t);** (2) apply as the poverty line in a specific time period , **t,** a previously identified poverty line, **z(0),**updated in accordance with a specified price index, $\mathbf{I_t}$**.** Refer to the resulting poverty line as **z'(t),** where $\mathbf{z'(t)=z(0)I_t}$**.**

The first approach maintains a substantive human achievement interpretation for the poverty line in each period of time, **t,** by construction. The second approach relies on a retrospective for the poverty line, although it can be claimed that this interpretation maintains relevance if it is believed that the price index maintains real purchasing power appropriately. These two approaches to the setting of a poverty line necessarily coincide in the base year (1973-74) as in that year there is no need to update the poverty line) i.e., $\mathbf{I_t=1}$ by definition). What of subsequent years? If the price index, I_t, is constructed so as to take on a specific value (namely, as $\mathbf{I_t=z(t)/z(0)}$ then the equivalence can be guaranteed, but it cannot otherwise. Thus, poverty lines constructed in accordance with the two methods may diverge, perhaps substantially. This is exactly what has happened in India. The official poverty lines that have been applied correspond to the indirect approach. However, poverty line constructed in accordance with the

direct approach are much higher than those constructed through the official indirect approach, and have become increasingly so over time. Since the very motivation for the choice of the original poverty lines, **z(0)** is the substantive human achievement interpretation that it possesses, it is difficult to dismiss this non-equivalence as being of no importance.

Soon after the formulation of the new economic policy in 1991, the Planning Commission set up a committee of experts, chaired by Prof. D.T. Lakdawala, to examine the entire question of the poverty line and lay down a methodology for its calculation. The Committee submitted its report in 1993, quite sometime after the death of its chairman, and until recently, the Planning Commission had been using the slightly modified version of the expert committee's methodology to estimate the extent of poverty in India. The Expert Group Methodology, popularly known as the Lakdawala Committee estimates, has made a number of refinements in estimating the percentage and number of poor across the states and India. First of all, the Expert Group has considered the valuation of the national consumption basket corresponding to all-India calorie norms implicit in the poverty line of Rs.49 and Rs.56.6 per capita per month at 1973-74 prices as used by the Planning Commission for rural & urban areas respectively with the help of state-specific prices to estimate the state-specific poverty lines. These state-specific poverty lines are plugged into state-specific NSS consumption expenditure distributions to derive the State wise head count ratios for rural and urban areas. Secondly, the group has added a federal dimensions to the estimation of poverty when the all-India poverty proportions for rural and urban areas are derived as a ration of aggregate state-wise number of poor to the all-India population for rural and urban areas respectively, and not as a sequel to using all-India poverty lines on the all-India NSS consumption expenditure distribution adjusted for parity with the national accounts statistics (NAS) estimates of private consumption expenditure. Thus the Expert Group gas used state-wise NSS consumption expenditure distribution along with state-specific poverty lines in order to arrive at poverty percentages for different states. Thirdly, in order to arrive at state-specific poverty line corresponding to the baseline consumption market for 1973-74, they have estimated state-wise price differentials separately for rural and urban areas with the help of specifically constructed cost of living indices.

The CPIAL with 1960-61 as base year for the states is used for rural cost of living indices, while a simple average of consumer price Index of Urban Non –Manual Employees (CPIUE) and Consumer Price Index for Industrial Workers (CPIIW) with 1960-61 as base is used to construct the urban cost of living indices for the states. As per the suggestions of Minhas et al (1988), weights corresponding to the consumption pattern of middle 40 per cent of the rural population, and about middle 42 per cent of urban population by expenditure strata for 1973-74 have been used to construct state-specific Consumer Price Index for Middle Rural population (CPIMR) and Consumer Price Index for Middle Urban population(CPIMU) for 1973-74 with 1960-61 as base, and using Fisher's index and state wise price differentials constructed by Chatterjee and Bhattacharya (1974), the Expert Group has estimated the price differentials across states relative to all India for rural and urban areas respectively to arrive at state-specific poverty lines for 1973-74, and updating them for subsequent years with the help of CPIMR and CPIMU for the corresponding years. The state-specific poverty lines for each year and the state-specific unadjusted NSS per capita consumption expenditure distributions enabled the Expert Group to arrive at state-specific rural and urban head count ratios. By using the state-wise population figures of Registrar General of Census for rural and urban areas on the poverty proportions

across the states, the total number of poor in each state for each of the years have been found out, before aggregating them to derive the number and proportions of poor people in the rural and urban areas for India as a whole. It may be noted that since March 11, 1997, the official consensus approach of the Planning Commission has been to adopt a Modified Expert Group Methodology which differs from the Expert Group Method described above on two counts: (a) it drops the CPIUE and uses only CPIIW for updating the urban of poverty lines across states, and thus the estimates of urban head count ratio are slightly adjusted in all the states; and (b) it uses revised population figures so that the number of poor people in rural areas of the state are slightly different even if the rural head count ratios are identical for the Expert Group and the Modified Expert Group estimates. It may be noted that while the original planning commission estimates show a much more pronounced decline in the indices of poverty across all states than could be ascertained by the Expert group, interstate variations in poverty indices as well as the differentials rates of their decline across the states of India are clearly indicated in all these estimates.

Two problems associated with the expert group methodology to estimate the incidence of poverty in our country need be mentioned at this stage. First, the Committee, rather than estimating the state level poverty lines for rural and urban areas separately at the first step and then aggregating them across states to obtain the all-India rural and urban poverty line as weighted averages of state-specific poverty lines, chose to do the reverse- i.e., the Committee began by calculating the poverty lines separately for the all-India rural and urban populations, and then is aggregated them for the states. This was done on the plea that dietary pattern varies across population at different states between rural and urban areas and the food baskets of different states were different in content, but surely the calorie figures were available at the state level for comparison. This makes the methodology of their estimates of poverty suspect and questionable. Second, for updating these poverty lines every year to take account of the changes in prices, the expert group suggested the use of the consumer price index for industrial workers, routinely prepared by the Labour Bureau, for the urban poverty line, and the consumer price index for agricultural labour for the rural poverty line. But given the dietary diversity across the states, all commodities featuring in the all-India basket will not be found in every state. Since the NSSO was conducting consumption expenditure surveys every year on the basis of *thin* samples, the implicit price deflators for both food and non-food items for the states were available, and therefore use of CPIAL and CPIIW indices and their estimated changes to update poverty lines for rural and urban areas are not tenable as restrictive. On both counts, the Expert Group Methodology had resulted in distorting the state level poverty lines and the consequent percentages of the population below the poverty lines.

What emerges from the above review of the aggregative views on poverty in India, are worth noting. Firstly, estimates of poverty depend crucially on the norm taken as a cut-off point to demarcate the poor from the non-poor and its valuation through the choice of appropriate price indices. The use of CPIAL does no better than the use of GNP deflator or wholesale price indices and the actual choice should take into account the representative nature of the prices rather the close proximity of the estimates chosen with alternative official estimates. Non-availability of adequate forms of price data often makes the task difficult for purpose of exact estimates. Secondly, the anchoring of the poverty line chosen to the nutritional norms through indirect updating of the cost of the basket of food by growth in GDP deflator rather than to estimate the current cost of the diet, makes the official poverty calculations as grossly underestimates. Attempt

to locate the Indian poverty line to purchasing power-adjusted International poverty line would also create similar problem of estimation bias in discerning the incidence of poverty in India .Thirdly, if one takes into account per capita per day expenditure on not only food, but also on non-food items like health and education in arriving at the poverty line cut-off level, then the HCR for all India as well as in all states would exhibit an upward tendency as compared to the official estimates of the Planning Commission. If, on the other hand , one computes the HCRs of very poor, who belong to less than or equal to 75 per cent of poverty lines, then also one would find significant increase in the incidence of poverty, which is more pronounced in rural areas as compared to urban areas. This is true not only at the aggregate level of all-India , but also at the state levels. Fourthly, while taking an aggregative view about the extent of poverty in India, there is a need to focus on intensity and depth of poverty through proper weights to the bottom fractile groups and use a Sen's P-measure of poverty along with estimates of HCRs.

In 2009, the Planning Commission set up another expert committee under the Chairmanship of Suresh D. Tendulkar, whose report3 was accepted by the Commission in 2010. The Tendulkar Committee made a basic corrective departure by using the price data from the NSSO's consumer expenditure survey for the latest available year (2004-5) to calculate the price indices for the rural and urban areas of the states as well as the Union. Besides the 80 per cent of the items in the consumer baskets for which price data were available from the NSS surveys, the Committee used other similar survey data from NSS surveys for education and health expenditures and for rent. This removed a major source of error from the poverty line calculations by the Commission following the recommendations of the Lakdawala Committee.

The salient features of the poverty lines proposed by the Tendulkar Committee are:

(a) The estimates of poverty will continue to be based on private household consumer expenditure of Indian households as collected by the National Sample Survey (NSS) Organization (NSSO); (b) Poverty lines won't be linked to a calorie *intake* norm; (c) Mixed Reference Period (MRP) based estimates of consumption expenditure has been used as the basis for future poverty lines as against the previous practice of using Uniform reference period (URP) estimates of consumption expenditure; (d) In the interest of continuity as well as in view of the consistency with broad external validity checks with respect to nutritional, educational and health outcomes, the expert group decided to recommend MRP equivalent of urban **Poverty Line Basket (PLB)** corresponding to 25.7 per cent urban headcount ratio (estimated urban share of the poor population) in 2004-05 as the new reference PLB to be provided to rural as well as urban population in all the states after adjusting it for within state urban relative to rural and rural and urban state relative to all India price differential;(f) The expert group also validated the proposed poverty lines by checking the adequacy of actual private expenditure per capita near the poverty lines on food, education and health by comparing them with normative expenditures consistent with nutritional, educational and health outcomes. Actual private expenditures reported by households near the new poverty lines on these items were found to be adequate at the all-India level in both the rural and the urban areas and for most of the states;(g)The proposed reference PLB takes into account all items of consumption (except transport and conveyance) for construction of price indices. Separate allowance for private expenditure on transport and conveyance has been made in the recommended poverty lines;(h)The price indices proposed by the expert group are based on the household-level unit values (approximated price data) obtained from the 61st round (July 2004 to June 2005) of NSS on household consumer expenditure survey

for food, fuel and light, clothing and footwear at the most detailed level of dis-aggregation and hence much closer to the actual prices paid by the consumers in rural and urban areas. Price indices for health and education were also obtained from unit level data from related National Sample Surveys. The proposed price indices (Fisher, Ideal indices) incorporate both the observed all- India and the state level consumption patterns in the weighting structure of the price indices. For rent and conveyance, actual expenditure share for these items had been used to adjust the poverty line for each state; (I) The new poverty lines have been generated for all the states including the north-eastern states. However, in the absence of adequate data, the expert group has suggested use of poverty line of the neighboring states for union territories.

The Tendulkar Committee had underscored that except for the urban all-India headcount ratio for 2004-05 which was used to derive the all- India reference poverty line basket, all other headcount ratios –rural all-India and for rural and urban populations of the states for 2004-05 are based on the new reference basket and new price indices, and hence are not comparable and must not be compared to the earlier announced official headcount ratios using the earlier official poverty lines and out- dated price indices. By adopting the above procedures, the committee estimated the all-India rural headcount ratio as 41.8 per cent pertaining to 2004-05 which is around 13 per cent higher than official estimate arrived at by the Planning Commission using the previous expert group method (28.3 per cent). Furthermore, as the new estimate is not comparable with previous estimates of poverty due to procedural modification it would be necessary to re-estimate poverty for the previous years. In view of that, the committee carried out a preliminary exercise for the year 1993-94 in order to broadly make a two point comparison of changes in poverty ratios. The exercise revealed that poverty at all India level in 1993-94 are 50.1 per cent in rural areas, 31.8 per cent in urban areas and 45.3 per cent in the country as a whole. On the contrary, the official poverty estimates pertaining to 1993-94 were 37.2 per cent in rural areas, 32.6 per cent in urban areas and 36.0 per cent at the all India level respectively It could, however, be observed that although the proposed methodology led to a higher estimate of poverty for 2004-05 and also for the 1993-94 the percentage point decline between 1993-94 and 2004-05 is not different from percentage point decline using the old expert group methodology. Despite stating that it made a conscious decision to move away from calorie intake norms to consumption norms in order to measure poverty, the Tendulkar Committee justifies its poverty line by arguing that the calorie intake at this line (of 1776 for urban and 1999 for rural, per person per day) compares well with the revised calorie norms of 1770 per person per day set by the Food and Agriculture Organization (FAO) for India. This justification is highly questionable. Secondly, the Committee's reliance on the urban head count ratio estimated by the expert group methodology, with questionable and non-comparable handling of price variations is a highly unsound procedure in measuring the extent of poverty in rural and urban areas.. There is also the problem of bias in the estimate of the committee as non-unit value items like education and health expenditure is included with commodities consumed valuated at their median unit values.

According to India's Eleventh Five Year Plan, the number of poor people in India amounts to more than 300 million. The country has been successful in reducing the proportion of poor people from about 55 per cent in 1973 to about 27 per cent in 2004. But almost one third of the country's population of more than 1.1 billion continues to live below the poverty line, and a large proportion of poor people live in rural areas. Poverty remains a chronic condition for almost 30 per cent of India's rural population. Poverty is deepest among members of scheduled castes

and tribes in the country's rural areas. In 2005 these groups accounted for 80 per cent of poor rural people, although their share in the total rural population is much smaller. On the map of poverty in India, the poorest areas are in parts of Rajasthan, Madhya Pradesh, Uttar Pradesh, Bihar, Jharkhand, Orissa, Chhattisgarh and West Bengal.

According to Montek Ahluwalia (2011) , the poverty estimates that are available for 2009-10 as indicative of the progress of poverty reduction in the Eleventh Five Year Pan indicate milder pace of decline as compared to the target of the plan. Although the estimates for 2009-10 due to C.Ravi (table 7) be taken only as approximation, in view of non-availability of fuller data set from the NSSO for the 66^{th} round of consumption expenditure surveys, it reveals that pace of reduction in the percentage of population below the poverty line is very modest-about 0.8 percentage points per year according to the Lakdawala estimates and slightly lower at 0.81 percentage points per year as per the Tendulkar committee procedure. The Eleventh Five year plan predicted a target of reducing poverty by 2 percentage points per year. The 2009-10 provisional estimate of head count ratio as reported in table 7 above indicates that poverty in 2009-10 was 32%, thus indicating a decline at the rate of 1 percentage point per year between 2004-05 and 2009-10, much below the eleventh plan target. There are however, considerable regional variation across the states of India :the four southern states of Andhra Pradesh, Tamil Nadu, Kerala and Karnataka all report impressive reduction in Head count ratios as do the states of Maharastra, Orissa, Madhya Pradesh and Himachal Pradesh , whereas there is no improvements in Uttar Pradesh and Bihar, and very marginal improvements in West Bengal and an actual deterioration in Assam., Punjab and Haryana had relatively lower poverty rates to begin with, but do not seem to have improved their position, despite relatively impressive growth performance during the period. Thus trickle down process seems to have slackened during the period of eleventh plan, rhetoric of inclusiveness notwithstanding .We need to focus on multidimensionality of poverty measurement to have a gauge of the inclusive nature of development process visualized by the planners.

The UNDP report on Poverty and Human Development points out some interesting contrasts. Some of our (Indian) states report levels of social advancement similar to leading industrialised countries. Others show achievement levels that are lower than the average of the poorest countries in the world. For example, only 39 out of 150 countries in the world -- and all of them by far richer -- reported a lower infant mortality rate than Kerala's in 1995. At the same time, only 24 countries had a higher rate of infant mortality than Orissa. A Kerala girl-child's life expectancy today is around 74 years, or 20 years more than that of a girl born in Uttar Pradesh. Similarly, disparities exist between and within communities in India. For instance, communities classified as Scheduled Castes and Scheduled Tribes have significantly lower literacy and higher child mortality rates than the rest of the population. Of our 350 to 400 million poor, roughly 75 per cent live in the rural areas. Of these 75 per cent, the worst-off are women, children, *adivasis* and *dalits*. Among the SAARC countries, India has the worst figures, with the exception of Bangladesh, in the status of underweight children under age five. In 1975, 71 per cent of children were undernourished. From 1990-96, the figure stood at 53 per cent. Compared to neighbouring countries like China, these figures are atrocious. Only 26 per cent of China's children were underweight in 1975, and in 1990-96, the figure has come down to 16 per cent. We are told that India has reached self-sufficiency in foodgrain production, having increased yields four-fold. And yet, even while the Food Corporation godowns have the best-fed rodent population in the world,

we have starvation deaths in Orissa and Bihar and hungry villagers in drought-stricken Rajasthan. This is the scenario where 53 per cent of children under five, that is, over 60 million Indian children, remain malnourished.

Table 1. Head Count Measures of Poverty in Indian States-Alternative Estimates

States	*Lakdawala Methodology*		*Tendulkar Methodology*		*Ravi Estimates*
	1993-94	*2004-05*	*1993-94*	*2004-05*	*2009-10*
Andhra Pradesh	22.2	15.8	44.6	29.9	20.0
Assam	40.9	19.7	51.8	34.4	39.2
Bihar	55.0	41.4	60.5	54.4	54.8
Gujarat	24.2	16.8	37.8	31.8	26.6
Haryana	25.1	14.0	35.9	24.1	23.8
Himachal Pradesh	28.4	10.0	34.6	22.9	11.7
Jammu &Kashmir	25.2	5.4	26.3	13.2	12.8
Karnataka	33.2	25.0	49.5	33.4	26.5
Kerala	25.4	15.0	31.3	19.7	11.3
Madhya Pradesh	42.5	38.3	44.6	48.6	40.5
Maharastra	36.9	30.7	47.9	38.1	26.4
Orissa	48.6	46.4	59.1	57.2	46.4
Punjab	11.8	8.4	22.4	20.9	19.3
Rajasthan	27.4	22.1	38.3	34.4	29.4
Tamil Nadu	35.0	22.5	44.6	28.9	18.3
Uttar Pradesh	40.9	32.8	48.4	40.9	40.5
West Bengal	35.7	24.7	39.4	34.3	32.5
All India	36.0	27.5	45.3	37.2	32.2

Source: M.S.Aluwalia (2011).Estimates for 2009-10 on the basis of consumption expenditure surveys are attempted by C.Ravi of CESS,Hyderabad, using the Tendulkar committee poverty line of 2004-05 and adjusting the rural poverty line by CPIAL and urban poverty line by CPIIW .The estimates could be revised after obtaining the unit level data for the 66th Round by the NSSO.

Thus nutritional adequacy apart, the crucial element in valuating a poverty line basket are the prices used to do the valuation and their appropriateness, particularly when inter-temporal considerations are present. The choice of the correct set of price indices to reflect the true purchasing power of the people and the entitlement and capabilities that such food intakes entail are important determinants of the estimates of poverty spread across the rural and urban population in all states of India. The problem would magnify when we attempt to define a global poverty line to examine the dispersal of the poor across the different nation states of the world.

2. Decomposition

There is no denying the fact that economic growth, though not sufficient by itself, can act as an instrument for reduction in the extent of poverty .There is also no denying the fact that in market-driven economy, the phase of rapid economic growth is also accompanied by accentuation of inequalities in the personal distribution of income. An attempt has been made to decompose the actual changes in the head count ratio of poverty between time periods as the

sum of growth and inequality or distribution effect. One may further decompose within group poverty changes and between group poverty changes to gauge the effects of population shifts between groups over time. To estimate the head-count index, the distribution function is typically fitted over the class interval containing the poverty line. In the context of constructing poverty measures from grouped data of household consumption expenditure, estimates of parameterized Lorenz curves would indicate relative inequality in the distribution. The Lorenz curve captures all the information on the pattern of *relative inequalities* in the population. It is independent of any considerations of absolute living standards. The poverty measure captures our assessment of the absolute living standards of the poor. The poverty measure is homogenous of degree zero in mean consumption and the poverty line—that is, if mean consumption and the poverty line change by the same proportion, poverty will remain unchanged. The slope of the Lorenz curve, evaluated at the poverty line *z*, gives the estimate of the head count ratio measure of poverty, H. As is discussed by Datt and Ravallion (1992), the basic idea of decomposition of changes in poverty into growth and redistribution components is as follows:

For any two dates 0 and 1, the growth component of a change in the poverty measure is defined as the change in poverty due to a change in the mean μ_0 *to* μ_1 *while holding the Lorenz curve constant at L = L(p;B). The redistribution component is defined as the change in poverty due to a change in the Lorenz curve from* $L_0 = L(p;B)$ *to* $L_1 = L(p;B)$ *while holding the mean constant at* μ_0 *.*

Thus, apart from the poverty measures at the two dates, we need two simulated poverty measures, namely $P(\mu, B)$ and $P(\mu, B)$, to compute the decomposition. The simulated poverty measures themselves are easily obtained by estimating poverty with the Lorenz parameters for one date and the mean for the other. Since the poverty line is kept fixed over the two dates, it should be ensured that the means have been adjusted for changes in the cost of living over the two dates.

Poverty and inequality are usually measured using quantitative indices. For example, when policies are implemented to reduce poverty, it becomes important to measure the evolution of these indices, and especially the decomposition of the observed variation, in order to evaluate the contribution of potential explanatory factors. Each of the decomposition techniques, whether static or dynamic, yields a particular solution to this general decomposition problem as a function of the characteristics of I and the goals of the decomposition. The decomposition techniques confront four principal problems:

1. The contribution assigned to each specific factor does not always have an intuitively clear meaning.
2. Decomposition procedures are only applicable to certain poverty and inequality indices. When used with other indices, these decomposition techniques sometimes introduce vague notions, such as “residual” or “interaction,” to ensure the identity of the decomposition.
3. The types of contributing factors considered are usually limited. For example, a single criterion is used to divide the population into subgroups. When multiple criteria are used for the subdivision, the decomposition methods have difficulty identifying the contributions.

4. All of these decomposition methods lack a shared theoretical framework. Each individual application is viewed as a different problem requiring a different solution.

We can focus on two types of decomposition of the inter-temporal evolution of poverty: (1) the decomposition of variations in poverty into a "growth" effect and a "redistribution" effect, and (2) the decomposition of the variation in poverty into sectorial effects by population subgroup. Given a fixed poverty line, the level of poverty at time t (t=1,2) can be expressed as a function $P(\mu_t, L_t)$ of mean income, μt , and the Lorenz curve, L_t .The growth factor is $G= \mu_1 / \mu_2 - 1$, and the redistribution factor $R. = L_2 - L_1$.

The decomposition issue here consists of identifying the contribution of growth, G, and that of redistribution, R, to the variation in poverty, ΔP. Consequently, we can write:

$$\Delta P = P(\mu_2, L_2) - P(\mu_1, L_1) = P\left[\mu_1(1+G), L_1 + R\right] - P(\mu_1, L_1) = F(G,R)$$

The final expression of the contribution of growth is

$$\begin{aligned} C_G^S &= \frac{1}{2}\left[F(G,R) - F(R) + F(G)\right], \\ &= \frac{1}{2}\left\{P(\mu_2, L_2) - P(\mu_1, L_1) - \left[P(\mu_1, L_2) - P(\mu_1, L_1)\right] + \left[P(\mu_2, L_1) - P(\mu_1, L_1)\right]\right\}, \\ &= \frac{1}{2}\left\{P(\mu_2, L_2) - P(\mu_1, L_2) + \left[P(\mu_2, L_1) - P(\mu_1, L_1)\right]\right\}. \end{aligned}$$

This expression reveals that the contribution of the "growth" factor is equal to the mean of two elements: (1) the variation in the poverty measure if inequality is fixed at its value in the first period, and (2) the variation in the poverty measure if inequality is fixed at its value in the last period.

Considering the same sequences A and B defined above, the contribution of inequality is similarly: $C_G^S = \frac{1}{2}\left[F(R) - F(\varnothing) + F(G,R) - F(G)\right] = \frac{1}{2}\left[F(G,R) - F(G) + F(R)\right]$.

$$\begin{aligned} C_G^S &= \frac{1}{2}\left[F(G,R) - F(G) + F(R)\right], \\ &= \frac{1}{2}\left\{P(\mu_2, L_2) - P(\mu_1, L_1) - \left[P(\mu_2, L_1) - P(\mu_1, L_1)\right] + \left[P(\mu_1, L_2) - P(\mu_1, L_1)\right]\right\}, \\ &= \frac{1}{2}\left\{P(\mu_2, L_2) - P(\mu_2, L_1) + \left[P(\mu_1, L_2) - P(\mu_1, L_1)\right]\right\}. \end{aligned}$$

The above expression shows the contribution of the "inequality" factor is equal to the mean of two elements: (1) the variation in the poverty measure if mean income is fixed at its value in the first period, and (2) the variation in the poverty measure if mean income is fixed at its value in the last period. Finally, the variation in poverty is the sum of the contributions of growth and distribution. There is usually a residual, which is the outcome of combination of growth and distribution factors. Thus, we have,

Change in Poverty = Growth Component + Redistribution Component + Residual

It may be noted that while such a decomposition method enables us to assess the relative impact of growth and distributional parameters on the incidence of poverty, one should not forget a very complex and inextricable link between the two phenomena in our actual process

of economic growth. It is interesting to relate the decomposition to the effective trickle down mechanism on which our planners had pinned their hopes repeatedly since the inception of planning in the country. It may be further noted that for meaningful explanations of the dynamics of poverty in a less developed country like India with so much of inter state variability, it is important to relate various estimates and their decomposition to a theoretical framework that capture not only actual mechanism of transmission of economic development in the country but also takes into account the developmental programmes and associated policy interventions which define the framework of public action towards betterment of living conditions.

In particular, one may point out the following problems with the above decomposition methodology. First, it is not legitimate to infer from two-point comparisons about the trends in head-count ratio or poverty –gap ratio from discrete time points. The presumption that between the two points there is linear pattern of uniform growth in, here, mean per capita consumption expenditure of the households, is not a valid one. Such a presumption precludes the unevenness in the changes in consumption patterns across households over time due to several economic and social factors , most important being the nature of distribution function that changes over the period due to continuous transfer payments by the government and distortionary inflationary pressures often encountered in less developed countries like India . Secondly, it is erroneous to take consumption inequality as equivalent to income inequality, and changes in mean consumption expenditure as equivalent to growth in per capita income. Such assumptions would invalidate the main inference of the decomposition exercise often made in the context of India (see Datt and Ravallion for details) that growth effect had dominated the impact on poverty reduction than distribution effect which was rather weak and ineffective. A lot of the inferential part of the analysis would depend on what the residual part is and what are the factors that govern the changes in the residuals. The growth effect in mean consumption per capita and the distribution effect of Lorenz ratio of household consumption expenditure, plus the residual effect is what observed changes in poverty indices indicate, and there are possibilities important omissions of factors that actually affect the transmission channel of poverty reduction. Thirdly, it would be wrong to compare growth rate of per capita consumption expenditure at constant prices and growth rate of the Gini index at current prices, as is required in the above mentioned decomposition analysis—one needs to have a prior decomposition between the price effect and the real effect, before decomposing between growth in mean consumption and changes in relative inequality between time periods. In fact, growth and distribution effects are interdependent, and well specified time series models needs be tested to gauge the relative importance of growth and redistribution factors in poverty reduction, and for this we need such time series information on poverty or household consumption expenditure.

3. Multidimensionality

In September 2000, 189 heads of state and government adopted the UN Millennium Declaration ,based on a set of fundamental values including freedom, equality, solidarity, tolerance, respect for nature and shared responsibility, with commitments for international cooperation on peace, security and disarmament; development and poverty eradication; environmental protection; and human rights, democracy and good governance. To promote development and poverty eradication, the declaration laid out a series of objectives that became the Millennium Development Goals (MDGs). Conceptually, the Millennium Development Goals

articulate and quantify some core human development priorities focused on minimum levels of achievement.

The MDGs catalysed the collection and compilation of comparable international data related to the agreed goals and targets. The MDG statistics are presented annually and reports invariably progress on each indicator singly, with no attempt to arrive at a composite MDG index, and few studies have reflected the interconnections between indicators. Given the diversity of indicators, it is difficult to construct an index that meaningfully brings all deprivations into the same frame. This is due to two main reasons : (i) the 'denominator' or base population of MDG indicators differ across countries -- in some cases, it is all people (malnutrition, income); in some cases children (primary school, immunization), or youth 15-24 (literacy), or childbearing women (maternal mortality), or households (access to secure tenure),and so on. (ii) Second, the MDG reports identify the percentage of countries that are 'on target' to meet the MDGs, but do not present any information on the actual *number of people* who are deprived. The multidimensional poverty index (MPI) proposed by the UNDP, establishes the 'base' population as being the household, as people live in households, the suffering of one member affects other members, and similarly the abilities of one member (e.g. literacy) often help other household members. The MPI tries to identify different 'types' of deprivations – clusters of deprivations that occur regularly in different countries or groups, and can contribute to a better understanding of the interconnectedness among deprivations, can help identify poverty traps, and can thus strengthen the composition and sequencing of interventions required to meet the MDGs.

Multidimensional Poverty Index

There is no denying the fact that poverty is intrinsically multifaceted and thus multidimensional and the dimensions of poverty go far beyond inadequate income—to poor health and nutrition, low education and skills, inadequate livelihoods, bad housing conditions, social exclusion and lack of participation. Although money-based measures are important, yet deprivations in other dimensions and their overlap need also to be considered, since households facing multiple deprivations are likely to be in worse situations than income poverty measures suggest. The multi-dimensional poverty index (MPI), like the HDI or HPI developed by UNDP, complements monetary-based methods by taking a broader approach. Grounded in the capability approach, the MPI includes an array of dimensions from participatory exercises among poor communities and an emerging international consensus, identifies overlapping deprivations at the household level across the same three dimensions as the HDI and shows the average number of poor people and deprivations with which poor households contend. The Human Poverty Index (HPI) developed since 1997 could not identify specific individuals, households or larger groups of people as jointly deprived. The MPI addresses this shortcoming by capturing how many people experience overlapping deprivations and how many deprivations they face on average. Based on the method developed by Sabina Alkire and James Foster (2009), the MPI is the product of the multidimensional poverty headcount (the share of people who are multi-dimensionally poor) and the average number of deprivations each multi-dimensionally poor household experiences (the intensity of their poverty). It has three dimensions mirroring the HDI—health, education and living standards—which are reflected in 10 indicators, each with equal weight within its dimension. A household is multidimensionally poor if it is deprived in at least two to six indicators (the cut-off depends on the weight of the specific indicator in the overall measure). The cut-offs

are austere, reflecting acute deprivations, and most are linked to the Millennium Development Goals.

The MPI is most appropriate for less developed countries in South Asia and Sub-Saharan Africa and in the poorest Latin American countries. It reveals the magnitude of poverty beyond monetary measures and captures overlapping deprivations across the different dimensions of serious, disadvantages faced by the human race spread across countries. Using MPI, the UNDP **has** estimated that about a third of the population in 104 countries, or almost 1.75 billion people, experience multidimensional poverty. In 19 of the 72 countries in the sample that have both the MPI and the income poverty measure—including China, Sri Lanka, Tanzania and Uzbekistan—the headcount rate for income poverty is higher than that for multidimensional poverty. In general, the lower the national HDI, the more likely that multidimensional poverty exceeds income poverty. UNDP's aggregate estimate of 1.75 billion multi-dimensionally poor people exceeds the 1.44 billion people estimated to be living on less than $1.25 a day in the same countries, but it is below the 2.6 billion people estimated to be living on less than $2 a day. The results of UNDP's Human Development Report 2010, which uses MPI across countries and regions are quite startling:

*Sub-Saharan Africa has the highest incidence of multidimensional poverty. The level ranges from a low of 3 percent in South Africa to a massive 93 percent in Niger; the average share of deprivations ranges from about 45 percent (in Gabon, Lesotho and Swaziland) to 69 percent (in Niger). Yet half the world's multi-dimensionally poor live in South Asia (844 million people), and more than a quarter live in Africa (458 million).

** South Asia is home to the largest number of people living in multidimensional poverty, followed by Sub-Saharan Africa. Sub-Saharan Africa has the highest incidence of multidimensional poverty, with considerable variation across the 37 African countries in our sample—from a low of 3 percent in South Africa to a massive 93 percent in Niger—while the average share of deprivations ranges from about45 percent (in Gabon, Lesotho and Swaziland) to 69 percent (in Niger). In Guinea, Mali and Niger more than half the population is poor and has experienced a child death. In those countries as well as Burkina Faso, Burundi, Ethiopia and Mozambique more than half the population is poor and lives in a household where no one has completed primary school.

***• Eight Indian states, with poverty as acute as the 26 poorest African countries, are home to 421 million multi-dimensionally poor people, more than the 410 million people living in those African countries combined. Thus, the MPI starkly exposes the intensity and incidence of multidimensional poverty in South Asia as greater than in any other region. In India Delhi's rate of multidimensional poverty is close to Iraq's and Viet Nam's (about 14 percent), while the state of Bihar's is similar to Sierra Leone's and Guinea's (about 81 percent). In India 81 percent of people of Scheduled Tribes are multi-dimensionally poor, alongside 66 percent of those of Scheduled Castes and 58 percent of those of Other Backward Castes.29 About a third of other Indian households are multi-dimensionally poor, with an MPI just below that of Honduras.

In an obvious sense, almost every poverty measure found in practice is "multidimensional." But multidimensionality *per se* cannot be what distinguishes a multidimensional index of poverty (MIP). The main measure now commonly practiced uses a composite measure of consumption or income with many components, relying heavily on market prices in aggregation. It must be recognized that poverty is not just about low consumption of market commodities alone, there are also important non-market goods relevant to welfare, such

as access to public services. Multidimensionality of poverty however, does not imply that one needs a composite MIP. The more common approach is to collect multiple indicators of the various dimensions of poverty, invariably including an index of command over market goods, but also including indicators for health and education attainments and access to services. The real differences between the "multidimensional" measure of poverty and standard approaches lie firstly in whether one believes that a single index of poverty could ever be a sufficient statistic, or whether multiple indices are required, each measuring different things using the best data available for that task, and secondly on how the analyst chooses to collapse multiple dimensions into one, recognizing that some degree of aggregation will probably be called for. There are countless possibilities for forming composite indices by some form of essentially *ad hoc* aggregation. But forming a single (uni-dimensional) index may not be particularly useful for sound development policy making. The MIP gives equal weight (one-third each) to three dimensions of health, education and living standards to form the composite index—according to this composite measure ,a household is identified as being poor if it is deprived across at least 30% of the weighted indicators. While the HDI uses aggregate country-level data, the Alkire-Santos MIP uses household-level data, which are then aggregated to the country level. Alkire and Santos construct their index for more than 100 countries. The Alkire-Santos MIP is a special case of the theoretical measure proposed in an elegant paper by Alkire and Foster (2007), which takes virtually all the elements of the measure as given (determined outside the measure), notably the dimensions of poverty, the dimension-specific cutoffs, the weights on deprivations and the minimum number of deprivations needed to be deemed "poor." A key step in implementing any multidimensional measure is to select a set of dimensions. Apart from the narrow set of goods that define the consumption dimension, there are also non-income dimensions like "conflict, personal security, domestic and social violence, issues of power/empowerment" and "intra-household dynamics." which the Alkire-Santos MIP chooses to leave out. If one chooses not to form the composite at household level but to look instead at the separate dimensions of poverty then one is in a better position to span the relevant dimensions and to choose the best available data on each. There are data constraints as well which point to the need for multiple measures in practice, namely that the data we typically use in measuring poverty do not tell us much about consumption within the household for which we need to make assumptions about intra-household distribution, such as the seemingly strong assumption of welfare equality within the household. Secondly, given strong or weak correlation between alternative dimensions, taking an a composite aggregate index would mean that the MDI, so constructed, will have overlapping dimensions, and hence would somewhat exaggerate the extent of deprivation that poverty is intended to typify. The total impact on (multidimensional) poverty would be lower if one based the allocation on the MIP rather than the separate poverty measures—one for incomes and one for access to services. It is not the aggregate index that we need for this purpose but its components.

Aggregation

One can distinguish between two approaches to forming an aggregate poverty index. The first one is to use prices (actual or imputed) to form a composite index for aggregate consumption, to be compared to a poverty line defined in the same space. Ideally this is not just consumption of market goods and services, but should include imputed values for non-market commodities as well. For market goods, either their market prices or appropriate shadow prices can be used. For non-market goods, the missing "prices" will need to be assigned on *a priori*

grounds or estimated. In practice, most poverty measures require imputations for missing prices, so this approach is a natural extension of prevailing practices. In principle we can broaden this approach to allow for non-commodity dimensions of welfare. The space defined by all primary dimensions of welfare (including commodities) can be called the "attainment space" and the aggregation can be called "attainment aggregation." The weights on attainments can be called "prices," understood to include imputed prices. A simple example of a poverty measure using attainment-aggregation is the usual headcount index of poverty:

$$P^A = F_Y(Z) \quad \text{... (1)}$$

where *Fy* is the distribution function for aggregate consumption *y* and *z* is the poverty line in that space. To keep things simple for expository purposes (including graphing), suppose that there are two attainments in amounts *x*1 and *x*2, with prices *p*1 and *p*2, so *y*=*p*1*x*1+*p*2*x*2.

The second approach measures poverty in each of the dimensions separately and then aggregates the dimension-specific "deprivations" into a composite index. Formal treatments of this approach can be found in Tsui (2002), Bourguignon and Chakravarty (2003), Duclos et al. (2006) and Alkire and Foster (2007). The Alkire-Santos MIP is an example of "deprivation aggregation."

To see more clearly how this second approach works, consider again the two continuous attainments, *x*1 and *x*2, with distribution functions *F*1 and *F*2 respectively. Poverty lines, denoted *z*1 and *z*2, are defined in each space and the weights on deprivations are *w*1 and *w*2 (*w*1+*w*2=1). Then a simple example of a poverty measure using deprivation-aggregation is the weighted incidence of poverty across the two dimensions:

$$P^D \equiv {}_{w1}F_1(Z_1) + {}_{w2}F_2(Z_2) \quad \text{... (1)}$$

This is only one possible way of aggregating deprivations. Alternatively one can focus on the joint distribution, and ask what proportion of the population is poor in at least one of the two dimensions (Bourguignon and Chakravarty, 2003)

The measure proposed by Alkire and Foster (2007) goes further in introducing an extra parameter, such that a household is deemed to be poor if its weighted deprivation exceeds a critical value. However, all these measures are essentially some weighted aggregation of deprivations, and (implicitly) a nonlinear function of the cut-offs *z*1 and *z*2. Evidently, these two approaches will not, in general, give the same measure, even when the poverty lines are consistent in that $\boldsymbol{Z = p_1 z_1 + p_2 z_2}$.

The academic literature to date on multidimensional poverty has focused more on the deprivation-aggregation approach. This is not surprising since the attainment approach is a natural generalization of existing approaches to poverty measurement which uses price-weighted commodity aggregation. In LDCs, there are problems in estimating missing prices, and often distorted prices. There have also been theoretical arguments against aggregation using prices in the attainment space, and these arguments have serious implication for the MIP measure. In the literature on the deprivation-aggregation approach, the weights on deprivations are taken to be known and explicit, while the weights on attainments are implicit. In practice, the weights on deprivations are set by the analyst, with no obvious reason to suppose that they would be accepted by those one is trying to help by measuring poverty: policy makers and, of course, poor people. Thus aggregation across deprivations cannot in general yield poverty measures that are

consistent with the welfare of someone living at the poverty line. This is because deprivation aggregation essentially ignores all implications for welfare measurement of consumer choice in a market economy.

Advocates of the new class of “multidimensional indices of poverty” are right to point out that command over market goods is not all that matters, and that other dimensions of welfare need to be considered in our efforts to fight poverty. But their claim that a single composite index can be defended with rigor or even help much in those efforts, is far less convincing.

Recognizing that poverty is not just about lack of household command over market goods does not imply that one needs to collapse the multiple dimensions into one (uni-dimensional) index. It is not credible to contend that any single index could capture all that matters in all settings. No consensus exists on what dimensions to include and how they should be weighted to form the composite index.

The role played by prices lies at the heart of the matter. It is widely agreed that prices can be missing for some goods and deceptive for others. However, it is one thing to recognize that markets and prices are missing or imperfect, and quite another to ignore them in welfare and poverty measurement. There is a peculiar inconsistency in the literature on multidimensional indices of poverty whereby prices are regarded as an unreliable guide to the tradeoffs, and are largely ignored, while the actual weights being assumed in lieu of prices are not made explicit in the same space as prices.

4. Public Action for Poverty Alleviation

The whole exercise of measurement of poverty would be useless if steps are not taken to eradicate it. Broadly speaking, there can be two approaches to poverty alleviation. One approach , also associated with arguments put forth by anti-donor lobby for not giving aid to poor countries, is that growth promoting strategies are sufficient to eliminate poverty and associated endemic deprivations, and it is not advisable to tinker with market mechanism by the state either in form of subsidy or direct transfer to the poor or some form of wage-employment schemes , because that forms of interventions by distortions they accompany , would be welfare decreasing in the long run , and incentive-incompatible in the short run. The other approach is to initiate public action and state investments, coupled with direct targeted anti-poverty programmes. Thus we see that alleviation of poverty can be broadly categorized through two sets of programmes: (a) One is the growth promotion strategies through which trickle down occurs to reach the bottom layers of income distribution. Programmes, which target rural poor by promoting agriculture and allied activities, belong to such categories. The second category belongs to special area development programmes whereby through multiple activities the backward districts/regions/localities are developed and particularly the income and livelihood of its population increases. The second category of programmes are more focused and targeted and the benefits spread rather than wait for percolation. Although there are arguments and counter-arguments in favour of either strategies, the fact remains that the incidence of poverty is still very high, highly clustered in countries in South Asia, Latin America and sub-Saharan Africa, and despite impressive decline in head count ratio measures of poverty in a number of countries, the number of poor people across the globe show a remarkable stable figure compared to what they were in 1980s. This implies that growth and redistribution impact of poverty reduction strategies are more than offset by

population growth factors, and the scenario got worsened due to high inflation of food prices throughout the world in recent years.

For a long time, anti-poverty strategies have looked at poverty reduction in minimalists terms of bringing the poor above the poverty line by focusing on their income improvement through employment programmes targeted at the individual level. Crossing the poverty lines does not ensure that multi-dimensional nature of deprivations are corrected, and even in terms of income criterion, there is a probability that those who have crossed the poverty line would slide back into the poverty zone, i.e., they remain vulnerable to poverty. Clearly, poverty reduction strategy should go beyond income poverty and consider inadequacy of basic needs and rights as well as inadequate access to both productive assets and social infrastructure. However, the route to poverty reduction differs across states. The experiences have varied across situations over time.

Targeting is an important way of intervention for poverty alleviation in many developing countries. The programmes, which are aimed at directly helping the poor instead of the entire population, are termed as targeted poverty alleviation programmes. The main objective of these programmes has been to directly help the poor to improve their economic, physical (Nutrition, health) and social conditions, and these schemes are supposed to protect a person or household in the case of both chronic as well as transient poverty. The rationale for targeting is that the benefits or social returns are more for the population at the lower end of the income distribution than at the upper end. The approaches to identify the poor can be grouped under three broad categories: means testing or income criterion, indicator targeting, and self-targeting. Information on income or consumption is generally used as a means test that ascertains whether household income is below the cut-off point. If it is possible to conduct a perfect means test, targeting by income scores over other types. But because of the informational and administrative constraints, mans testing may not be perfect and may induce costly leakages and create adverse incentives. These considerations led to a variety of schemes for indicator targeting, whereby transfers are made contingent on some correlates of poverty. The indicator targeting in turn can be divided into two types. The first one is similar to means testing and uses some characteristic of households to select beneficiaries, whereby instead of information on income or consumption, information on variables like landholding, profession, or social class is used for targeting. The second type of indicator targeting known as geographical targeting uses the place of residence as a poverty indicator. Geographical targeting allocates resources to states, municipalities, or neighborhoods based on their average welfare level (such as, head count ratio). Finally, self-targeting is generally suggested for poverty alleviation because of its simplicity in administering the programme. Self-targeting occurs where a programme is ostensibly available to all but is designed to discourage the non-poor from participating. For example, participants can be required to do manual work, as in public employment programmes. It acts as an effective deterrent to higher income groups.

Poverty reduction has been a major goal of development policy in India since Independence and achievement of a minimum standard of living for all within a reasonable period has been the objective of efforts initiated under five year plans. This was to be brought about by attaining higher growth, raising livelihood opportunities of the poor through the endowment of land and non-land assets, generating employment opportunities, and through public intervention for large scale food-for-work programmes. Poverty alleviation programmes targeted at the poor were

meant to supplement market forces and generic growth strategies. The recent body of literature highlights the multidimensionality of poverty, the conceptual problems involved in aggregation across the dimensions and the inadequacy of operationalising poverty in terms of income. It also highlights that the poor are not a single homogeneous lot.

The Poverty alleviation programmes of the Government of India can be broadly classified under five categories: (a) Self Employment programmes like the Swarnajayanti Gram Swarojgar Yojana (b) Wage-Employment programmes like the Sampoorna Grameen Rojgar Yojana and the National Rural Employment Guarantee (NREG) scheme. (c) Area Development programmes like Drought Prone Area Programmes and the Rashtriya Sam Vikas Yojana. (d) Social Security programmes like the National Old Age Pension Scheme. (e) Other programmes like the Indira Awaas Yojana. Of the programmes relating to area development, the Rashtriya Sam Vikas Yojana (RSVY), introduced under the Tenth Five Year Plan sought to tackle the problem of extreme deprivation in backward pockets of the country. Started with an outlay of Rs 2,500 crore for 2002-03, the RSVY aimed to promote focused developmental programmes for backward areas that would help reduce imbalances, speed up development and help backward areas overcome poverty. The programme also aimed to encourage states to take up productivity-enhancing reforms. Under the backward districts initiative, the Planning Commission had identified ***100 backward districts*** across the country. State governments were required to prepare plans for the identified districts, including schemes to fill "critical gaps" or serve as catalysts for the district's development. District authorities were expected to use existing institutions, non-government organisations and innovative delivery systems so that maximum benefit can be derived from the additional funds provided under the scheme.

One of the main requirements of most central schemes has been the identification of the poor households in rural areas. The NSSO consumption expenditure distribution enables us to obtain an estimate of poverty at the state level in terms of percentage of population below the poverty line, but cannot be used to identify the individual poor households whom the central scheme of poverty alleviation would like to alleviate. Identification of BPL households is a major problem in India, and many of the poverty alleviation programmes have encountered huge seepage cost due to such errors of identification. One can mention of several ant-poverty schemes launched in India since 1980s, 1990s and even thereafter, where mis-identification of beneficiaries has made appropriate targeting virtually defunct, such that benefits of such poverty alleviation expenditure have bypassed the real poor.

Second, many of the currently operational programmes like the MNREGA suffers from their transitory and partial nature , and do not ensure that the poor labourer gets employment upto 280 days in a year .In fact, in many states of India, the MNREGA is **not** conceived of as a scheme drawn up in tandem with asset formation in the rural economy, so that the long-term effects of such huge public investment would fail to usher in growth of employment opportunities in our rural economy, where the poor are concentrated .This scheme which is a rights-based approach, meets the immediate consumption requirements of the poor households by providing them scope for supplementary incomes, but is not conceived of as a long-term measure to lift the consumption and well-being profile of such deprived population .In other words, most of the currently operational anti-poverty programmes , like the ones that ran earlier, fail to be inclusive and productive , and cannot answer the challenge of endemic poverty, hunger, malnutrition, ill-health, and not to speak of lack of access to education, skill formation and employment

opportunities. The ad hocism in devising the strategies of poverty alleviation together with mis-targeting and wrong identification of beneficiaries, along with poor implementation of the schemes are responsible for the failure of poverty alleviation schemes to eliminate the deprivations associated with poverty. As is rightly pointed by Abhijit V.Banerjee and Ester Duflo(2011), none of the straight jacket schemes are by themselves sufficient to eradicate poverty, one needs to devise a combination of strategies that include transfer by the state, expansion of productive employment opportunities as well as devising right incentive structures for the poor people to save and grow over the poverty syndrome and sustain their livelihood and capability over time and space. A selective yet comprehensive case by case approach towards inclusive development is what is urgently called for as there is no readymade lever which would guarantee eradication of poverty.

5. Conclusion

The entire discourse on poverty is featured by attempts to measure the extent of poverty by income and expenditure criteria, and nutritional adequacy apart, the choice of the appropriate prices becomes crucial in this estimation exercise. There is a direct link between poverty and prices as variation and growth in price indices chosen affect our measure of deprivation called poverty. While multi-dimensionality is important, aggregating multiple deprivations into a composite index creates confusions over the measurement of deprivations as different dimensions of poverty often overlap. The decomposition of changes in poverty indices between time periods between growth effect and distribution effect often misses the important link and interdependence between economic growth and distribution of income between persons through macroeconomic mechanisms of saving and investment Taking a cut-off at the global level misses the nation specific characteristics of the poor, and devising single form of strategies for alleviation of poverty often prove to be insufficient , as evidence from many country's experiences in respect of poverty alleviation measures indicate, and India is no exception.

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