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MEASURES OF POVERTY SUITED TO DESIGN AND EVALUATE POVERTY ALLEVIATION PROGRAMMES[1]

By

T Krishna Kumar[2]

I INTRODUCTION

Measurement of poverty has assumed a greater prominence in recent years as a result of increasing use of poverty measures in designing and evaluating poverty alleviation programmes (Kanbur (1986), Thorbecke (1986), Kakwani and Subba Rao (1990), Ravallion (1991) and Keen (1992)). There are mainly four measures of poverty that are in popular use. These are (i) the head count ratio (H), which is widely used in India for the comparison of incidence of poverty across regions and over time; (ii) the income gap ratio (I), used by the U.S. Social Security Administration (Batchelder (1971)); (iii) Sen's index of poverty (P_S) (Sen (1976)), and (iv) Foster, Greer, and Thorbecke (FGT) index (P_α) (Foster, Greer, and Thorbecke (1984), Foster (1984), Foster and Shorrocks (1991)).

Inspite of the defects of the head count ratio as a measure of poverty, as pointed out by Sen (1976), this index is continuing to be used to measure not only the incidence of poverty but also the effectiveness of poverty alleviation programmes (Kakwani and Subba Rao (1990), Minhas, Jain, and Tendulkar (1991)). Minhas, Jain and Tendulkar use rate of change of head count ratio to rank the Indian states with respect to poverty alleviation efforts. It is intuitively clear that poverty alleviation depends on the propensity of households below the povety line to cross the poverty line, and that households closer to the poverty line have a greater propensity to cross the poverty line. It must be expected that with a skewed income distribution the larger the initial head count ratio the smaller could be the rate of change in head count ratio. Thus, using the rate of change of head count ratio to evaluate the performance of poverty alleviation is biased against those states

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[2] Quantitative Analysis Unit, Institute for Social and Economic Change, Nagarbhavi, Bangalore-560072. The author thanks K S Krishnaswamy, Anil P Gore, N Krishnaji, and T V S Rammohan Rao for their helpful comments on an earlier draft. The author also thanks G.Nagaraju for his able assistance in processing the paper on PC.

or regions that are poorer to start with.[1] It is therefore necessary to choose a better measure of poverty that is suited for evaluating poverty alleviation programmes.

The plan of the paper is as follows. In the next section Sen's axiomatic scheme is restated in terms of the cumulative income distribution function. Section III proposes a new and simple measure of poverty. Section IV suggests how one can use the new index of poverty and conditional logit or probit analysis to determine empirically the factors that influence the incomes of households in different poverty categories. Using the results of such analyses, and the relative importance the policy makers attach to various poverty categories, one can devise suitable poverty alleviation programmes. Evaluation of poverty alleviation programmes is also facilitated by the new measure, as it takes into due account the relative importance that the policy makers attach to various poverty categories.

II A RESTATEMENT OF SEN'S AXIOMATIC APPROACH

Any measure of poverty must satisfy certain criteria which we normally associate with the words - poor, poverty, degree of poverty, poverty alleviation etc. It is natural to expect that any measure of poverty must depend on four things - (i) identification of the poor, (ii) identification of different degrees of poverty among the poor, (iii) the distribution of households according to different degrees of poverty, and (iv) the relative weightages the policy makers attach to different degrees of poverty.

Let z be the poverty line - i.e., a definite level of per capita household income such that any household whose per capita household income falls below it is treate as a poor household (Dandekar and Rath (1971)[2]. Let y denote the per capita household income. Let us assume that the distribution of per capita household income can be represented (i.e., smoothed or approximated) by a continuous relative frequency distribution, or density, $f(y)$. Let $F(y)$ denote the cumulative distribution function: i.e.,

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[1] It is the use of this measure by G.Parthasarathy to evaluate the poverty alleviation in Andhra Pradesh that drew my attention to this problem. G. Parthasarathy presented the findings of his research in a seminar at our Institute in May 1992.

[2] Dandekar and Rath (1971) attempt to give a scientific basis for the poverty line they proposed. This scientific basis was questioned by Sukhatme (1978). From purely a policy perspective what we need is an administratively chosen target group called the poor. The choice of target group may be based on certain criteria, one such criterion being persons or households below a certain income, often called the poverty line.

$$F(y) = \int_0^y f(x)\,dx$$

The following axioms reflect the common sense notions of poverty.

Monotonicity Axiom : Given other things, an increase in per capita income of a household below the poverty line must decrease the poverty.

Transfer Axiom: Given other things, a pure transfer of income from a household below the poverty line to any other household which is richer must increase poverty.

Transfer Sensitivity Axiom: Given other things, if a transfer $t>0$ of income takes place from a poor household with per capita income y to another poor household with percapita income $y + d$ $(d>0)$ then the magnitude of increase in poverty decreases as y increases.[3]

The poverty index must depend on z and the distribution of income - represented by the density $f(y)$. Let the poverty index be represented by:

$$P = \int_0^z h(y)\, f(y)\, dy \qquad (2.1)$$

where $h(y)$ is called a deprivation function and it satisfies the conditions: $h(y) > 0$; $h'(y) < 0$; $h''(y) > 0$

$$P = \int_0^z h(y)\, f(y) = \int_0^{F(z)} h\{F^{-1}(F(y))\}dF \qquad (2.2)$$

$$\frac{dP}{dF} = h\{F^{-1}(F(y))\} = h(y) > 0$$

$$\frac{d^2P}{dF^2} = h'(y)\frac{dy}{dF(y)} = \frac{h'(y)}{f(y)} < 0 \qquad (2.3)$$

Consider the monotomicity axiom. Suppose a household's income is changed from y to $y + \Delta$. Then $f(y)$ is decreased by $1/n$ (where n is the total number of households) whereas $f(y + \Delta)$ increases by $1/n$. Suppose that the household is poor, i.e., $y < z$.

$$\Delta P = \{h(y+\Delta) - h(y)\}\frac{1}{n} < 0 \qquad (2.4)$$

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[3] The first two axioms are due to Sen (1976). The last axiom is due to Kakwani (1980).

since $h(y)$ is a decreasing function of y. Hence poverty decreases. Monotonicity therefore implies that poverty decreases with an increase in income to any poor household, all other things remaining the same.

Let us now consider the transfer axiom. Let a household with income y transfer an income Δ to another household with income y' $(y < y' < z)$

It can be easily verified that $\Delta f(y-\Delta) = 1/n$; $\Delta f(y) = -1/n$; $\Delta f(y') = -1/n$, and $\Delta f(y'+\Delta) = 1/n$

$$\Delta P = \frac{1}{n}\{h(y-\Delta) - h(y)\} - \frac{1}{n}\{h(y') - h(y'+\Delta)\} > 0 \qquad (2.5)$$

This is so because $h'(y) < 0$ and $h''(y) > 0$

Hence, under transfer axiom, we see that poverty increases.

Now consider the transfer sensitivity axiom.

Let y_1, y_2 and y_3 denote three levels of per capita household income such that $y_1 < y_2 < y_3 < z$.

Let there be a transfer of income Δ from a household with income y_1 to another with income y_2 .

Then ΔP is given by

$$(\Delta P)_{y_2, y_1} = \frac{1}{n}\left[h(y_1-\Delta) - h(y_1)\right] - \frac{1}{n}\left[h(y_2) - h(y_2+\Delta)\right] > 0 \qquad (2.6)$$

Similarly if there is a transfer of income Δ from a household with income y_2 to another with income y_3

$$(\Delta P)_{y_3, y_2} = \frac{1}{n}\left[h(y_2-\Delta) - h(y_2)\right] - \frac{1}{n}\left[h(y_3) - h(y_3+\Delta)\right] > 0 \qquad (2.7)$$

Since $h''(y) > 0$ it follows that

$$(\Delta P)_{y_3, y_2} < (\Delta P)_{y_2, y_1}$$

This is what the transfer sensitivity axiom says.

If we do not wish to distinguish poor by different degrees of poverty then we arrive at a simple poverty index of the form (2.1)

This satisfies the nomotonicity axiom.

$$P = \int_0^z f(y)\,dy \text{ (with the deprivation function } h(y) = 1 \qquad (2.8)$$

As we do not wish to distinguish between different degrees of povertry the question of satisfying transfer and transfer sensitivity axiom does not arise.

If we wish to distinguish the poor by their degree of poverty the head count ratio will not be useful. As pointed out by Sen the head count ratio does not satisfy the transfer axiom. It does not satisfy the transfer sensitivity axiom also. Sen (1976) developed an index which satisfies the transfer axiom.

Let $d = \min (1, y/z)$ (2.9)

Define $g = (1-d) = \max (0, (z-y)/z)$ (2.10)

d measures the degree of relative affluence of poor households. The poor who are at the poverty line are relatively most affluent among the poor and have $d = 1$. All households who are above the poverty line are assigned a value 1 for d. g measures the poverty gap. It measures, put in percentage, the percentage shortfall of a poor household's percapita income from the poverty line. For households above the poverty line the poverty gap g is assigned a value of zero.

Sen defines a poverty measure which depends on $z, g,$ and the distribution of y. It is a special case of a general poverty index:

$$P_s = P_s(z,g,F) = \int_0^z h(y)\,f(y)\,dy \qquad (2.11)$$

where $h(y)$ depends on g

Foster, Greer, and Thorbecke (1984) take a monotone non-decreasing transformation of g, viz g^α $(\alpha \geq 0)$. Their index can be written as:

$$P_\alpha = P_\alpha(z, g^\alpha, f) = \int_0^z [g(y)]^\alpha f(y)\,dy \qquad (2.12)$$

where $h(y) = [g(y)]^\alpha$

It can be verified that $h'(y) < 0$ for all values of $\alpha \neq 0$ and $h''(y) > 0$ for $\alpha > 1$.

III AN ADDITIVELY SEPARABLE DECOMPOSABLE MEASURE OF POVERTY

Suppose that there are different degrees of poverty defined in terms of proportion of households whose income falls in different ranges below the poverty line. One way of doing this is to assume

that there are different poverty markers $z_1, z_2, \ldots\ldots, z_k$. where $0 < z_1 < z_2, \ldots\ldots < z_k$ and z_k being the poverty line.

Each one of these poverty markers could be some percentage below the poverty line. z_{k-1} might be a 80 per cent of z_k z_{k-2} being 70 per cent of z_k and so on.[4] One can now distinguish between different classes of the poor. The poorest of the poor are those whose incomes lie between 0 and z_1, the next class being those households whose incomes fall between z_1 and z_2 etc. Associated with these k intervals we can define k proportions of all households who belong to different degrees of poverty P_1, $P_2, \ldots\ldots, P_k$.

Using these proportions one can define an over-all poverty index

$$P = P(P_1, P_2, \ldots\ldots, P_k) \qquad (3.1)$$

with the properties:

$$(i) \quad \frac{\partial P}{\partial P_i} > 0$$

$$(ii) \quad \frac{\partial P}{\partial P_i} > \frac{\partial P}{\partial P_j} \qquad for \ i < j$$

It is easy to verify that these conditions imply that the three axioms of section II will be fulfilled by the poverty index. One may consider in particular an additively separable index. For example, one may consider the following additively separable index:

$$P = \beta_1 P_1 + \beta_2 P_2 + \ldots\ldots\ldots \beta_k P_k \qquad (3.2)$$

such that $\beta_1 > \beta_2 > \ldots\ldots\ldots \beta_k > 0$ and $\Sigma_{i=1}^{k} \beta_k = 1$ (3.3)

when there is only one poverty line this measure becomes the head count ratio H *(for $k=1$, $F=H$)*. This measure does not distinguish income transfers within an income group. Secondly this measure does not take into account the income gaps of different income groups. To take the later into account one can modify the above measure as:

$$P = \beta_1 g_1 P_1 + \beta_2 g_2 P_2 + \ldots\ldots\ldots + \beta_k g_k P_k \qquad (3.4)$$

$$\text{with } \beta_1 > \beta_2 > \ldots\ldots\ldots\ldots > \beta_k > 0, \quad \Sigma\beta_k = 1$$

where

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[4] Hossain and Sen (1992) distinguish between absolute poverty and hardcore poverty, where the latter was defined with a poverty line lower than the one used for the absolute poverty.

$$g_i = \left(z - \frac{z_i + z_{i-1}}{2}\right) \qquad (3.5)$$

It can be easily checked that this measure satisfies the three axioms by noting that:

$$\frac{\partial P}{\partial P_i} = \beta_i g_i > 0 \qquad (3.6)$$

and

$$\frac{\partial P}{\partial P_i} = \beta_i g_i > \beta_{i+1} g_{i+1} = \frac{\partial P}{\partial P_{i+1}} \qquad (3.7)$$

It may be noted that the contribution to income gap of households in the i^{th} group equals $n\, g_i\, p_i$. The above measure assumes that in the over-all poverty index the marginal rate of substitution between the income gap of i^{th} and j^{th} income groups is a constant.

$$\frac{\left(\frac{\partial P}{\partial (g_i P_i)}\right)}{\left(\frac{\partial P}{\partial (g_j P_j)}\right)} = \frac{\beta_i}{\beta_j} \qquad (3.8)$$

If poverty is measured in terms of another monotone non-decreasing function of relative income gap g, viz, g^α, where $\alpha \geq 0$ then one can define a new poverty index

$$P = \beta_1 g^\alpha_1 P_1 + \beta_2 g^\alpha_2 P_2 + \ldots\ldots\ldots + \beta_k g^\alpha_k P_k \qquad (3.9)$$

$$\text{with } \beta_1 > \beta_2 > \ldots\ldots\ldots\ldots > \beta_k > 0, \quad \Sigma\beta_i = 1$$

This is a simple modification of F.G.T. poverty index.[5]

It is perhaps even more meaningful to consider the following more generalized version of FGT poverty index

$$\text{with } \beta_1 > \beta_2 > \ldots\ldots\ldots\ldots > \beta_k > 0, \quad \Sigma\beta_k = 1, \quad \alpha_i \geq 0.$$

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[5] This index is equivalent to FGT's decomposable index if $\beta_1 = \beta_2 = \ldots\ldots = 1$ and if the groups are made according to per capita household income. The index given in (3.9) is a modified FGT index which is more useful for our purpose.

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$$P = \sum_{i=1}^{k} \beta_i g_i^{\alpha_i} P_i \qquad (3.10)$$

It is reasonable to assume that income elasticity of consumption differs for different poverty groups justifying using different αs. We note that this index also satisfies the basic axioms:

$$\frac{\partial P}{\partial P_i} = \beta_i g_i^{\alpha_i} > 0 \quad for \quad \beta_i > 0 \qquad (3.11)$$

$$\frac{\partial P}{\partial P_i} > \frac{\partial P}{\partial P_{i+1}} \quad if \ \alpha_i \geq \alpha_{i+1} \qquad (3.12)$$

The poverty measures suggested here are simple generalisations of head count ratio, Sen's measure of poverty and FGT poverty index. The generalisations take into account grouping of households into different degrees of poverty based on partitioning of the interval between 0 and the poverty line z into k classes. If our major concern is to design and evaluate poverty alleviation programmes we will benefit from using such classes and the suggested measures.

The parameters β_i can be obtained by questioning the policy makers regarding the marginal rates of substitution between households in consecutive income groups.[6]

IV DESIGNING AND EVALUATING POVERTY ALLEVIATION PROGRAMMES

The poverty measures given in the previous section distinguish different degrees of poverty and give higher weightages to higher degree of poverty. One may wish to distinguish different type of poverty alleviation schemes - one that enables people just below the poverty line to cross the poverty line must be distinguished from another that enables the poorest of the poor to move closer to the poverty line.

In order to design different types of poverty alleviation programmes one needs to understand clearly the factors that determine why households belong to different poverty categories. One way of determining the factors that determine why households belong to different income groups is to employ an n-chotomous probit or a multinominal logit model.

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[6] For an application of this kind of interview approach to statistically estimate the welfare trade-offs (with reference to the policy trade-offs of the head of a University between teaching, research, and public service activities of a University) see Kumar and David (1972). K S Krishnaswamy rightly cautions me in introducing this kind of policy subjectivity. In order that the new poverty index be usable and objective the researcher can simply compute the poverty index for each of the k increasingly poor groups. One can then order the poverty using lexicographic ordering.

Under this approach we can hypothesize that there are different factors such as education, occupation, ownership of certain assets, access to credit, caste, etc which determine the probability that a household belongs to a particular poverty group. The effect of these variables may be different for different poverty groups. This can be postulated by the following model:

$$\ln\left(\frac{P_i}{P_k}\right) = \beta_{0i}+\beta_{1i}X_{1i}+\beta_{2i}X_{2i}.....\beta_{mi}X_{mi}$$
$$for\ i=1,2,3,.....k-1$$

where P_i are as in (3.1)

Hossain and Sen (1992) distinguish between extreme or hardcore poverty and general poverty, and identify the differences between the two groups in terms of land ownership and land tenure. This information enables us to design proper land reforms to alleviate poverty.

Thus, identifying different degrees of poverty, estimating the number of households in each one of various categories of poverty, distinguishing the characteristics of households in each of those categories are the basic empirical research agenda for designing poverty alleviation programmes.

Once this is done the next step is to see if the poverty alleviation programmes actually chosen and implemented reduce poverty. In this evaluation care must be taken to see that reduction of poverty among the poorest of the poor has a greater emphasis. In general a reduction of poverty of poorer households must have a greater emphasis than that of the less poor households. This is achieved through the poverty indices suggested in Section III.

It may also be noted that the poverty indices suggested in Section III are also eminently useful in evaluating the impact of the Structural Adjustment Programme (SAP) on the rural poor and various disadvantaged groups. This SAP is basically a collection of those policies that are regarded as market-friendly. It is genrally suspected that these so-called market friendly policies are, using Orwellian phrase, more friendly to the non-poor and less friendly to the poor. Some of the recent studies undertaken by UNCTAD, ILO, and World Bank have shown that the structural adjustment programmes increased poverty and benefitted only a small minority.

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The R.B.R.R. Kale Memorial Lecture, 1981, was delivered by Professor V. M. Dandekar, on 6th June 1981 at the Institute. The subject of the lecture was "On Measurement of Poverty".

Professor Dandekar joined the Gokhale Institute of Politics and Economics in 1945. He was the Director of the Institute during 1966-68 and again from 1970 to 1980. He is also the Honorary Director of the Indian School of Political Economy at Lonavala, which was conceived and registered under his initiative in 1969-70. He has worked as member or chairman of many committees and commissions set up by the State and Union Governments as well as by international organizations. He was the Chairman of the National Sample Survey Organization from 1970 to 1980. He has contributed several thought-provoking articles to professional journals. Some of his important books are: Report on the Poona Schedules of the National Sample Survey (G.I.P.E. Pub. No. 26) 1953; Use of Food Surpluses for Economic Development (G.I.P.E. Pub. No. 33), 1956; Working of the Bombay Tenancy Act-1948 (Report of Investigation) (G.I.P.E. Pub. No. 35), 1957 (jointly with his colleagues at the Gokhale Institute) and Poverty in India (jointly with N. Rath).

On his retirement on 5th January 1981 from the services of the Institute, he was conferred the status of Professor Emeritus.

R.S. DESHPANDE.
READER IN ECONOMICS, GOKHALE INSTITUTE
OF POLITICS & ECONOMICS. PUNE 411004

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Measurement of Poverty

V. M. DANDEKAR

R. R. Kale Memorial Lecture, 1981

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ON MEASUREMENT OF POVERTY

Shri Venkatraman, Professor Nilakantha Rath, Colleagues in the Gokhale Institute, and Friends :

As you are aware, I retired from the service of the Gokhale Institute of Politics and Economics just about five months ago on January 6. Almost the following day, Professor Rath asked me whether I would agree to deliver this year's Kale Memorial Lecture and quoted precedence that I had made a similar request to Professor Gadgil soon after he retired. I had therefore no escape. Unfortunately, before the end of the week, I was involved in a road accident and since then, almost todate, I have remained immobilised with a broken leg. I therefore felt uncertain whether I would deliver this year's Memorial Lecture. Professor Rath was kind enough to extend the time to its limit and I am glad that today I am able to be present here and, in the form of a Lecture, pay my respects to the memory of Late Rao Bahadur Raoji Ramachandra Kale, the founder of the Gokhale Institute of Politics and Economics which it was my privilege to serve for the past thirty-five years and which after my retirement, by conferring on me the status of Professor Emeritus, has provided me a life-long seat to read and write and to learn and teach.

I propose to take this opportunity to return to a subject I dealt with ten years ago. In January 1971, Professor Rath and myself published, in the form of two rather long articles in the *Economic and Political Weekly*, a small study titled Poverty in India. The main purpose of the study was to offer a rough estimate of the extent of prevailing poverty, to examine policy alternatives, to emphasize that a massive transfer of incomes was essential if immediate relief was to be provided to the poor, to indicate the size of such needed transfer and to suggest a modus operandi by means of which such a transfer might be effected. Naturally, the study attracted considerable attention but mostly in its first part namely the estimate of the extent of prevailing poverty. The data and methods employed by us for the purpose have been critically examined and, by applying more sophisticated methods, somewhat different and presumably improved estimates of the extent of poverty have been put forward. I have rather studiously avoided joining this debate, first, because the revised estimates of the extent of proverty are often only marginally different from those given in our study; second, because I believe that the quality of data on which these estimates are based does not justify much greater sophistication in analysis; and third, because I thought that a debate on the estimate of the extent of poverty might detract attention from the policy needed to provide immediate relief to the poor.

But, more recently, our estimate of the extent of poverty has come under more fundamental attack from two very senior and distinguished academicians namely Professor V. K. R. V. Rao and Dr. P. V. Sukhatme. (Rao, 1977, Sukhatme, 1977, 1978.) The point of Professor V. K. R. V. Rao's criticism is the following : "A method commonly employed for the measurement of poverty is to take the nutritional norm in terms of daily calorie intake by consumer unit, and the cut-off point by the expenditure class which has an average daily calorie intake per consumer unit nearest to the norm and then treat half of the population lying in this expenditure class and the entire population in the lower expenditure classes as the poor. This is the method employed by Dandekar and Rath (1971) in their famous brochure 'Poverty in India'. And it has been followed by more studies using a more or less similar method... (But) the methodology ... does not appear to be correct. While the proportion of under-nutritional poverty undoubtedly declines with increasing income, we find the paradoxical result that the poor as defined also include the not-poor and that the not-poor include the poor." (Rao, 1977). Professor V. K. R. V. Rao seems to believe that we get what he calls the 'paradoxical result' that "the poor as defined also include the not-poor and that the not-poor include the poor" because of our basing the estimates of poverty on the sole criterion of calorie intake. Hence he proposes : "Poverty has to be identified with deficiency in the total level of living. And total level of living includes not only energy requirements but also balanced diet needed for health, and the other components of basic needs essential for human existence at a tolerable level. This exercise on the connotation and identification of poverty has still to be undertaken in India." (Rao, 1977.) The gist of Dr. Sukhatme's criticism is as follows: "A person who cannot afford a diet which meets his minimum energy needs for a healthy active life is both poor and undernourished... However, the figure for calorie requirement which the authors use is not the minimum below which a person can be said to be undernourished, but is the average requirement of a healthy active population of the 'reference' type. Consequently, the dimensions of poverty are exaggerated." (Sukhatme, 1977.) In fact, Dr. Sukhatme argues that the 'correct' estimate of poverty is only about one-half the estimate put forward in our study.

Professor V. K. R. V. Rao and Dr. P. V. Sukhatme both had raised these points in their presentations before the meeting on Problems in the Measurement of Poverty during the 41st Session of the International Statistical Institute held at Delhi in December 1977. In the discussion that followed, I had made a brief reply. I propose now to elaborate. I shall begin with a few preliminary points.

The commonly used measure of the extent of poverty is the proportion of the population living below a certain level of living called the poverty line. One may, if one desires, supplement this measure of the extent of poverty by another designed to measure what may be called the intensity of poverty namely how many people live how much below the poverty line. Thus, basic to a measure of the extent as also the intensity of poverty is a certain level of living defined as the poverty line. The measures of poverty thus depend upon how we determine the poverty line. That is what the debate is about.

The simplest method of determining the poverty line is to agree upon a certain level of income or consumer expenditure as necessary to meet the minimum needs of life. This was how a distinguished group, of which Professor V. K. R. V. Rao was a member, set up by the Government of India in July 1962 decided that a per capita monthly expenditure of Rs. 20 at 1960-61 prices should be considered the national minimum or the poverty line. The group did not reveal the basis of this determination and hence the particular definition of poverty line appears rather arbitrary. As we shall presently see, a certain element of arbitrariness is inevitable. However, the poverty line such as the one determined by the Group is unsatisfactory for other reasons. A per capita monthly consumer expenditure of Rs. 20 without a reference to the prices of a number of essential commodities does not make clear the implied level of living; and even when prices are indicated, such as the 1960-61 prices in the present case, they fail to make the implied level of living sufficiently concrete and explicit. Hence, while the poverty line may be defined as a certain level of consumer expenditure, it is desirable and useful that the connotation of the level of living associated with the particular expenditure level is made explicit. This requires a criterion which, while it connotes different levels of living, is also highly associated with levels of consumer expenditure particularly in the range in which the poverty line lies.

There are several such criteria. Probably the simplest is the proportion of expenditure spent on certain essential items of consumption such as food. As is well known, poor living is characterised by a large proportion of the total consumer expenditure taken up by items essential for sheer physical existence and survival, such as food. One may therefore define poverty line as that level of consumer expenditure at which a certain proportion such as 80 per cent or 85 per cent of total expenditure is devoted to food, or food and fuel, or food, fuel and light. In our study, Professor Rath and myself did not use this criterion to define the poverty line nor am I aware of anyone else having used it. But on second thought, I see great merit in it. The criterion is sufficiently concrete and vivid.

Besides, in view of the quality of available data, I expect that the poverty line thus defined will be statistically more stable and reliable than if based on some other criteria.

Other criteria connoting different levels of living are based on prescribed physical norms in respect of one or more items of consumption considered important, essential or crucial. If one must choose one single item, the choice inevitably falls on the energy intake in terms of calorie value of food. In our study, Professor Rath and myself had taken the norm to be 2250 calories per day per capita and defined the poverty line as that expenditure level at which the average calorie intake met this norm. But, in deference to the recommendation of the group appointed by the Government of India referred to earlier, we had raised the poverty line for the rural population slightly from Rs. 170 to Rs. 180 per annum at 1960-61 prices. I mention this only incidentally. It is not relevant to the present discussion.

If one is willing to prescribe physical norms for more than one items but still remain confined to food, one may prescribe a normative balanced or minimum diet. The FAO has worked out normative diets for groups of countries and one is available for the South East Asia. For India, various recommendations have been made by the Nutrition Advisory Committee. Dr. P. V. Sukhatme (1965) has worked out two food baskets corresponding to a minimum and a medium concept. His minimum basket per day per person consists of 0.403 kg. of cereals, 0.104 kg. of pulses, 0.201 kg. of milk, 0.137 kg. of fruits and vegetables, and certain quantities of starchy roots, sugar, oils and fats, and meat, fish and eggs. The Report of the Second Pay Commission – Central Government Employees (1957-59) gives a minimum diet reportedly constructed on the advice of Dr. Patwardhan. The diet per day per adult unit consists of 0.425 kg. of cereals, 0.113 kg. of pulses, 0.113 kg. of milk, 0.170 kg. of fruit and vegetables, and certain quantities of sugar, oils and fats but no meat, fish or eggs. Thus, while Dr. Sukhatme's minimum diet includes certain quantities of meat, fish and eggs, Dr. Patwardhan's minimum diet does not include any meat, fish or eggs. There are also other differences between the two recommended diets.

Given a 'balanced' or 'minimum' diet, the poverty line may be defined as that expenditure level at which the households seem to have the specified diet. In practice, it is not easy to be satisfied item by item on this point. For instance, households may have more milk and less or none of meat, fish and eggs. Obviously it is neither possible nor meaningful to insist that households have precisely the prescribed diet, item by item. Hence, the method usually adopted is to find the cost of the specified

diet and to take that level of total expenditure at which the households seem to spend on the items of the specified diet an amount equal to its worked out cost, not item by item but on all items put together. Thus, suppose the cost of the specified diet works out to Re. 1 per person per day, then the poverty line is that expenditure level at which the households spend Re. 1 per person per day on items included in the specified diet but not necessarily conforming to its prescribed composition. This is what Bardhan and Rudra do. Professor V. K. R. V. Rao refers to their studies approvingly. He says: "The balanced diet approach is . . . . . preferable to the calorie intake approach. And this is what writers like Bardhan (1974), Rudra (1974) and others have done, unlike Dandekar and Rath (1971) who have only used the calorie intake criterion." (Rao, 1977). Professor V. K. R. V. Rao prefers the balanced diet approach because he believes that it takes into account the nutritional quality of the calorie intake. In fact, as we see, in the application of the balanced diet approach to determine the poverty line, the composition of the balanced diet is abandoned and only its aggregate cost is retained. All that it ensures is that the households on the poverty line spend on their diets enough to give them a balanced diet; it is by no means certain that they in fact buy balanced diets. I do not see that this is an improvement over the method which ensures that the households on the poverty line have the specified calorie intake particularly if we see that a diet adequate in calories is almost always also a balanced diet.

Professor V. K. R. V. Rao, though he prefers the balanced diet to calorie intake as a criterion for determining the poverty line, is not entirely satisfied with the balanced diet approach either. As I already noted, he says: "Poverty has to be identified with deficiency in the total level of living. And total level of living includes not only energy requirements but also balanced diet needed for health, and the other basic needs essential for human existence at a tolerable level." And he notes: "This exercise on the connotation and identification of poverty has still to be undertaken in India." In this Professor V. K. R. V. Rao is of course right. But I am not aware if similar exercise has been done in any other country. I see great difficulty in defining a tolerable level of human existence and identifying its basic needs namely its material content in terms of specified quantities of probably a hundred different commodities. Moreover, even if this exercise is done and essentials of human existence at a tolerable level are identified, judging by what happens to the balanced diet when used to define the poverty line, it seems inevitable that all the details of the tolerable human existence will be abandoned and only its total cost will be used to define the poverty line.

Thus, several criteria may be used to define the poverty line. I have mentioned four such criteria, namely, (i) the proportion of expenditure taken up by specified essential items such as food; (ii) calorie value of food; (iii) cost of a balanced diet; and finally, (iv) cost of essentials of tolerable human existence. The point to note is that, whichever criterion we may choose, it is used to determine an expenditure level which meets that criterion; and ultimately, it is the expenditure level so determined and not the chosen criterion which defines the poverty line.

But, alternatively, we might use the chosen criterion to define poverty directly that is without the intermediation of the total expenditure. Thus, we might identify the poverty line by a certain specified proportion such as 80 per cent of the total expenditure spent on certain specified items such as food and define poor as all those who spend more than 80 per cent of the total expenditure on food. We may do this if we choose. But we should recognise that this definition of poverty is different from the one given by an expenditure lower than the one at which households on an average spend a certain proportion of their expenditure on the specified items. The two definitions are related because households at lower levels of total expenditure are seen to spend on an average higher proportion of their total expenditure on the specified items. But the two definitions are not identical.

Similarly, taking the second criterion namely the calorie value of food, we may identify the poverty line directly by a certain minimum calorie intake and define poor as all those whose calorie intake is less than the prescribed minimum. We may do this if we choose. But we should note that this definition of poverty is different from the one given by an expenditure lower than the one at which on an average the calorie intake meets the prescribed minimum. The two definitions are related because the average calorie intake of households at lower expenditure levels is generally lower. But the two definitions are not identical.

In fact, the two definitions define two different, though related, phenomena and it will help avoid confusion if we refer to them by their respective names, namely, poverty and under-nutrition. When a population is classified on the basis of a certain income or expenditure howsoever 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. The two are related in the sense that statistically they go together. But the two are not identical: in fact they are two different phenomena.

In our study on poverty, Professor Rath and myself have been talking about poverty and not under-nutrition. We did not emphasise this. Indeed, I should confess, in a couple of places we were guilty of loose wording and treating poverty and under-nutrition as identical. For instance, referring to rural population living on per capita annual expenditure of less than Rs. 170 at 1960-61 prices, or the urban population living on per capita annual expenditure less than Rs. 271 at 1960-61 prices, we said that it lived on diets inadequate even in respect of calories. This was clearly an error and we wish to stand corrected. The correct statement would be that this population lived on such levels of consumer expenditure that, judged by average standards of household management, it could not provide for itself diet adequate even in respect of calories. There would certainly be some households among the poor, defined by a certain expenditure level, who with better household management and better priorities of expenditure did provide for themselves diets adequate at least in respect of calories. The contrary is also true. There would be some households who were not poor by the same definition but who nevertheless, by mismanagement of their households and wrong priorities of expenditure, failed to provide for themselves diets adequate even in respect of calories. Poor households do not cease to be poor simply because they manage their households better than the average; and not-poor households do not cease to be not-poor because the management of their households is below the average.

Table 1: National Sample Survey : 26th Round (1971-72) : Rural Households

Monthly expenditure per consumer unit Rs.	Number of households	Number of households with calorie intake per day per consumer unit		Average calorie intake per day per consumer unit
		Below 2300	Above 2300	
0-15	444	404	40	1493
15-21	1207	921	286	1957
21-24	813	466	347	2287
24-28	1174	518	656	2431
28-34	1748	492	1256	2734
34-43	2028	300	1728	3127
43-55	1655	123	1532	3513
55-75	1319	53	1266	4016
75-100	598	10	588	4574
100+	482	11	471	6181
All classes	11468	3298	8170	2724

Direct statistical evidence on this point became available when the consumer expenditure data from the 26th Round (1971-72) of the National Sample Survey was published showing households cross-classified by monthly expenditure per consumer unit and calorie intake per day per consumer unit.

In his paper read before the 41st Session of the International Statistical Institute held in Delhi in December 1977, Professor V. K. R. V. Rao invited attention to these data (Table 1) and commented as follows: "Previous writers on the subject have used the calorie intake norms to determine the cut-off expenditure class for determining the magnitude of poverty. Taking a daily intake of less than 2300 calories for determining the cut-off expenditure class, the relevant figure in respect of the N.S.S. data for 1971-72 is the monthly expenditure class of Rs. 21-24. On this basis, the number of households representing the poor among the consumer units would be 2057 out of a total of 11468 or 17.9 per cent. But this number includes 673 (it should be 499) households ... whose daily intake is above 2300 calories." On the other hand, among the households with expenditure above the cut-off point, there are 1740 households whose daily intake is below 2300 calories. In fact, he points out, the number of households with daily intake of below 2300 calories irrespective of the expenditure class is 3298 compared to the number 2057 living below the cut-off expenditure defining poverty.

Professor V. K. R. V. Rao is dismayed by these results. He says: "Clearly the methodology followed hitherto for estimating the magnitude of rural poverty does not appear to be correct. While the proportion of under-nutritional poverty undoubtedly declines with increasing income, we find the paradoxical result that the poor as defined also include the not-poor and that the not-poor include the poor." In fact, there is nothing wrong with the methodology. Professor V. K. R. V. Rao gets into what he calls paradoxical results because he uses the terms 'poor' and 'not-poor' in two different senses without seeing the difference. Indeed, he comes close to seeing the difference when he uses two different terms, namely, 'poverty' and 'under-nutritional poverty' but he misses the distinction. What Professor V. K. R. V. Rao calls 'under-nutritional poverty' is what I earlier suggested we should call simply 'under-nutrition'. Then all that Professor V. K. R. V. Rao discovers is that some poor are not under-nourished while some not-poor are under-nourished. There is nothing paradoxical in this result. Indeed, because poverty and under-nutrition are two different, though related, phenomena, a cross-classification of the households by the two criteria gives a fourfold classification :

	Poor	*Not-poor*	*Total*
Under-nourished	1558	1740	3298
Not-under-nourished	499	7671	8170
Total	2057	9411	11468

Thus, with nutritional norm of 2300 calories as Professor V. K. R. V. Rao has chosen, out of a sample of 11468 households, 2057 were poor, 3298 were under-nourished and only 1558 were both poor and under-nourished.

Professor V. K. R. V. Rao does not see this. Instead he seems to believe that he gets what he calls the 'paradoxical' results because our definition of poverty is based on the sole criterion of calorie intake. Hence he advises the use of a broader base for defining poverty such as the balanced diet or in fact all basic needs essential for a tolerable human existence. In this, Professor V. K. R. V. Rao is again not right. He may of course use the balanced diet or a comprehensive portfolio of basic needs as the basis for defining the poverty line. But he must hold to one definition of poverty. If he fails to do that, he will again get the paradoxical results he is worried about. Whichever criterion we might use to define the poor, if poor and not-poor are to be mutually exclusive classes, we must use one single definition of poverty.

Before I leave Professor V. K. R. V. Rao's critique of our estimates of poverty, I wish to make two incidental comments. The first concerns Professor V. K. R. V. Rao's choice of the calorie norm and the estimate of the rural poor he derives on that basis. On the basis of the data from the 16th Round (1960-61) of the National Sample Survey and calorie intake norm of 2250 per person per day, Professor Rath and myself estimated that about one-third (33.12 per cent) of the rural population lived below the cut-off expenditure of Rs. 170 per capita per annum. Now on the basis of the data from 26th Round (1971-72) of the National Sample Survey and a calorie intake norm of 2300, Professor V. K. R. V. Rao estimates that only 17.9 per cent of the households live below the cut-off expenditure. One might wonder whether the large drop from 33.12 per cent to 17.9 per cent in the magnitude of poverty is in fact what happened between 1960-61 and 1971-72. Unfortunately, this is not the case. The difference between 33.12 and 17.9 is almost entirely due to two methodological inaccuracies in Professor V. K. R. V. Rao's presentation. First, he chooses the daily calorie intake norm of 2300 with-

out being sufficiently clear whether it is per person or per consumer unit. The data from the 16th Round (1960-61) of the National Sample Survey is on per capita that is per person basis. The data from the 26th Round (1971-72) of the National Sample Survey is on per consumer unit basis. Hence, the norm of 2300 calories per day chosen by Professor V. K. R. V. Rao is per consumer unit and is too low compared to the norm of 2250 calories per person per day we had chosen. There are about 0.8 consumer units per person. Hence the norm of 2250 per person per day is equivalent to 2812.5 calories per day per consumer unit. By the latest standards developed by FAO/WHO, the calorie norm for India is 2780 per day per consumer unit at the retail level. Hence, the calorie norm chosen by Professor V. K. R. V. Rao is too low and, in the absence of an explanation, is very misleading. Second, we had expressed the magnitude of poverty as 35.12 per cent of population; Professor V. K. R. V. Rao expresses it as 17.9 per cent of households. As is well known, the poorer households have a larger size. Hence, expressing poverty as a per cent of the households clearly understates its magnitude. If Professor V. K. R. V. Rao had chosen a calorie intake comparable to the one we had chosen such as the one given by the FAO/WHO and had expressed the poverty as the proportion of the population living below the cut-off expenditure level, his estimate of the magnitude of poverty could not be so different. There is a large lay audience interested in the estimates of the magnitude of poverty but not familiar with some of these technicalities. It will help avoid confusion if all research workers, particularly the eminently senior ones, use standard methodology or explain when they deviate from it.

The second incidental comment I wish to make concerns a very elementary mathematical or statistical error appearing in Professor V. K. R. V. Rao's above-mentioned paper presented to the International Statistical Institute. Professor V. K. R. V. Rao says: "The data given earlier . . . show that the range of intake varies from an average intake of 1493 calories in the monthly expenditure class Rs. 0-15 to one of 6181 calories in the monthly expenditure class of Rs. 100 and above. In fact, all expenditure classes above a monthly figure of Rs. 55 show an average intake per consumer unit of above 3500 calories. One does not know how to explain this phenomenon in nutritional terms. The N.S.S. data do not also support the normally held thesis that the relation between calorie intake and monthly expenditure increases rapidly to start with and gradually thereafter till it stabilises itself at a given maximum level." Professor V. K. R. V. Rao proceeds to demonstate his point on the basis of the N.S.S. 26th Round (1971-72) data (Table 2).

Table 2: National Sample Survey : 26th Round (1971-72) : Rural Households

Monthly expenditure per consumer unit Rs.	Mid-point of monthly expenditure class	Average calorie intake per day per consumer unit	Percent increase over the preceding class	Rate of increase in calorie intake per rupee increase in monthly expenditure
(1)	(2)	(3)	(4)	(5)
0-15	7.5	1493	—	—
15-21	18.0	1957	13.1	44.2
21-24	22.5	2287	16.9*	73.3
24-28	26.0	2431	6.3	32.0
28-34	31.0	2734	12.5	60.6
34-43	38.5	3127	14.4	52.4
43-55	49.0	3513	12.3	36.8
55-75	65.0	4016	14.3	31.4
75-100	87.5	4574	13.9	24.8
100+	(150.0)	6181	35.1	(22.2)

*The printed figure is 11.2 which is either a numerical or a printing error.

From the average caloric intake per day per consumer unit for each monthly expenditure class, Professor V. K. R. V. Rao works out the percentage increase in the calorie intake of a class over the preceding class (Col. 4). It is obvious that the percentage increase over the preceding class shows no sign of declining. Indeed, in the last class of Rs. 100+, there is a sharp increase. On this, Professor V. K. R. V. Rao remarks: "The continuity of the rise in calorie intake of each expenditure class over the preceding class culminating in a rise over the immediately preceding next highest class is certainly an unusual phenomenon in nutritional behaviour and raises doubt about the credibility of the N.S.S. data ..." It is obvious that Professor V. K. R. V. Rao is making an elementary mathematical-statistical error to argue his point. The percentage increase in the average calorie intake of each class over the preceding class is not relevant to the point which Professor V. K. R. V. Rao desires to make. The appropriate rate to calculate is the rate of increase in calorie intake per rupee increase in the monthly expenditure. For this purpose it is necessary to know the average total monthly expen-

diture for each class. This is not given in the published data. Hence, I have taken the mid-point of the expenditure class as an approximation of the average expenditure and calculated the rate of increase in calorie intake per rupee increase in monthly expenditure (col. 5). For the last open-ended class of Rs. 100+, I have taken the average expenditure to be Rs. 150, which I suppose is conservative and calculated the corresponding rate of increase in calorie intake. It will be seen that the rate of increase declines continuously after monthly expenditure of Rs. 34. In fact, if we neglect the exceptionally low figure in the expenditure class Rs. 24-28, it might appear that the rate of increase declines almost continuously after the monthly expenditure of Rs. 24. The data therefore do not support Professor V. K. R. V. Rao's contention.

This does not mean that everything is all right with the N.S.S. data. The rate of increase in calorie intake per rupee increase in monthly expenditure declines but not rapidly enough so that the calorie intake might reach its maximum at a very high level. The high calorie intake in the higher expenditure classes in the N.S.S. data are known to be over-estimates and at least one reason for it is explicitly stated in the N.S.S. reports. The N.S.S. does not count guests and domestic and farm servants, even when eating in the households, as its members; but it fails to exclude their consumption from the household consumption. This affects the per consumer unit calorie intake particularly in the higher expenditure classes in rural areas. There are also other reporting errors such as inclusion of poultry and cattle feed in household consumption. Cases where very large per consumer unit calorie consumption is reported, certainly need careful scrutiny.

Let me now turn to the critical attack which Dr. P. V. Sukhatme has launched on our estimate of poverty. This attack is on a completely different plane unfamiliar to and unsuspected by economists including ourselves. Hence, in order to make clear the essential point of his criticism, I propose to quote him rather at length. Dr. Sukhatme says: "Analysis of data confirms that as income increases, the energy intake increases, rapidly to start with and gradually thereafter indicating that an appreciable number of people remain undernourished for want of adequate income . . . Economists were quick to see in this analysis that poverty was the principal cause of the large and widespread incidence of malnutrition and began to use the minimum energy requirement as the criterion for estimating the extent of poverty. A person who cannot afford a diet which meets his minimum energy needs for a healthy active life is certainly both poor and malnourished. Thus Dandekar and Rath were among the first economists to apply this criterion. However,

in applying this criterion to estimate the extent of poverty they have misused the meaning of requirement. In particular, they have mistaken the average energy need of an individual for the minimum need ignoring the fact that energy needs vary between and within individuals even of the same age-sex groups."

Dr. Sukhatme proceeds to explain: "As is well known the figure for average energy need is based on measurement of energy intake in healthy active subjects of the 'reference' type. Consequently, one expects that if the population is healthy and active, about half of the individuals will have intakes less than the average and half more than the average. When, therefore, Dandekar and Rath find that 40 per cent of the rural and 50 per cent of the urban India live on a level of total expenditure below the level corresponding to the average energy need for the country, it simply means that they find a situation which is in line with what one expects to find in a healthy active population of the 'reference' type."

Dr. Sukhatme then gives a telling example of the kind of inference which he believes Professor Rath and myself are involved in. He says: "We have in fact an example of such assessment carried out in Great Britain by the late Sir Arthur Bowley. He found that 50 per cent of the population in U.K. were below the average need for U.K. and he concluded that some 50 per cent of the population must be under-nourished. I need hardly add that, notwithstanding the eminence of Sir Arthur Bowley, the conclusion was rejected by the Government of U.K." Dr. Sukhatme proceeds: "This was 40 years ago when the concept of requirement had hardly developed to a point to grasp its full implications. But to adopt the same method today that was rejected as inapplicable in the U.K. decades ago, is to ignore the knowledge we have gained in understanding the concept of physiological requirement." Impliedly, Dr. Sukhatme suggests that Dandekar and Rath are adopting the same method which Sir Arthur Bowley used forty years ago and which was rejected as not valid.

I have not been able to check the reference to Sir Arthur Bowley's work. But I feel quite uncertain that Sir Arthur Bowley in fact did what Dr. Sukhatme alleges he did; because, notwithstanding his eminence, Dr. Sukhatme clearly fails to see the difference between one procedure and another, the procedure which Sir Arthur Bowley allegedly followed and the procedure which Dandekar and Rath follow. If we had followed the same procedure as Sir Arthur Bowley allegedly did, we would have classified the households by their daily per person calorie intake and declared all those households whose calorie intake fell below the norm to be poor. We did not do this and Dr. Sukhatme knows this well. Even by Dr.

Sukhatme's account, Sir Arthur Bowley was trying to estimate the extent of under-nutrition; we are estimating the extent of poverty. Like Professor V. K. R. V. Rao, Dr. Sukhatme fails to see the difference between poverty and under-nutrition.

For instance, Dr. Sukhatme says that a person who cannot afford a diet which meets his minimum energy needs for a healthy active life is certainly both poor and malnourished. Note that Dr. Sukhatme says that the person is both poor and malnourished. It means that he recognises that poverty and under-nutrition are two different phenomena but he is unable to see the distinction clearly. Hence he says that when a person cannot *afford* the needed diet, he is both poor and under-nourished. This is the source of confusion. When we say that a household cannot *afford* the requisite diet, we mean that as judged by the average consumer behaviour and household management at that expenditure level. The household is therefore poor. But, as I have already explained, a poor household need not necessarily be under-nourished; by better priorities and better management of expenditure, it may in fact eat an adequate diet. Similarly, and for the opposite reason, a not-poor household may in fact suffer from under-nutrition. I wish to emphasise and plead with Dr. Sukhatme to understand that, all through our little study on Poverty in India, Professor Rath and myself have been discussing poverty and not under-nutrition. The two are related because as Dr. Sukhatme points out "as income increases, the energy intake increases, rapidly to start with and gradually thereafter indicating that an appreciable number of people remain under-nourished for want of adequate income." But the two are not identical: in fact, they are two different phenomena.

Consider again Dr. Sukhatme's statement : "When . . . Dandekar and Rath find that 40 per cent of the rural population and 50 per cent of the urban India live on a level of total expenditure below the level corresponding to the average energy need for the country, it simply means that they find a situation which is in line with what one expects to find in a healthy active population of the 'reference' type." He argues this on the ground that, in a healthy active population, one expects to find that about half the individuals will have energy intakes less than the average and half more than the average; and he does not see the difference. Dr. Sukhatme does not see the difference between half the population having calorie intake less than the average and half the population living below the total expenditure level corresponding to the average energy need. In a healthy active population one would expect to find about half the population to live on calorie intake below the average. But, in such a population, should we also expect about half the population

to live on total expenditure less than the expenditure corresponding to the average calorie intake? I ask, is this also an essential attribute of a healthy active population? Dr. Sukhatme is confused.

But let us return to the main ground of Dr. Sukhatme's criticism of our estimates of the magnitude of poverty. It is his explicit recognition of the existence of inter and intra individual variation in energy needs. Inter individual variation means that the energy intake of even normally healthy and active individuals with similar body weight and occupation varies implying that some individuals are more efficient machines than others. Intra-individual variation means that energy intake of an individual engaged in similar activity and maintaining body weight varies from day to day. I am not familiar with the literature on this subject. But I have no difficulty in admitting such variation on a priori grounds. It means that the daily, weekly, or monthly energy intake of different individuals will show variation even if all of them are normally healthy and active.

A statistical measure of such variation is called the standard deviation. As for its magnitude, Dr. Sukhatme admits that the available data are scanty. The most recent evidence, and the one on which Dr. Sukhatme seems to rely most, is from a study reported by Edholm and his associates in 1970. The study was carried out on army cadets engaged in very similar activities and covered three weeks in a ten-week period. I regret to say that in reporting the results of this study, Dr. Sukhatme does not meet the norms of accuracy expected of a scientist of his standing and reputation. Nowhere we are told how many cadets were involved; probably they were no more than 20 or may be 30. There are wide differences in the results as Dr. Sukhatme reports them in his Lal Bahadur Shastri Memorial Lecture delivered in January 1977 and in his article in August 1, 1978 issue of the Economic and Political Weekly. His own assessment regarding the magnitude of the standard deviation based on these results also seems to suffer from considerable intra-Sukhatme variation. For instance, in his Lal Bahadur Shastri Memorial Lecture (January 1977), he says that "the requirement of an individual will vary around the mean value with a standard deviation of approximately 400 calories." In his paper contributed to the 41st Session of the International Statistical Institute (December 1977), he says that "the standard deviation of an individual's requirement can be placed at approximately 300 calories." In his paper in the Economic and Political Weekly (August 1978), he says that "requirement of an healthy active adult will vary around the mean values with standard deviation of approximately 375 calories." As much as I know, this is his last pronouncement. Hence I thought I should proceed on this basis. Unfortunately, there is also intra-paper variation. In the same paper, in the same paragraph, Dr. Sukhatme says that "the

coefficient of variation of requirement can be placed at approximately 15 per cent." This means that the standard deviation may be placed at 15 per cent of the average requirement which Dr. Sukhatme takes to be 2750 calories. This puts the standard deviation at 412.5 calories. As I shall presently show, to be consistent with what Dr. Sukhatme does later in the same paragraph, we shall have to place the standard deviation of an individual's requirement at 450 calories. All through, I presume that the individual is an adult.

The National Sample Survey does not report data on the consumption or energy intake of individuals but of households which are groups of individuals or groups of consumer units. In the 26th Round (1971-72) of the National Sample Survey, the sample of 11,468 rural households consisted of 49,198 consumer units. Thus the average size of a household is 4.29 consumer units which, for convenience of numerical exposition, we may take to be 4.0 as Dr. Sukhatme does. The mean or average per consumer unit energy requirement of households is of course the same as the average requirement of individuals namely 2750 calories per day per consumer unit. But, because the households are groups of individuals, the variation in their per consumer unit energy requirements is smaller than the same among individuals. By a simple rule, if the standard deviation of individual requirements is s, the standard deviation of per consumer unit requirement of households of an average size of 4.0 consumer units will be approximately $s/2$, the divider 2 being the square root of 4, namely the size of the households. Thus, taking the standard deviation of individual requirements equal to 450 calories, the standard deviation of household requirements per consumer unit will be $450/2 = 225$ calories. To sum up: As a consequence of inter and intra individual variation in energy requirement, we should expect that the per day per consumer unit energy requirements of households will vary; or, in statistical parlance, will be distributed with mean or average requirement of 2750 calories and a standard deviation of 225 calories.

The data are too meagre to judge the shape or form of this distribution. In the absence of specific knowledge, it is customary in statistical practice to assume that the distribution is 'normal' which, please note, has no normative connotation. The normal distribution is a particular statistical distribution found to hold good in many diverse situations and particularly satisfactory in the case of biometric data such as the energy requirements. Hence, in what follows, I shall assume that the per day per consumer unit energy requirements of households are normally distributed with mean 2750 calories and standard deviation 225 calories. For purposes of illustration, a numerical distribution of 100,000 households distributed in this manner is given in Table 3.

Table 3: NORMAL DISTRIBUTION OF HOUSEHOLDS BY PER DAY PER CONSUMER UNIT CALORIE REQUIREMENT

$(m = 2750;\ s = 225)$

Energy requirement in calories per day per consumer unit	*Number of households out of a total of* 100,000
less than $(m-3s)$ i.e. less than 2075	135
$(m-3s)$ to $(m-2s)$ i.e. 2075 to 2300	2,140
$(m-2s)$ to $(m-s)$ i.e. 2300 to 2525	13,590
$(m-s)$ to (m) i.e. 2525 to 2750	34,135
(m) to $(m+s)$ i.e. 2750 to 2975	34,135
$(m+s)$ to $(m+2s)$ i.e. 2975 to 3200	13,590
$(m+2s)$ to $(m+3s)$ i.e. 3200 to 3425	2,140
more than $(m+3s)$ i.e. more than 3425	135
	100,000

Thus, in a population of 100,000 households of healthy and active members with an average per day per consumer unit energy requirement of 2750 calories, we may expect 135 households with energy requirement less than 2075 calories, 135 + 2140 = 2275 that is 2.275 per cent households with energy requirement less than 2300 calories, 135+2140+13590 = 15,865 that is 15.865 per cent households with energy requirement less than 2525 calories per day per consumer unit. There will be equal number of households on the other side with energy requirements more than 3425, more than 3200, and more than 2975 calories per day per consumer unit respectively. Even the remaining middle 34,135 + 34.135 = 68,270 that is 68.27 per cent of the households will have energy requirements ranging between 2525 and 2975 calories per day per consumer unit. Such is the consequence of the existence of inter and intra individual variation in energy requirement.

From this, Dr. Sukhatme draws the following conclusions: "When the observed intake for any day or period is therefore less than the average requirement, . . . it cannot be taken to imply that a man is undernourished, as Dandekar and Rath do, unless his intake is so low as to be below the lower limit of confidence interval for the chosen level of significance. . . It follows that in any observed intake distribution on nutrition unit basis with a nutrition unit having the same daily requirement as the reference adult, namely m, the proportion of the population below $(m-2s)$ will determine the incidence of undernutrition and poverty."

I should once again remind that Dandekar and Rath do not say that an observed intake less than average requirement implies under-nutrition. In fact, Dandekar and Rath do not compare the observed intake with the average requirement except to identify the expenditure level where the observed average intake is equal to the average requirement. Thereafter, Dandekar and Rath compare only the total expenditure with the cut-off expenditure level so identified and say that all households with expenditure less than the cut-off expenditure are poor. Dandekar and Rath do not talk of under-nutrition. As I have already argued, Dr. Sukhatme is not able to sort out the two phenomena of under-nutrition and poverty.

But let me proceed. First, it will be useful to clarify in what sense $(m-2s) = 2300$ calories is the 'lower limit of confidence interval for the chosen level of significance'. This is part of the logic of statistical inference which commonly takes the form of what is called a 'test of significance' or 'a test of a hypothesis'. The procedure is to set up a hypothesis called the null hypothesis and examine given evidence in the light of this hypothesis. It is highly unlikely that the evidence is in complete accord with the hypothesis; some amount of deviation is common. The question is then asked as to how frequently, that is with what probability, the deviation as large as or larger than the observed one would appear if the hypothesis were true. If this probability is very low, rather than holding that the hypothesis is true but a rather improbable evidence has turned up, the evidence is taken to contradict the hypothesis and on that ground the hypothesis is rejected. How low must this probability be in order that the null hypothesis is rejected, is a matter of choice. The chosen level of probability is called the 'critical level of significance'. It is customary to work with either 5 per cent or 1 per cent level of significance. It means that the null hypothesis is rejected only if evidence turns up so unfavourable that the probability of such or more unfavourable evidence turning up, if the null hypothesis were in fact true, is less than 5 per cent or less than 1 per cent depending upon the chosen level of significance.

In the present case, the null hypothesis is that there is no under-nutrition. It means that we shall not accept the existence of under-nutrition unless the evidence is overwhelming. If we meet a household whose energy intake is below the average requirement, we shall suppose that its particular rquirement must also be below the average or in fact below its actual intake; it eats less because it needs less. We take cognisance of its low intake as possible evidence of under-nutrition only if the intake is so low that the probability of the requirement being lower still is very low. Dr. Sukhatme suggests that we may consider a household to be under-nourished only if its intake is below 2300 calories per day per consumer

unit. As we have seen, on the basis of a normal distribution of requirements of households with mean 2750 and standard deviation 225 calories, the probability of a household having its requirement less than 2300 calories is 2.275 per cent. Dr. Sukhatme considers this to be sufficiently low to admit the household to be under-nourished. It means that his chosen level of significance is 2.275 per cent.

With lower probability level of significance, the lower limit of 'no under-nutrition' will also be lower. For instance, if we choose 1 per cent rather than 2.275 per cent level of significance, the lower limit of 'no under-nutrition' will be 2225 calories instead of 2300 calories; naturally, our estimate of the magnitude of under-nutrition will also be lower. Thus, if one accepts Dr. Sukhatme's logic, the estimate of under-nutrition depends crucially upon the choice of the level of significance. Hence, Dr. Sukhatme should have explained and justified the choice of the particular level of significance. He does not do it. Indeed, he does not even mention the level of significance he has chosen. He merely refers to it as the 'chosen level of significance' as though it was chosen by God.

Table 4: National Sample Survey : 26th Round (1971-72): Rural Households. All expenditure classes.

Calorie intake per day per consumer unit	Number of sample house-holds	Number of consumer units per house-hold	Number of house-holds with calo-rie requi-rement as in (1)	Revised number of house-holds with calo-rie requi-rement as in (1)	Estimated number of deficit- & excess-intake house-holds
(1)	(2)	(3)	(4)	(5)	(6)
Upto 1500	651	5.01	—	—	651
1501-1700	455	4.77	—	—	455
1701-1900	576	4.75	—	—	576
1901-2100	762	4.71	22	6	756
2101-2300	854	4.79	239	56	798
2301-2500	947	4.51	1267	309	638
2501-2700	882	4.55	3198	757	125
2701-3000	1234	4.31	5214	1234	4098**
3001-3500	1774	4.13	1523	360	1414
3501-4000	1174	3.92	5	1	1173
4000 & above	2159	3.42	—	—	2159
All groups	11468	4.29	11468	2714*	(4716)***

* balanced-intake; ** deficit-intake; *** excess-intake

Let me proceed and apply Dr. Sukhatme's advice to the distribution of households and corresponding consumer units by their calorie intake per day per consumer unit as given by the 26th Round (1971-72) of the National Sample Survey (Table 4).

According to these data, out of a total 11,468 sample households, 3298 households, which is 28.76 per cent, had energy intake less than 2300 calories per day per consumer unit. Even on Dr. Sukhatme's reckoning, these must be considered under-nourished. Moreover, the households with lower energy intake are seen to have larger number of consumer units. Hence, in terms of consumer units, the proportion of under-nourished is even larger; it is 32.21 per cent. This is the estimate of under-nutrition Dr. Sukhatme should accept because it is based on his own advice.

But, as I shall presently demonstrate, the procedure is not valid. Let us see its implications. As I have already mentioned, Dr. Sukhatme accuses us of having "mistaken the average energy need of an individual for the minimum need" treating everybody with energy intake below the average, say 2750 calories, to be under-nourished. As I have explained and emphasised, we did not do this; this is not our procedure. But, now when Dr. Sukhatme says that all those and only those whose energy intake is less than 2300 calories should be counted as under-nourished, does he realise that what he calls the 'minimum', howsoever defined, is considered the requirement for everybody? Once we recognise the existence of inter and intra individual variation in requirement, each individual on each occasion has a particular requirement and whether he is under-nourished must be determined by comparing his observed intake with his particular requirement. Like the individual intakes cannot be judged by the average, they cannot also be judged by any single figure called the 'minimum' howsoever defined. Dr. Sukhatme does not see this because, as I shall presently argue, he is applying the logic of test of significance appropriate to one situation to another where it is not appropriate.

As I explained, if we meet a household with calorie intake less than 2300 calories per day per consumer unit, we would admit it as under-nourished because the probability of its requirement being less than 2300 calories is 2.275 per cent which we consider too low. This accords with the logic of statistical test of significance. But suppose that we have a group of 100,000 households and among them 2275 households are seen to have calorie intakes less than 2300 calories per day per consumer unit. should we consider them as under-nourished? Dr. Sukhatme would and he is wrong. In a group of 100,000 households we expect about 2275 households to have energy requirements less than 2300 calories; therefore, in

a group of 100,000 households, the existence of 2275 households with energy intake less than 2300 calories offers no evidence of under-nutrition and hence they cannot be judged under-nourished. This is the difference between the two situations; in one, we are judging a single household with energy intake less than 2300 calories; in the other, we have a large number of households of which a small number have their energy intake less than 2300 calories. The logic of statistical inference appropriate to the first situation is not appropriate to the second.

Now, suppose that in a group of 100,000 households, 5000 households have energy intake less than 2300 calories. Should we regard them all as under-nourished? No, not all the 5000 are under-nourished; but some of them are. In a group of 100,000 households, the existence of 2275 households with energy intake less than 2300 calories would not constitute evidence of under-nutrition. But any larger number of households such as 5000 with intake less than 2300 calories, would constitute evidence of existence of under-nutrition. In such a situation, our estimate of under-nutrition should be not 5000 but only the excess (5000 — 2275) = 2725 households.

Let me apply this principle to the distribution of households by the calorie intake given by the 26th Round (1971-72) of the National Sample Survey (Table 4). The total sample of rural households is 11,468 households. We should first find the distribution of these households by their energy requirements on the basis of a normal distribution with mean 2750 and standard deviation 225 calories (Col. 4). If we compare the frequencies of energy intake with frequencies of energy requirement in all calorie classes, it will appear that the intake frequencies exceed the requirement frequencies in all calorie classes upto 2300 calories and in all classes above 3000 calories. In the middle classes from 2301 to 3000 calories the intake frequencies are short of the requirement frequencies. The excess intake frequencies in the lower calorie classes is evidence that among the sample of 11,468 households, some households have intake short of requirement. The excess intake frequencies in the higher calorie classes is evidence that some households have intake in excess of requirement; or the intake is over-stated. The deficit in the middle calorie classes is the consequence of the excess in the lower and higher classes.

To sum up: A comparison of the frequency distribution of households by energy intake with their frequency distribution by energy requirement shows that in the sample of 11,468 households, there must be some households with intake short of requirement; and some households with intake in excess of requirement. It is only for the remaining households that intake matches requirement. The problem, as I see it, is how to

estimate the number of households in the three sub-groups, namely, the deficit-intake group, the excess-intake group, and the balanced-intake group. I am not aware if a solution has been suggested to this or similar problem either in statistical theory or practice. Hence, I shall propose a rough and ready solution leaving a more sophisticated resolution of the problem to more competent hands.

I propose that the number of households with balanced-intake should be so determined that when distributed by energy requirement (Col. 5), the frequencies in the middle calorie classes do not exceed the actual intake frequencies in those classes. In the present case, a little arithmetic shows that, on this basis, out of the total of 11,468 households only about 2714 households may have balanced-intake. When these are distributed by their energy requirement (Col. 5), the excess intake frequencies in the lower calorie classes provide the estimate of the deficit-intake households; in the present case it is 4008 (Col. 6). The excess intake frequencies in the higher calorie classes provide the estimate of excess-intake households; in the present case, it is 4746 (Col. 6). Thus, the sample of 11,468 households seems to be composed of three sub-groups; 4008 deficit-intake households; 4746 excess-intake households; and 2714 balanced-intake households.

It will be noticed that all the deficit-intake households do not have intake less than 2300 calories; there are deficit-intake households with energy intake in the range of 2301-2500 calories as also 2501-2700 calories. Nevertheless, they must all be considered as under-nourished in the sense that their intake is smaller than their requirement. On this basis, 4008 out of 11,468 that is 34.95 per cent households are under-nourished. As before, if we convert the households into consumer units, the proportion of under-nourished will be larger; it is 38.70 per cent. I should emphasise that this estimate of under-nutriuon does not depend upon any arbitrarily defined minimum or lower limit such as 2300 calories. It depends only upon the distribution of the households by their energy requirement and hence essentially on the standard deviation of this distribution. In all the above numerical illustration, I have taken the standard deviation of the individual requirements at 450 calories or the standard deviation of the household requirements at 225 calories so as to remain consistent with $(m-2s) = (2750 - 2 \times 225) = 2300$ calories. I should mention that this is higher than any value of the standard deviation indicated by Dr. Sukhatme. With lower standard deviation, the estimate of the magnitude of under-nutrition will be higher than the above estimate of 38.70 per cent.

I suggest that this should be the procedure to estimate under-nutrition from an observed distribution of individuals or of households by their energy intake, once we recognise that the individual energy requirement is subject to inter and intra individual variation. Dr. Sukhatme's assertion that, in such a distribution, the proportion of population below the mean-minus-twice-standard-deviation limit estimates the incidence of under-nutrition is not correct.

Surprisingly, Dr. Sukhatme does not follow his own, though wrong, advice and apply his procedure to the distribution of households by their per consumer unit calorie intake available from the 26th Round (1971-72) of the National Sample Survey (Table 4). He recognises that the individual energy requirement is subject to inter and intra individual variation; but then he completely misses the point. He makes no use whatever of the distribution of the households by the per consumer unit calorie intake. Instead, not seeing the difference, he uses the distribution of households by the per consumer unit expenditure, as we do, but uses 2300 calories, and not 2750 calories, to determine the cut-off expenditure level.

Thus, the difference between the procedure adopted by us and the one Dr. Sukhatme proposes rests on the level of energy intake one should choose in order to identify the poverty line or the cut-off expenditure level. Applying our procedure to the data from the 26th Round (1971-72) of the National Sample Survey (Table 5), we would take 2750 calories to be average requirement and, seeing that the average intake in the expenditure class Rs. 28-34 is 2734 calories, identify the cut-off expenditure level somewhere in the middle of this expenditure class and, estimate that about 46.4 per cent of the consumer units live on expenditures below this level and hence are poor. Dr. Sukhatme says that this procedure is wrong; that it ignores the inter and intra individual variation in energy requirement; that it treats energy requirement as a fixed quantum such as 2750 calories. In fact, as we have seen, the energy requirement of households is distributed with a mean 2750 calories and a standard deviation 225 calories. Hence, Dr. Sukhatme says, that the actual energy requirement of households in an expenditure class could be as low as $(2750 - 2 \times 225) = 2300$ calories, being the lower limit of the confidence interval at the chosen level of significance; and therefore, the cut-off level of expenditure should be identified as that expenditure at which the actual energy intake equals, not 2750 calories, but 2300 calories. On this basis, the cut-off expenditure level is located somewhere in the expenditure range Rs. 21-24 and about 20 per cent of the consumer units are seen to live on expenditures below this level. Dr. Sukhatme concludes that only about 20 per cent of the rural population (measured in consumer units) is poor and not 46.4 per cent as we would estimate it. Dr. Sukhatme says that Dandekar and Rath have greatly exaggerated poverty.

Table 5: National Sample Survey : 26th Round (1971-72): Rural Households

Monthly expenditure per consumer unit Rs.	Number of households	Average number of consumer units per household	Average calorie intake per day per consumer unit
0-15	444	4.99	1493
15-21	1207	4.74	1957
21-24	313	4.78	2287
24-28	1174	4.51	2431
28-34	1748	4.44	2734
34-43	2023	4.20	3127
43-55	1655	4.08	3513
55-75	1319	3.70	4016
75-100	598	3.31	4574
100—	482	2.34	6181
All classes	11468	4.29	

I am afraid that Dr. Sukhatme is making a serious statistical error As I have said, I readily admit the existence of inter and intra individual variation in energy requirement of individuals. I also accept the magnitude of this variation as Dr. Sukhatme has indicated it; namely, a standard deviation of 450 calories for energy requirement of individuals and 225 calories for energy requirement of households. But I ask, what is the standard deviation of the energy requirement of a group of households – because now we are concerned with groups of households in different expenditure classes. For identifying the cut-off expediture level, we examine the actual average intake of the group of households in each expenditure class and we must compare it with the average energy requirement of a group of the same size. Because the energy requirement of individual households is variable, the average requirement of a group of households is also variable. This is agreed. But how variable it is? In other words, what is its standard deviation? Not the same as the standard deviation of energy requirement of individual households. Dr. Sukhatme has overlooked this and has continued to work with a standard deviation of 225 calories even when he is considering the average energy requirement of groups of households in different expenditure classes. That is the basis of his determining the cut-off expenditure level at the average intake of $(2750 - 2 \times 225) = 2300$ calories. The error is obvious.

Dr. Sukhatme should know that if the standard deviation of the energy requirement of a household is 225 calories, the standard deviation of the average requirement of a group of 1748 households is not 225 calories but $225/41.8 = 5.4$ calories, 41.8 being the square root of 1748. Hence, with the same level of significance as chosen by Dr. Sukhatme, the average energy need of the group of 1748 households in the expenditure class of Rs. 28-34, cannot be placed below $(2750 - 2 \times 5.4) = 2739.2$ calories and one cannot be far wrong by placing it at 2750 calories. I confess that Professor Rath and myself did not take explicit cognisance of inter and intra individual variation in energy requirement of individuals; but I submit that its neglect at the level of groups of several hundred households does not vitiate our estimate of poverty. On the basis of the 26th Round (1971-72) of the National Sample Survey, about 46.4 per cent of the rural population was poor and not merely 20 per cent as Dr. Sukhatme would estimate it.

Before concluding, I may add a final word of explanation. Dr. Sukhatme's critique of our estimate of poverty is full of much nutrition-theoretic discussion and some, though rather scanty, data to support it. It may be said that I have not taken sufficient note of this. This is true; but, instead, I have accepted its principal finding namely the existence of inter and intra individual variation in energy requirement. The existence of inter-individual variation can be readily established and explained: it simply means that some individuals are more efficient biological machines than others. But the intra-individual variation, namely variation in energy requirement of an individual from day to day or week to week, is somewhat intriguing and there is currently considerable speculation regarding its causation. An explanation, apparently widely accepted, is that the human body has an essential homeostatic or regulatory mechanism which adjusts to varying intakes of food without drawing on or adding to reserves, while at the same time enabling the individual to continue activity involving a given quantum of energy expenditure. If this is correct, it means that the energy requirement of an individual varies mainly in response to variation in his energy intake. Thus, rural poor suffer from want, intermittantly and during certain parts of the year. The homeostatic mechanism ensures that they tide over the difficult period without imparing their activity and efficiency. I trust that it is not implied that the homeostatic mechanism eliminates their poverty. I also suppose that the homeostatic mechanism functions within limits and that energy intake beyond these limits over a sustained period results in changes in bodily function and activity. I suspect that these limits of homeostatic mechanism are dif-

ferent for different individuals. Such, briefly, seems to be the explanation for the existence of intra-individual variation in energy requirement.

Relevant to our purpose, namely measurement of poverty, is the fact of existence of inter and intra-individual variation of energy requirement. I have accepted the phenomenon and its magnitude as Dr. Sukhatme has indicated. It seems to me that the existence of such variation by itself would not materially affect our estimate of poverty in India unless supported by improper use of statistical methods and some plain blundering.

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This paper is organized as follows. The next section introduces the basic conceptual issue - "What is a Poverty Index?". Section III traces methodological developments in poverty measurement upto the development of an axiomatic approach by Sen (1973). Section IV deals in some detail with some recently developed measures of poverty. In section V measurement of poverty is viewed from a policy perspective and it is integrated with applied welfare economics and public policy. Finally, the last section, section VI presents a few statistical issues such as welfare comparisons of income distributions, efficient estimation of poverty index, incorporation of variability of consumption deprivation in devising new measures of poverty.

II WHAT IS A POVERTY INDEX ?

The question of what a poverty index is, can not be answered unless we state clearly what is meant by poverty of an individual. Poverty connotes the notion of a poor state of economic well-being or a state of economic ill-being. It connotes a state of economic deprivation. Deprivation can be based on comparing an individual's economic state with either an absolute norm, in which case it is called an absolute deprivation, or a normative or relative norm, in which case it is called a relative deprivation. An individual's economic state can have several dimensions. Hence the notion of economic deprivation implies that the individual is comparing, or introducing a partial ordering on, various economic states he is confronted with. Thus, the notion of economic deprivation of an individual is closely related to the partial ordering of economic states by an individual. The economic state can be redefined in terms of three states, better than the norm, worse than the norm, or equivalent to the norm. From these states one can say whether a person is deprived or not. It is thus clear that the norm used for determining deprivation has to be specific to each individual. For example, this norm should be very low for a priest who vows to live in poverty and thus chooses poverty voluntarily.

When there are several individuals in a community, it is necessary to arrange them into different groups such that persons within a group can be expected to have the same set of preferences

SOME CONCEPTUAL AND STATISTICAL ISSUES ON MEASUREMENT OF POVERTY

BY

T Krishna Kumar*

"..... important conceptual issues in the measurement of poverty remained undiscussed for too long. What was needed was a greater degree of vertical integration between the statistical measurement of poverty on the one hand and welfare economics on the other"

A. B. Atkinson (1987)

I INTRODUCTION

It was nearly ten years ago that I overheard a conversation between two professional colleagues, both concurring with the view that a third colleague was continuing to work on an over-worked topic "poverty". I took their conversation seriously and paid little attention to poverty studies until I attended a seminar recently in which the author was using head-count ratio as a measure of poverty to measure regional differences in poverty. I could not avoid taking interest in the topic as I felt somehow that two specific aspects of poverty had not been adequately explored in this allegedly "over-worked" topic. These two aspects are: (i) synthesizing the poverty measurement with applied welfare economics and public policy, and (ii) statistical issues relating to measurement of poverty index based on sample survey data on income and expenditure distributions. This review of econometric methodology pertaining to poverty measurement is therefore to be regarded as a review by a late comer to the field with emphasis on the two specific issues just cited that have a great potential for future research. Several important contributions to the poverty literature such as empirical analysis of poverty indices and their variation are excluded in this review in order to focus on issues relating to methodology and in order to maintain a moderate length for the paper.

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* Quantitative Analysis Unit, Institute for Social and Economic Change, Nagarabhavi, Bangalore - 560 072, India. The author thanks V. Sitaramam, Anil Gore, N. S. Iyengar, V. M. Rao and Vinod Vyasulu for discussions and comments on various issues that are raised here. The author also thanks S. K. Mallick, G. Nagaraju, and N. S. Vasuki for their assistance in processing the paper.

or partial ordering and persons in different groups have different partial orderings. Within each homogenous group one can determine the number and/or proportion of persons who are deprived. There will be as many such deprivation indices, viz., the proportion of persons who are deprived, as there are groups. The question then arises as to how one can combine the group deprivation indices into a single community deprivation index. Such a conversion of group deprivation indices to a single deprivation index requires a partial ordering or economic well-being of different groups - viz., a social welfare function.

It was assumed above, just for convenience, that each individual's economic state is represented in two categories - deprived, not deprived. But one can also introduce a partial ordering of different economic states of an individual relative to an absolute or a relative norm. Then under certain regularity conditions on the individual's preferences an individual's deprivation can be represented by a deprivation function as demonstrated by Debreu (1959). Using an analogous reasoning, if the social partial ordering of group deprivations satisfy certain regularity conditions there exists a community deprivation function.

A group poverty index can be defined as the mean level of deprivation for that group. The community poverty index can be defined as a "subgroup consistent" aggregate of the various constituent group poverty indices. The meaning of the term subgroup consistency and the problem of aggregation and decomposition of poverty indices are dealt with in detail in Section III.

III EARLY DEVELOPMENTS IN MEASUREMENT OF POVERTY

As indicated in the previous section measurement of poverty depends on a norm with respect to which the economic state of an individual is compared. The standard approach which goes at least as far back as Rowntree (1901) is to define a poverty line in terms of a minimum level of income needed to purchase the basic necessities of life and use the income distribution to see what percentage of the people have an income less than such a poverty

line. This measure is called Head Count ratio (H). Some other contributors who used this approach are Bowley and Burnett-Butt(1915), Townsend (1954), Weisbrod (1965) and Atkinson (1970b). Another measure which also depends on the poverty line and income distribution is the poverty-gap used by Batchelder (1971). It is the aggregate income short-fall from the poverty line of all those persons whose incomes are below the poverty line. A slightly modified and normalised version - viz., per person percentage gap of all the poor, called the income-gap ratio, I, is in popular use.

Suppose there are n individuals with incomes $y_1, y_2, \ldots\ldots y_n$ arranged in an increasing order and let z be the poverty line. Let q be the maximum index i such that $y_i \leq z$. Then, q denotes the number of the poor. The head-count ratio H is given by:

$$H = q/n \qquad \ldots\ldots\ldots\ldots\ldots\ldots (3.1)$$

Let g_i be the income gap defined as $g_i = z - y_i$. Then the per person percentage gap of all the poor, I is given by:

$$I = \frac{1}{qz}\sum_{i\leq q} g_i = \frac{1}{q}\sum_{i\leq q}\left(\frac{g_i}{z}\right) = \frac{1}{q}\sum_{i\leq q}\frac{(z-y_i)}{z} \qquad \ldots\ldots\ldots\ldots (3.2)$$

If one defines the mean income of the poor as m then

$$m = \frac{1}{q}\sum_{i\leq q} y_i$$

$$I = \frac{z-m}{z} \qquad \ldots\ldots\ldots\ldots (3.2a)$$

It is clear that the head count ratio gives only a count of the poor and it gives no account of how poor the poor are relative to the poverty line. The income-gap ratio tells how poor the poor are, as a group, in relation to the poverty line. But neither of these indices give any idea of how the income is distributed among the poor. It is desirable that the poverty index reflect the inequality of income distribution among the poor. For this one can

use an inequality index introduced by Lorenz (1905) and Gini (1912). This index is given by:

$$G = \frac{1}{2q^2m}\sum_{i=1}^{q}\sum_{j=1}^{q}|y_i-y_j| \qquad \text{.....(3.3)}$$

One may conclude that the best thing to do for measuring poverty is to present the triplet H, I, and G, where H tells us how many persons are poor, I tells us by how much the mean income of the poor falls short of the poverty line, and G tells us the inequality of the income among the poor. The first item measures the extent of poverty, the second measures severity of poverty and the third measures the incidence of poverty. The weights a policy maker attaches to these three components must be commensurate with the policy maker's concern for these three policy dimensions of poverty - extent, severity and incidence.

There was, and there has been, a considerable debate on how to determine a poverty line. This debate is quite significant because the poverty indices depend on this choice of the poverty line. Here there are three different points that one may note. First, the poverty line need not have a scientific basis. It can be chosen administratively using certain objective criteria.[1] Second, one can possibly consider a ranking of people according to the degree of deprivation in such a way that the ranking is invariant to the choice of the poverty line. This suggestion was made by Atkinson (1987). Third, there may not be a unique deterministic minimum requirement on the basis of which a poverty line can be determined. This last point is closely related to a criticism made by Sukhatme (1978) of a method which uses an average requirement in choosing the poverty line.

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[1] Usually there is a hierarchy of needs that are to be satisfied in a given order. Which items of this hierarchical need structure should enter into the minimum needs that are to be met may vary from society to society. Similarly the desired levels of consumption also may vary from society to society. Hence, the choice of poverty line may be different for different societies.

Dandekar and Rath (1971) used a nutritional norm and then used the minimum total expenditure needed to meet that norm as the poverty line. For this they used the *average* daily energy requirements of an individual of a given age, sex, body weight, and physical activity. Sukhatme (1978) pointed out that one must instead use a *minimum* daily requirement rather than an *average* requirement. He had also established that the energy requirements of an individual would follow a first order autoregressive stochastic process with a constant variance. Sukhatme did not take his argument to its logical end. If one were to deal with a human deprivation based on nutritional inadequacy then what is important is the survival risk of the individual as a consequence of nutritional deficiency. Such a survival risk depends not on nutritional deficiency on a given day. Instead, it depends on a history of nutritional deficiency. A part of this history is contained in the individual's body weight and state of health, and the rest is contained in the cumulative nutritional deficiency over the recent past. This is an important point to note as it leads to certain statistical issues that will be dealt with later in Section VI. In particular, if the actual energy intake and the required energy intake are both random the nutritional deficiency is determined by the probability that actual energy intake falls below the requirement. The survival risk due to nutritional deficiency is then a function of the probability that the actual energy intake falls short of the requirements over a period.

IV LATER DEVELOPMENTS IN MEASUREMENT OF POVERTY

Sen (1974) used an axiomatic approach for developing a normative poverty index along the lines of his earlier axiomatic approach for arriving at normative measures of income inequality (Sen (1973)). He extended this work by developing a new ordinal approach to the measurement of poverty (Sen (1976)). It was mentioned in the previous section that a poverty index can be derived from three indices H, I and G. Sen introduced three axioms that a poverty index must satisfy and from them he deduced that the only poverty index that satisfies those three axioms is of the form:

$$P_\alpha = H[I+(1-I)G] \quad \ldots\ldots\ldots\ldots\ldots\ldots (4.1)$$

There are three other major contributors besides Sen who made significant contributions to the development of poverty indices. These are Atkinson (1970a, 1970b, 1987), Kakwani (Kakwani and Poddar (1976), and Kakwani (1980a,1980b)), and Foster (Foster, Greer and Thorbecke (1984), Foster and Shorrocks (1991), and Foster (1984)). Some of these developments are described below in a modified form and in some detail as they lead us to some useful and researchable issues that will be discussed in Sections V and VI.

Let us assume that deprivation and poverty are measured in terms of income. Let z be the poverty line and let y be the income of a typical individual. Let f(y) denote the density while F(y) is the cumulative distribution function associated with the income distribution. Following Sen (1976) and Kakwani (1980a) the poverty index may be expected to satisfy the following three axioms:

Monotonicity Axiom : Given other things, an increase in income of a person below the poverty line must decrease the poverty.

Transfer Axiom: Given other things, a pure transfer of income from a person below the poverty line to any other person with a higher income must increase the poverty.

Transfer Sensitivity Axiom: Given other things, if a transfer $t>0$ of income takes place from a poor household with per capita income y to another poor household with per capita income $y + d$ $(d>0)$ then the magnitude of increase in poverty decreases as y increases.

From the earlier discussion in Section II it is clear that an individual's deprivation "d" can be expressed as a function of either absolute or relative deviation of his income from the poverty level:

$$d = g(z-y) \quad \ldots\ldots\ldots\ldots\ldots\ldots (4.2a)$$

$$d = [(z-y)/z] \quad \ldots\ldots\ldots\ldots\ldots\ldots (4.2b)$$

In general terms the deprivation can be expressed as a function of y and z:

$$d = d(y,z) \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.2c)$$

Atkinson (1987) has shown that most of the poverty indices proposed in the literature can be represented by a poverty index defined as follows:

$$P_A = \int_0^z d(y,z)\, f(y)\, dy \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.3)$$

From Figure 2 in Atkinson's paper, and from Table 1 of the same paper it is clear that in all those cases the deprivation function is a non-increasing function of y and convex to the origin, or strictly convex to the origin. It can be shown that Atkinson's class of poverty indices satisfy the three axioms listed above if the deprivation function is a decreasing function of y and strictly convex (Kumar (1992)).[2]

It is often desirable, either due to analytical necessity or convenience and for policy purposes, to divide the entire population into different groups of persons and define poverty index for each group. This gives rise to the basic conceptual problem of consistent aggregation or decomposition. In order to tackle this issue Foster and Shorrocks (1991) introduced another axiom termed "subgroup consistency" which only means that the concept of monotonicity applies to groups of persons, viz., if the poverty index of all groups except one group, group i, remains the same and if the poverty of group i increases then the aggregate poverty index must increase.

Suppose that we partition the people into a finite number of mutually exclusive and collectively exhaustive groups G_1, G_2, ..., G_K. These may refer to different regions, different income

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[2] After I had written my paper I had come across a paper by Keen in which he cites the result that convexity of the deprivation function corresponds to the transfer principle (see Keen (1992) p.70).

groups, different ethnic groups etc.. Assume that w_i is the proportion of households who belong to group i and $f_i(y)$ and $F_i(y)$ refer to the conditional density and conditional cumulative distribution function of income distribution, respectively, associated with group i. Let $d_i(y,z_i)$ denote the deprivation function associated with group i. We can then define a sub-group poverty index P_i as follows:

$$P_i = \int_0^{z_i} d_i(y,z_i) f_i(y)\, dy \qquad \ldots\ldots\ldots\ldots\ldots\ldots (4.4)$$

The interesting question to pose is: how can one combine the sub-group poverty indices into an aggregate poverty index so that aggregate poverty index satisfies the three axioms listed earlier and also the sub-group consistency axiom of Foster and Shorrocks (1991). Let the aggregate poverty index P be given by:

$$P = \int_0^{z} d(y,z) f(y)\, dy \qquad \ldots\ldots\ldots\ldots\ldots\ldots (4.5)$$

where z and d are yet unknown and f(y) is given by

$$f(y) = \sum_{i=1}^{k} w_i f_i(y) \qquad \ldots\ldots\ldots\ldots\ldots\ldots (4.6)$$

If one notes that d(y,z) is consumption deprivation then what is needed is a condition for consistent aggregation of consumption over individuals that will give rise to the following consistency relation:[3]

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[3] Here it is being assumed that $d(y,z_i) = 0$ for $y > z_i$. For conditions on consistent aggregation of consumption expenditure the reader may refer to Muelbauer (1975).

$$d(y,z) = \sum_{i=1}^{k} w_i d_i(y,z_i) \qquad \ldots\ldots\ldots\ldots (4.7)$$

Where $z = \max\{z_i\}$

If the above condition is satisfied then employing (4.6) and 4.7) one can write:

$$P = \int_0^{z=\max z_i} d(y,z)\, f(y)\, dy = \sum_{i=1}^{k} w_i \int_0^{z_i} d_i(y,z_i)\, f_i(y)\, dy \quad \ldots.(4.8)$$

$$i.e.\ P = \sum_{i=1}^{k} w_i P_i \qquad \ldots\ldots\ldots (4.9)$$

A poverty index that satisfies (4.9) is called (an additively) decomposable poverty index. Two points that must be noted here are that $d_i(y,z_i)$ is the *mean* deprivation of group i and that each group may have its own poverty line. These two points are related to the issues raised by Sukhatme and these are quite important for some statistical issues raised in Section VI. The analysis given above is a synthesis of ideas and results contained in Atkinson (1987), Foster and Shorrocks (1991), and Kumar (1992).

V POVERTY MEASUREMENT AND APPLIED WELFARE ECONOMICS

By its very nature measurement of poverty was motivated by welfare economics because it is through such measurement that one can identify the need for welfare measures and also devise suitable methods for needs targeting (Kanbur (1987), and Keen (1992)). However, different methodological approaches were followed in poverty measurement. needs targeting, and other applied welfare economics. In particular the approaches of poverty measurement invariably depended on income distribution and a deprivation function. Recent literature on needs targeting (Kanbur (1987), Thorbecke (1989), and Keen (1992)) that used such poverty indices were hence focused on changing the incidence of poverty through direct income transfers. The arbitrary choice of deprivation function based on certain axiomatic considerations has placed

poverty-based welfare economics into an altogether different compartment from other microeconomic theory based welfare economics. In the latter type of analysis one would normally take social welfare as a function of levels of individual consumption, and this level of individual consumption as a function of income and prices confronting the individual.

A synthesis between these two seemingly different approaches is possible by noting that consumption deprivation can be taken as the deprivation function in the poverty index. Bhanoji Rao (1981) had already drawn the attention to the relation between consumption deprivation and poverty. Quite independently and without the knowledge of Bhanoji Rao's paper, Kumar, Sitaramam, and Gore (1992) had developed this link between poverty index and consumption by suggesting that the deprivation function used in the poverty index can be the consumption deprivation, this term being defined as the shortfall of mean consumption from a bliss point. If one restricts to the commodities that constitute the necessities then this consumption deprivation at any level of income would be the difference between the bliss level of consumption and the consumption expenditure on necessities. Since for necessities the Engel curves, which depict the relation between consumption expenditure and income, are increasing functions of income and strictly concave, it follows that the deprivation function so defined is a decreasing function of income and strictly convex.[4] Thus, the poverty index based on consumption deprivation of necessities satisfies the three axioms suggested by Sen (1976), and Kakwani (1980a). By assuming that the conditions for consistent aggregation of consumption hold, by this procedure, one can also get group decomposable aggregate poverty index that satisfies Foster-Shorrocks's axiom of subgroup consistency. The parameters of Engel curves are functions of own and cross prices. If one writes the consumption deprivation functions in full using aggregate consumer demand functions for necessities they will be

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[4] In the consumption basket of persons who are near the officially defined poverty line of India such essential items or necessities constituted in 1983-84 more than 75 per cent of the total consumption expenditure. See Technical note on the Seventh Five Year Plan, p.10.

functions of prices and income. One can then devise policies through which deprivation can be reduced employing price and income policies. Such policies affect both the level of consumption deprivation and the resulting income distribution, these two being the major components of the poverty index.

Such a synthetic approach to applied welfare economics can be illustrated by considering the following enlarged definition of the poverty index

$$P = \sum_{i=1}^{k} w_i \int_0^{z_i} d_i(y, z_i, p_i) f_i(y, p_i) dy \qquad \ldots\ldots\ldots\ldots (5.1)$$

Where p_i is a vector of prices encountered by persons in group i.

Let $f_{i,0}(y, p_{i,0})$ denote the distribution of income in group i prior to introduction of public policy measures, some of which are directly meant to be poverty alleviation programs while others are policies that do have an impact on the poverty level. Let $f_{i,1}(y, p_{i,1})$ denote the distribution of income of group i after the introduction of public policy measures. The policy measures are in general aimed at asset redistribution policies, changing factor incomes, pure income transfer policies, and price policies such as rationing and public distribution etc. $p_{i,0}$ and $p_{i,1}$ represent the price vectors without and with new policy interventions. It is possible that there are direct and indirect effects of programs. The poverty levels can be favourably affected by the poverty alleviation schemes but they can be adversely affected by other public policies. Hence one must consider the over-all welfare impacts of all public policies put together. Such an evaluation is eminently carried out by describing the functioning of the economy as a temporary equilibrium model with price controls and rationing. One can consider an extended input-output model with different types of households as different endogenous sectors that supply factor inputs to the other sectors and receive factor incomes. Similarly, in this set-up one must include government as a separate sector that provides government services to various sectors,

including different household sectors, and it receives as inputs taxes and services of factors.[3]

The welfare economic problems can then be posed as follows

Minimize

$$P_a = \sum_{i=1}^{k} w_{ia} \int_0^{z_i} d_i(y, z_i, p_{ia})\, f_{ia}(y, p_{ia})\, dy \qquad \ldots\ldots\ldots\ldots (5.2)$$

subject to the conditions

$$P_a \leq P_0 = \sum_{i=1}^{k} w_{io} \int_0^{z_i} d_i(y, z_i, p_{io})\, f_{io}(y, p_{io})\, dy \qquad \ldots\ldots\ldots\ldots (5.3)$$

$$x_d = Ax + B\dot{x} + e \qquad \ldots\ldots\ldots\ldots (5.4)$$

$$y_{ia} = r'_{ia} p_{ia} + t_{yi} + t_{ai} \qquad \ldots\ldots\ldots\ldots (5.5a)$$

$$y_{io} = r'_{io} p_{io} \qquad \ldots\ldots\ldots\ldots (5.5b)$$

$$p_{ia} = p_{io} + D_\lambda (x_d - x) + p_{ci} \qquad \ldots\ldots\ldots\ldots (5.6)$$

Where x_d is a n x 1 vector of demand for outputs of the various sectors while x is the supply; A and B are n x n matrices of current and capital coefficients, e is n x 1 vector of net imports, $D\lambda$ is a n x n diagonal matrix of coefficients that reflect the speed of market adjustments between demand and supply, the diagonal elements of $D\lambda$ can be zero for those sectors whose price is controlled. $r_{i\,o}$ denotes the initial endowment of factors of the ith

---

[3] It is no doubt a very difficult task to allocate between various sectors the public goods that the government produces. One approach is to treat public goods as a factor of production that enter into all sectors at the same levels.

person while $r_{i,}$ is the final endowment of factors. Some of the additions to factor endowments is through markets for factor services while other additions are due to asset distribution policies . Thus in equation (5.5a) $t_{y,i}$ is a pure transfer income while $t_{x,i}$ is a transfer of an asset (its income equivalent). In equation (5.6) $p_{x,i}$ is that component of change in price which is set through government's price control. In the above optimization problem the government policies regarding choice of elements of the price vector $p_{x,i}$ and its activity levels (certain components of x vector denote the activities of the government) are instruments of policy, e is exogenous and all other variables are to be determined endogenously.

Thorbecke (1989) presented this kind of model to assess the impact of programs targeted for poverty alleviation. His approach also included both the direct and indirect impacts employing the Social Accounting Matrix (SAM). But his approach involved estimating the income-equivalence of such direct and indirect impacts and including the post-policy incomes in a Foster-Greer-Thorbecke index of poverty (Foster, Greer, and Thorbecke (1984)). What is suggested here is a more direct approach in which the policy impacts, both direct and indirect, are traced through a computable general equilibrium model. The resulting consumption levels are used to derive consumption deprivation and the consumption deprivations are used to measure poverty.

VI STATISTICAL ISSUES ON MEASUREMENT OF POVERTY

There are mainly three distinct ways in which statistical issues arise in measurement of poverty. First, since the poverty index depends on the density of income some problems confronting poverty measurement are similar to the statistical problems associated with probability distributions. Second, as we do not have, except in rare occasions, a census of incomes poverty measurement is quite often made employing information on income distribution provided by sample surveys. This gives rise to estimation of population poverty index using a sample. Third, following the critical contribution of Sukhatme one can interpret deprivation, whether it is a nutritional deprivation or a

consumption deprivation, as not being deterministic but as being stochastic. Then even if we have a census of incomes the poverty index must be based on a stochastic deprivation.

Some of the statistical issues first arose with the measurement of inequality. Since there is a close relation between income inequality and poverty it is useful to cover the methodological issues relating to income inequality also. One early application of properties of density functions was by Levine and Singer (1970). They consider the closed-form expression for the income inequality in terms of the income density function. Using an exponential distribution for incomes they reach the conclusion that under such an income distribution a proportional tax does not change income inequality but if a lump sum tax is imposed after a proportional tax then the effect of that on income inequality depends on the proportional tax also. The usual definition of Lorenz curve is in terms of two equations both having a common parameter (decile or fractile) as given in Kendall and Stewart (1969). Gastwirth (1971) presents the equation of Lorenz curve as a single function of the percentile employing the inverse function of the cumulative distribution function. Such an approach provides an elegant analytic scheme for studying the effects of income transfers, through taxation, on income inequality. With the P C revolution and the availability of software for numerical integration this technique has great potential applications for studies on impacts of taxation on income inequality and welfare.

Another study that has a significant potential for future research on measurement of poverty is by Singh and Maddala (1976). They noted that the two distributions that are quite often used in income distribution studies, viz, the Pareto and the log normal, were not quite suited for the graduation of incomes. These authors capitalized on the well-known result that the larger the income the more is the probability of having more income. This phenomenon is just the opposite of the phenomenon of probability of survival with aging. The authors argued that upto a point, i.e., at lower levels of income, the failure rate or hazard rate defined by $f(y)/\{1-F(y)\}$ is increasing and then it is decreasing. And they also noted that this property is shared by the log normal distribution of incomes.

This approach of Singh and Maddala to relate probability distributions in economics to those in reliability theory of Barlow and Proschan (1965) has a great potential for further research on poverty measurement. This is because the deprivation function used in the poverty indices must be related to failure rate or hazard rate that measures the risk of survival. We shall return to this topic when we discuss the stochastic nature of deprivation.

There were quite a few studies that addressed to the question of dominance of one income distribution over another in terms of the dominating distribution giving rise to an unambiguously more equal income distribution than the other (Atkinson (1970a), Dasgupta, Sen, and Starrett (1973), Rotschild and Stiglitz (1973), and Kanbur and Stromberg (1988)). Bhatty (1974) and Moothathu (1991) examined a similar issue of deriving conditions for one Lorenz curve being entirely above another Lorenz curve. Monotonicity axiom plays a central role in measurement of poverty. This axiom imposes certain conditions on the cumulative distribution function as shown by Atkinson (1987) and Kumar (1992). Spencer and Fisher (1992) point out that this condition is same as the condition of stochastic ordering or majorization. Hence, there is a need to further explore in detail the applicability of the concepts of stochastic dominance and majorization developed by Marshall and Olkin (1979) to the problems of measuring and comparing poverty.

The problem of utmost significance in devising sustainable poverty alleviation programs is to treat income over individuals and time as a multivariate stochastic process and to derive conditions under which one stochastic process dominates another in terms of reducing the poverty index over a period. Kanbur and Stromberg (1988) examined this problem for a particular case in which a conditional transitional density was used. Employing the statistical theory of stochastic dominance and majorization of Marshall and Olkin (1979) some more research can be undertaken on this topic which has great policy relevance.

Most of the applied and empirical work on poverty measurement that one comes across is of the "economic statistics" variety such

as construction and comparison of economic indices. Several authors had computed poverty indices over time and space and made comparisons not realising or ignoring the fact that such indices were constructed on the basis of sample income distributions. They are therefore only estimates of the underlying population poverty indices.

Iyengar (1960,1964) derived a consistent estimator of the Lorenz ratio under the assumption that the underlying income distribution was log normal and that this sample distribution was available in grouped data form. Similarly Maiti and Pal (1988), and Kakwani and Poddar (1976) developed efficient methods of estimating the population Gini coefficient using grouped frequency distributions. However, it is very rare to find instances where a comparison of estimates of Gini coefficient over time or space is done against the standard errors of such estimates. Similar statement can be made regarding the comparison of estimates of poverty indices over space and time. There is a need to judge whether the observed differences in estimates of poverty over time and space or groups of persons are significant in relation to their standard errors which reflect the inherent variation attributable to mere random variation. One important statistical problem that needs immediate research attention is the problem of estimation of population poverty index employing grouped sample frequency distribution of incomes with a deterministic deprivation function. In this case the population poverty index can be written as:

$$P = \int_0^z d(y, z)\, f(y)\, dy \qquad \ldots\ldots\ldots (6.1)$$

Its estimate, based on grouped sample frequency distribution, can be written as

$$\hat{P} = \int_0^z d(y, z)\, f_n(y)\, dy \qquad \ldots\ldots\ldots\ldots\ldots (6.2)$$

where $f_n(y)$ is an estimated sample density function. The sample density function can be estimated either parametrically, assuming

a specific functional form for the density with unknown parameters or non-parametrically employing any one of the non-parametric Kernel estimators. If one interprets d(y,z) as the conditional mean of deprivation given an income of y then the poverty index P of (6.1) has the interpretation of unconditional mean deprivation. One can then treat (6.1) as being quite similar to a non-parametric regression and employ methods suggested by Nadaraya (1964) and Watson (1964). More importantly, one needs to know the properties of estimators P of (6.2) under various types of density estimators $f_n(y)$.

If a parametric approach is followed assuming a specific functional form for f(y) in (6.1) then one can derive an estimator of P based on appropriate sufficient statistics of the parameters of f(y) thereby assuring oneself of consistent and efficient estimator. If analytic methods become intractable for drawing inferences on the sampling distribution of the poverty estimator given by (6.2) one can employ bootstraps technique of Efron (1982) to generate replicated samples and generate sampling distributions of the poverty estimators. If non-parametric approach is adopted for estimating $f_n(y)$ then the problems of inference under that set-up are more challenging. One may refer to Prakasa Rao (1983) for inference in situations of non-parametric functional estimation.

There are some attempts in the literature for "correcting" or improving the estimate of Gini coefficient which was calculated from grouped sample frequency. Gastwirth and Glauberman (1976) proposed an interpolation formula employing Hermite interpolation. This approach is of the nature of curve-fitting and smoothing rather than efficiently estimating the Gini coefficient. Suryanarayana (1991) compared the Gini coefficients estimated by the traditional trapezoidal method and by the Kakwani and Poddar procedure and concluded that the estimates provided by the trapezoidal method underestimate the Gini index and that the estimate was sensitive to the method of estimation. It is possible to apply Gastwirth's method to the NSS data to improve the estimates of the Gini coefficient. But it is more interesting to assume a parametric form to the income density function and to

obtain an efficient estimator of the Gini coefficient based on sufficient statistics of the parameters of the density.

Suryanarayana and Geetha (1992) estimate Foster, Greer, and Thorbecke's poverty index using grouped sample income distribution and specifying a two parameter log normal distribution. The authors, while realizing this is a sample estimate of the population poverty index do not examine the properties of this estimator and its sampling distribution. Suryanarayana and Geetha express the Foster, Greer, Thorbecke index as a function of the moments of the log normal distribution. This approach opens up the doors for a series of interesting statistical problems. Some of these may be outlined here.

First, any deprivation function d(y,z) can be approximated by a sufficiently high degree polynomial in y, for a given z. Hence any general poverty index can thus be expressed as a function of the moments of the income distribution. Second, even if a given deprivation function can not be easily approximated by polynomial of a low degree, since the poverty index is only ordinal, one can ask if there is any monotonic increasing function of d(y,z) that can be approximated by a low degree polynomial. Third, since the statistical literature provides efficient methods for estimating the moments, one can take such estimates of the moments and derive efficient estimators of the poverty index. For instance one can take the maximum likelihood estimators for the moments. Then poverty index can be estimated as a function of such consistent estimators. Such an estimator of the poverty index which is a function of the maximum likelihood estimators itself will be consistent and efficient under certain very general conditions.

Many practical problems of poverty alleviation can be converted into policies aimed at modifying the income distribution so as to reduce poverty. Since the poverty index can be expressed in terms of the moments of the income distribution the policy problem reduces to that of choosing public policies that affect the moments of the income distributions in suitable ways. One can generalize the concept of regression which is an expression for conditional expectation or conditional mean. Similarly one can

define higher order regressions representing conditional variance and conditional third moment etc. These moments of income distributions can be expressed as functions of certain factors such as public policies aimed at poverty alleviation and other market forces. We thus have a hierarchy of regressions[6]:

$$E(y \mid X) = h(X; \beta) \quad \ldots\ldots\ldots\ldots (6.2a)$$

$$E[\{y - E(y|x)\}^2 \mid X] = k(X; \gamma) \quad \ldots\ldots\ldots\ldots (6.2b)$$

$$\ldots\ldots\ldots\ldots\ldots$$

etc.

From the coefficients of these hierarchy of regressions one can devise suitable policies such as altering the values of certain components of vector X which are under the policy makers' control. It is possible that some policies increase not only the mean of the income but also variance while some policies change only the mean and do not change the variance. This type of knowledge will help in designing optimum policies for poverty alleviation.[7]

The poverty indices defined in section IV assumed a deterministic deprivation function. Very little attention is paid in the literature regarding operational procedures for deriving the deprivation function. It was suggested earlier that consumption deprivation can be taken as the deprivation function. The question then arises as to whether consumption deprivation function can be regarded as deterministic. Consumption deprivation in fact should be regarded as stochastic since the amount of consumption expenditure for a given amount of income is not deterministically known. The usual interpretation of the consumption deprivation

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[6] It may be noted that the same way y_i is a sample information on the mean $(y_i+y_j-(y_i+y_j)/2)^2$ is the sample information on the variance. Hence the above expression can be calculated for every pair of observations and those calculated values can be used as values assumed by a dependent variable for the regression of the variance. The mean values of the corresponding pairs of values for x can be taken as the values of the independent variables.

[7] At the suggestion of this author Suryanarayana (1986) derived analytically the partial derivatives of the Lorenz Ratio with respect to the location and scale parameters of a log normal income distribution (Suryanarayana (1986) pp. 234-237). The type of hierarchical regressions given above together with such partial derivatives provide the necessary information to devise policies to reduce the income inequality.

function is that it is the mean value of consumption deprivation at a given level of income. The real problem with poverty is not the mean level of consumption deprivation, but it is the variability of the consumption deprivation. The lower income persons are more susceptible for deprivation as the spread of actual consumption is so wide due to high variance that it can go below the consumption requirements more frequently. Even if the variability is same at different income levels the probability that a person's consumption falls below the minimum required consumption is more for a lower income person than for a higher income person. This is because the mean deprivation is a decreasing function of incomes at all levels of income. It is this variability in the consumption deprivation, and that too the possibility of differential variability at different income levels, that causes a major problem for the poor.

The existing literature on poverty indices does not take into account this aspect of variance in deprivation level. A more useful measure of poverty can be derived as an (E,V) measure that is frequently used in portfolio choice:

$$P = \int_0^z E[d(y,z)]\, f(y)\, dy + \sigma \int_0^z V[d(y,z)]\, f(y)\, dy \quad \ldots\ldots (6.3)$$

$$(with\ \sigma > 0)$$

The problem raised by Sukhatme is a special case of this problem. Sukhatme treated z to be random (variability of intra-individual energy requirements). In general both actual consumption and the requirements may show variability giving rise to variability in d(y,z).

In fact the above suggestion to replace E{d(y,z)} by E{d(y,z)} + σ V{d(y,z)} is a standard approach of measuring risk. One can generalise this procedure and introduce alternative measures of risk in place of d (y,z). Another promising approach seems to be the approach of reliability theory. Based on the distribution of d(y,z) one can determine a hazard rate or failure rate function (Barlow and Boschan (1965)) and use that function instead of E{d(y,z)}. From a policy perspective the sustainability of a

poverty alleviation program depends on reducing the vulnerability of the poor people towards consumption deprivation. Hence sustainable poverty alleviation as a policy objective calls for devising a measure of poverty which captures such vulnerability. Equation (6.3) provides such an alternative measure of poverty.

The problems of statistical inference cited above with a deterministic or known deprivation function need to be modified to incorporate the stochastic deprivation function. The population poverty index may now be defined as:

$$P = \int_0^z E\{d(y,z)\}\, f(y)\, dy \qquad \ldots\ldots\ldots (6.4)$$

this case the sample estimate may be written as:

$$\hat{P} = \int_0^z \hat{d}(y,z)\, f_n(y)\, dy \qquad \ldots\ldots\ldots (6.5)$$

One needs to examine the sampling properties of this estimator. In the absence of any analytic approach to derive the sampling distribution of this estimator one can compute this estimator of the poverty index for given sample estimates $d(y,z)$ and $f_n(y)$ employing numerical integration, for which appropriate computer software is available. The bootstrap technique developed by Efron (1982) can be employed to generate sampling distribution of the poverty estimator given by (6.5). Similarly one should consider suitable modification of (6.5) if the population poverty index is given by (6.3).

Another important statistical problem is that of classification. If one knows that different groups of persons must have different poverty lines, the determination of which is quite difficult, and uses for convenience a uniform poverty line for all, what will be the extent of the errors in classification of the poor in different groups?

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T. N. Srinivasan

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POVERTY : SOME MEASUREMENT PROBLEMS*

T. N. SRINIVASAN

Development Research Center, World Bank, U.S.A.
and
Indian Statistical Institute, India

1. Introduction

The recognition that an important, if not the overriding, objective of economic development in less developed countries is to provide at least a minimum level of living for their entire population, is not new. As far back as 1962, the then chief of the Perspective Planning Division of the Planning Commission in India, the late Pitambar Pant, produced a paper exploring the implications for planning for providing a minimum level of living to the Indian population by the end of Fifteen year time horizon (Pant, 1974). An operational definition of poverty was used in this paper : a household was defined as poor if it cannot afford to buy (at the going market prices) a normatively set bundle of basic goods, particularly food[1]. At 1960-61 prices, this bundle cost Rs. 20 per capita per month. The pioneering approach of this paper was not reflected in the Indian Plans until a Minimum Needs programme was proposed in the Approach paper of the Indian Fifth Five-Year Plan (1972). The purpose of the present paper is not to go into the reasons for the failure of Indian Planning to pursue their earlier perceptions or to those that led some of the International organizations and aid donors to embrace what has come to be known as the Basic Human Needs approach to development, as if it is a fundamentally new discovery. Nor will some of the policy issues be discussed except in so far as they raise some problems of measurement (Srinivasan, 1977). The aim of this paper is to raise some conceptual and measurement problems relating to poverty with an aim towards formulation of policies for poverty alleviation[2].

Before entering into any discussion of measurement of poverty, it is important to draw attention to a problem which has both political as well as

* The views expressed are personal and do not necessarily reflect those of the World Bank and the Indian Statistical Institute.

[1] This bundle did not include education and health care and services that were sought to be provided through the public budget.

[2] Only the so-called "size distribution" of income or consumption among persons or households will be considered in this paper. Functional (i.e. as between wages and asset income), regional and other such distributions of total income will not be discussed.

philosophical dimensions. It can be argued that one should be concerned not with the observed inequalities in the income or wealth distributons but whether the institutional structure provides equality of opportunity in a broad sense. In other words, what one should be concerned with is equality of "access", be it to educational facilities, medical facilities, job opportunities and not necessarily with equality of "success", i.e., what different individuals make of the opportunities as long as the system is "fair". This is not to say that those who fail in a "fair" system should not be aided through transfers from those who succeed. However, this would not call for institutional change. If this view is accepted, one would want to measure the degree to which equality of "access" and fairness of the operation of the system is observed rather than the extent of inequality in the end results. Though this problem arises in the context of almost all issues to be discussed in the following, no further reference to it will be made for the sake of brevity.

At the outset, it is worthwhile to distinguish between *absolute* and *relative* measures of poverty. The most widely used absolute measure of the extent of poverty (at a point of time in some nation, state or region) is the proportion of the relevant population whose level of living falls below some *poverty line*. Often the level of living is identified with the per capita consumption expenditure (monthly or annual) of the household which a person is a member and the poverty line is the cost at relevant prices of a normatively defined basket of consumption. Perhaps as frequently, the level of living and poverty lines are defined in terms of per capita *income* of a household rather than its consumption. Less frequently, the level of living of a household is identified with its per capita calorie intake (monthly or annual) and the poverty line is the calorie requirement based on nutritional considerations.

The familiar measures, namely, the Gini coefficient of the distribution of persons (or households) according to income or consumption expenditure (per capita or total) is a relative measure in the sense it reflects the relative positions of different persons or households (Pyatt, 1977). So are other measures based on such a distribution, such as the coefficient of variation, variance of logarithm of income or consumption, the share in total income or consumption accruing to the bottom and top deciles, quintile or other percentile of the population. The relative measures are better described as summary measures of the inequality rather than as poverty measures. There is by now a growing literature on the economics of inequality measures, i.e., whether a particular inequality measure can be used as a social welfare indicator in the sense that the ranking of alternative income distributions according to some well-defined social welfare function is the same as that produced by

the inequality measure, as well as the statistical estimation problems (Sen, 1973 and Kakwani, 1977). While this literature is impressive and useful, the link between the positive aspects such as measurement (more appropriately, description) and the normative aspects of social and economic policy towards poverty abatement, has not received as much attention as it deserves. This is not to suggest that effects of some policies, such as, for instance, of the proposal for a negative income tax at the lower ends of the income profile in addition to the usual progressively aspects of it are not discussed extensively. But it is fair to say that this discussion is not usually in the context of poverty abatement and economic development of a less developed country.

The paper is organized as follows : In section 2, the problem of interpreting the data (cross-sections as well as time series) on income distribution is reviewed. In Section 3, the problems associated with defining an absolute norm called poverty line as well as estimating the proportion of a population having a standard of living lower than the poverty line are discussed. In Section 4, problems associated with estimating the impact of specific policy measures, such as investment in education, health care, etc., are discussed. Section 5, offers some concluding remarks.

2. Income distribution trends and patterns

Kuznets (1963) in his historical study of the development of some of the rich countries of Western Europe and North America put forward the hypothesis that as development proceeds, the inequality in the distribution of income first increases before it decreases. Ahluwalia (1976) tested the Kuznets hypothesis by relating the share in total income of the top 20%, middle 40%, lowest 60% (as well as 40% and 20%) of the population to the logrithm of per capita GNP in constant 1970 US dollars of 60 (developed and developing countries in the form of a quadratic regression. The relationship was estimated separately for the entire sample of 60 countries and a subsample of 40 developing countries. His results show that as per capita GNP rises, the share of income accruing to the poor—say the bottom 40%—first falls, reaches a minimum and then rises. The estimated per capita GNP at the "turning point", at which the share begins to rise again, is $ 468 if the entire sample is used and $ 371 if only the developing countries are considered. The income share of the bottom 40% falls from an average value of 17% at a per capita GNP level of $ 100 to 11% at the turning point, and rises to 15% at a level of $ 2,000. If this cross-section result is interpreted as if the increases in income were taking place over time, it confirms the Kuznets hypothesis,

There are a number of well-known difficulties with interpreting and projecting the cross-sectional relationship over time. One problem is, of course, the implicit assumption that the parameters of a cross-sectional relationship used for temporal projections are stable over time. In some situations where the data base is richer in that a time series of cross sections are available, various statistical techniques including that of variance components models, the random coefficients regression models, Kalman Filter models, etc., can be used to recover efficiently the information contained in the data (Maddala, 1971; Swamy, 1970 and Cooper, 1973). The well-known and oft-repeated issues relating to whether GNP is an appropriate indicator of the level of development or the less stressed, but perhaps more important problem, namely, that GNP estimates for different countries (or for different time points for the same country) are subject to differing conceptual and measurement errors need not detain us. Given the policy emphasis of the present paper, two issues are particularly relevant. If the cross-sectional relationship is accepted as a valid tool of projection over time, is there an implicit denial in such acceptance of any role of economic policy in changing income distribution ? A literal interpretation of the statistical assumption underlying the model, namely, that the residuals (i.e. the departure of an observation for a country from the expected value over countries with the same GNP) are random and have the same probability distribution as GNP varies, would suggest this to be the case. If, however, one assumes that the residual represents both random factors as well as any policy differences between countries with the same GNP, the statistical assumptions on the distribution of residuals have to be strengthened to state that residuals include "country effects" that are uncorrelated with other explanatory variables such as GNP of the country. In the former case, one would be interpreting the cross-section relationship and the projections from it as representing some sort of "iron law" of development. In the latter case, at best one obtains projections for each country that corresponds to an unchanging country effect or policy mix with no clue as to how policy changes may affect the projections.

There is another important problem in using relationships and descriptions related to a point in time. It is not always clear whether and to what extent, the relationships represent a long run structural aspect of an economy. This can be illustrated by the following. Suppose we are comparing the income distribution among persons in two different economies at a point in time and let us assume for the sake of argument that they happen to be the same and the common distribution is characterized by extreme inequality. Suppose, further, that in one of the economies the observed distribution

represents only the relationship between income and age of person, in the sense, that every individual in this economy will have the same income profile over his life time with low incomes when young and old, and higher incomes during the middle years. For contrast, let us assume that in the second economy, there is no mobility of individuals across income profiles in the sense that a person born poor (rich) stays poor (rich) and dies poor (rich). It is obvious that the observed income inequality in the first economy, is irrelevant from a policy angle, since the life-time income profile of all persons are identical whereas the same level of inequality in the second economy is far more serious from a policy point of view. There have been some attempts to apply a Markovian model with a transition probability matrix describing the probabilites of an individnal belonging to one income group in one period staying in the same or moving to another income group in the next period. On a version of this approach, see Champernowne (1973).

The above illustration, while extreme, in itself, raises a number of measurement issues. It has been suggested that the "life cycle" aspect of the income profile over time of an individual is better reflected, if instead of comparing the distribution of actual income, one compared the distribution of "permanent" incomes. The trouble is that there is no completely satisfactory proxy for the unobserved and unobservable permanent income studying the distribution of material and financial assets is not adequate for this purpose. Those who believe the permanent income hypothesis of Milton Friedman (1957) to be an adequate description of behavior, would suggest that the distribution of consumption is the relevant distribution to study when the aim is to examine the distribution of levels of living. The latter is not affected much by transitory phenomena, in the sense that the variance of the transitory components of consumption are considerably less than that of income. There is also the additional advantage that consumption is less subject to conceptual and measurement error than income. The fact that in most household surveys in which data on both income and consumption expenditure were collected show negative saving by households with low per capita income is consistent with the permanent income hypothesis. At any rate, it is fairly clear that the inequality of observed incomes overstates the inequality in the levels of living appropriately defined.

It may be worthwhile to point out here that data on consumption are often collected through household surveys in which the household's consumption in the previous week or month (called the reference period) is recorded. The design of the survey usually is such that the enquiry is suitably spread throughout the year and the sample size is set appropriately so that the

annual *average* per capita consumption is estimated with very little seasonal bias and a sampling error not exceeding a desired value. But in so far as any inequality measure is an increasing function of the variance of the distribution as obtained from the survey, an element of upward bias arises due to seasonality. However, surveys which draw their samples of households from a listing of houses may miss some of the really urban poor who live in slums not included in any house list. Equally, the non-response from the extremely rich is likely to be higher. As such, the survey based measure may also have a downward bias. But, if these biases are constant over-time, estimates of trends in inequality are not affected. Further, if as is often done, the average per capita consumption of selected deciles or quintiles of the population are also estimated, the problem of inadequate sample size as well as biases also arise.

In the discussion so far, it was tacitly assumed that somehow or other a distribution of *individuals* in the relevant *population* according to their income or consumption has been obtained. Of course, this distribution is a derived construct : the primary data are available in the form of distribution of (i) individuals according to their earnings, (ii) income tax assessees according to income as defined for taxation, (iii) households according to their income or consumption and so on. In deriving the distribution of individuals, two alternative approaches are available : attribute to each individual who is a member of the household (or a dependent of an earner or assessee), the *total* consumption (or earnings or income) respectively of the household (earner and assessee) or alternatively one can attribute to each individual the *per capita* income (earnings or consumption). It is important to note that the two alternative descriptions of the same data may yield different policy inferences : again to take an extreme illustration, the distribution of persons according to total household consumption may just reflect the differences in household size so that no matter what the household size happens to be, its per capita consumption is the same. Admittedly this is extreme. On the other hand, household size per se may not be revealing. For instance, it has often been observed that single member households fall in both tails of the distribution : rich, single and the eligible at the upper tail and the poor, old and unemployable at the lower tail.

The above discussion suggests that it could be misleading to make policy inferences without carefully analyzing the age-sex composition of the households, the educational attainment of its members, its material asset holding, etc. Again to illustrate: if it so happens that the households that fall in the lower tail of the relevant distribution are characterized by their high dependency

ratios and possibly being headed by females with dependent children or consist of the elderly or the disabled, the relevant policy option would be one of the income transfers to them. On the other hand, if the poor households are characterized by their poor asset holding (say, land) and/or by their members being illiterate or poorly educated, the policy intervention could also include asset redistribution, better and greater access to education, etc. Indeed these considerations have led the National Sample Survey in India to collect data on the "weaker" sections of the society, employment and unemployment, asset and liabilities of rural housheolds, etc. These data have not yet been fully analyzed taking into account possible interrelations among these variables[3]. The analysis has to go beyond an attempt to "decompose", for instance, a chosen measure of inequality into contributions of various "factors" and their interactions, almost by analogy with analysis of variance. While the analysis of variance has behind it a statistical model, the decompositions of measures of inequality often have no explanatory model or theory behind them so that they are no better than ex post accounting. As such, not much can be learnt about the process of generation of inequalities (Rao, 1969; Pyatt, 1976 and Mangahas, 1975).

It is also worth mentioning that, even though the household surveys often can provide data on asset (human and material) holdings, the information on the "quality" or "productivity" of these assets is usually not collected or may even be impossible to collect. Again, as an illustration, the Indian data show that small farmers tend to have a larger proportion of their land irrigated. But the concept of irrigation used in Indian data is to classify any land that received at least one irrigation during the crop season, however inadequate it might have been, as irrigated. Clearly from a productivity point of view, irrigation quality (intensity) as well as quantity is important. The "quality" of skills and education (i.e. human capital) is even more difficult to assess. There is a further problem that an identical asset may yield different returns to different individuals, because the access to and/or the terms at which other inputs are acquired for making productive use of the asset may differ between individuals.

If the cost of fertilizer or irrigation water or credit are not the same for two farmers holding land of identical inherent fertility but in different amounts (as is often the case, the large farmer gets inputs at a lower cost) then the

[3] The Income Distribution Division of the Development Research Center at the World Bank is currently engaged in analyzing household survey data from a number of South Asian and Latin American countries in a research project in collaboration with ESCAP and ECLA. The World Employment Programme of the ILO has also generated a number of studies.

size differential in their holdings will understate their income differential. Obviously, if other contractual aspects of cultivation, such as the forms of tenancy or sharecropping, are also brought in, the picture becomes even more complicated. More generally, in understanding the proximate causes of poverty, one will necessarily have to probe into the nature of the markets or other institutional arrangements by which resources get allocated and their returns determined.

3. Definition and measurement of a "Poverty Line"

In defining the "poor", one could adopt either a *relative* concept, such as that any one is deemed to be poor if that person is a member of a household that happens to fall in the bottom 40% of the relevant income or expenditure distribution or an *absolute* concept that a person is poor if the income or consumption of the household is below a normatively defined *poverty* line. While it is clear that in understanding poverty, the absolute concept is more useful, its usefulness is intimately connected with the definition (and measurement) of the poverty line.

As stated earlier, there have been two main approaches in the literature in defining a poverty line at a *point in time*; the first is to define it as the cost of a bundle of "basic goods" at the relevant prices (Muellbauer, 1974)[4] and the second is to define it as a nutritional norm, such as the "required" intake of calories and proteins.

A number of measurement problems arise in using either definition. The composition of the bundle of "basic goods" is not independent of the socio-cultural characteristics of the population and the structure of the economy, or even the climate of the country. Even if we assume that "basic goods" are defined narrowly to include consumption of food, clothing, shelter, and services, such as education and health, the fact that some of this consumption is provided to households through the public budget becomes relevant. The Indian norm of poverty mentioned earlier, specifically excluded publicly provided services and defined the poverty line as the mimimal per capita household expenditure that was expected to cover the cost at base year (1960-61) prices of a basket of basic goods in the market. Implicit in this

[4] Clearly in defining the bundle, the size and age-sex composition of the household has to be taken into account. If we rule out economies of scale in consumption, then only the ratio of a household's income (or expenditure) to the cost of its basic needs bundle is relevant, those with a ratio less than 1 being defined as poor. There are a number of articles on the methodology as well as empirical estimates of consumer unit scales to adjust for age-sex composition of a household.

is the belief that the excluded items of consumption will somehow be provided to the required extent to all sections of the population. Whether, in fact, this has happened is an issue on which the evidence is fragmentary—there are few studies on the distribution of benefits from public expenditures on health, education, water supply and sanitation, etc.[5] Be that as it may, there is a further problem that the prices for the same set of commodities vary depending on the location of the transaction (rural, urban, metropolitan, etc.), time of year, and, more importantly, on the economic status of the buyer. Thus, it is often the case that the poor pay more and get an inferior variety or brand of the same commodity that the rich get cheaper. These issues become extremely important if one were to make comparisons (over time and or space) of the proportion of the poor in a population (Srinivasan and Bardhan, 1974). Frequently, however, they are ignored and inferences as to trends in poverty are drawn on the basis of as few as two observations widely separated in time (Griffin and Khan, 1976). There is some evidence, at least for India, that the fluctuations over time in the proportion of rural population below the poverty line are substantial; while there is no time trend in the proportion, the fluctuations appear to be associated with those in agricultural output per head (Ahluwalia, 1977 and Sen, 1974). It turns out that Ahluwalia's results are not affected if the so-called Sen index of poverty is used rather than the proportion of poor in the population for comparisons over time.

A nutritional requirement based poverty line is fraught with even more problems of a conceptual nature. This is particularly the case when the poor are defined as persons who are members of households whose per capita calorie intake falls below some average norm set for the population as a whole. Even if one were to ignore the intra-household variations (in actual intakes) so that the per capita intake represents the actual intake of each member of a household, the fact that the calorie norms vary from person to person (and, in fact, from day to day for the same person), can result in erroneous estimates of the population of the poor. To take two extreme examples : if every person, in fact, consumes as much calories as his "norm", by definition there are no poor persons in this society; yet, by identifying the proportion of persons whose intake is less than the *average norm* for the population as the poverty proportion, we obtain an overestimate of the extent of poverty. At another extreme, if everyone consumed the same number of calories but

[5] Besides the question of incidence of public expenditure on these items as well as the means to finance it, there is also the question whether the level of expenditure is "optimal" in some well-defined sense.

the individual requirements varied, the estimated proportion of the poor (i.e. those with a calorie deficiency) in the population could be either 100% or 0% depending on whether the identical consumption is less or greater than the mean requirement, while the true proportion, of course, will be somewhere in between. Sometimes, the single number used to characterize the distribution of calorie requirements of a given population may include a substantial safety margin above the mean requirements, thus adding to the possibility of over-estimation of the proportion of poor. Some of these problems are discussed by Sukhatme (1977), who shows, that, if instead of using a poverty line based simply on average calorie requirements, allowance is made for variations in individual requirements, the estimated incidence of poverty in India is brought down from about 50% to about 25% in urban areas, and from about 40% to about 15% in rural areas.[6] Indeed, as he points out, from a policy point of view, the fact that these proportions are not as large as was once believed, raises the hope that the problem of poverty amelioration need not be intractable.

In some studies, it has been observed that calorie intake based estimates of the proportion of malnourished can be substantially different from the proportion obtained of when malnourishment is defined in terms of body weight in relation to some suitable standard. All this suggests, that perhaps the most reliable method of estimating the extent of malnourishment is anthropometric measurement and only recently this has come to be extensively adopted in poor countries. Even if the best estimate of the malnourished is available, there is still the problem of its utility for policy purposes. Firstly, the evidence on the deleterious effects of mild malnourishment is scanty since most studies concentrate on the severely malnourished. Secondly, and more seriously, the problem of malnutrition may have other explanations besides inadequate calorie intake, such as disease and unsatisfactory food habits. Thirdly, certain sections of the population, such as children, particularly female children, expectant and nursing females, etc., may be particularly susceptible to malnourishment because they may not get their due share of the household food consumption—the experience with direct nutrition intervention programs directed towards these groups in India has not been

[6] At the request of FAO, the National Sample Survey in India has tabulated the calorie and protein content (per consumer unit per day) of the food consumed according to per capita total consumption expenditure of the household. These data were collected as part of a nation-wide survey during July 1971-June 1972. Sukhatme's analysis relates to earlier data. It is not clear whether this elaborate tabulation by itself adds very much to our understanding of poverty or malnourishment.

spectacularly successful.[7] Finally, to dispel malnutrition may require raising incomes, making available appropriate foods, reducing the incidence of diseases and changing food habits. Further, provision of pure drinking water may rise the nutritional and health status of the population without any additional food intake, simply by reducing the incidence of gastrointestinal diseases. Better education may again improve nutrition by enabling individuals to improve the nutrition content of their food basket by proper choice of foods, etc. The complementarity as well as substitution possibilities in all these suggests that it would be misleading, as is often done, to estimate separately the proportion of population subject to calorie deficiency, to diseases of various kind, lack of protected water supply and sewerage, etc., the investment and other costs of eliminating these deficiencies and adding up these proportions and costs to arrive at the extent of poverty and the cost of its elimination. Even at a national level, this procedure is dubious. But some hardy souls attempt global estimates. For examples of such flights of fancy, (see McHale and McHale, 1977). Another extreme approach is to define a hierarchy of "wants" or "needs", say food, clothing, shelter, etc., in that order. Then anyone who has inadequate food will be termed poor even if he is well clothed and housed. If he is well fed, then he is termed poor only if he has inadequate clothing etc. The inadequacy of this approach is apparent.

4. Health, education and poverty abatement

It was mentioned above that there are complex interrelations among nutrition, health and hygiene and education. Attention was also drawn to the fact that poor households are often characterized by high dependency ratios, in particular, having a larger proportion of non-earning children. The relationships between fertility and infant mortality on the one hand, and between these two and nutrition, health and education, particularly female education on the other, are relevant in understanding the dynamics of poverty. Space does not permit a detailed discussion of the issues involved. It can be stated without fear of contradiction, that while a number of hypotheses are available in the literature on the nature of these relations, very few of them have been tested statistically with adequate and reliable data from developing countries (Cassen, 1976; Rosenzweig and Evenson, 1977).

[7] It has been suggested that one reason why direct intervention programs, such as mid-day meal at school do not show any effect (i.e. no significant difference between the nutritional status of children subject to the program compared to control groups) is that poor families often send their children to school without feeding them at home. Thus the school meal acts as a substitute and not as a supplement to home food.

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Nevertheless, there are signs that many of the countries in which the majority of the world's poor live seem to have passed the peak in the growth rate of their population (McNamara, 1977). The decline in brith rates is more pronounced and perceptible in some countries, such as Sri Lanka and regions of India, such as Kerala, where longstanding public policies towards better education (particularly of women), nutrition and health care seem to have reinforced each other in bringing about the decline (U.N., 1975). This interesting study reaches some rather far reaching conclusions that not many would draw from the same body of data.

Turning now specifically to education, the available data do suggest that poor households have disproportionately higher concentration of adults and children with little or no formal education. It has also been frequently said that poor countries invest in higher education (rather than in primary education, adult and functional literacy programs) more than they should, in some sense. Both the data on the poor and the alleged misdirection of educational expenditure reflect the notion that investment in education will certainly bring high private returns to the educated while the returns to the society from expenditure on education, at least some forms of it, may not be that high. An extreme version of this difference between private and social returns to education arises in the screening theory of education, in which education simply acts as a signal to the potential employers of the inherent ability of the individual who has acquired the education, and, as such, education has no social productivity (Arrow, 1973). The individual has an incentive in getting educated, thereby revealing his superior inherent ability and receiving its reward; for the employer, it serves the useful purpose of screening out those with low inherent abilty. But since the individual's productivity depends in this extreme case only on his or her inherent ability, and not on the particular job assigned to him or her, there is no social benefit from the individual's acquiring education. In sharp contrast, the human capital view of education treats educational investment on par with investment in physical capital and both have social as well as private returns though they may differ. Needless to say that both the screening theory and the human capital theory describe some valid facets of education, but neither provides the only and exclusive rationale for an individual's acquiring education. However, it is obvious that, if expansion of educational opportunities is one of the poverty abatement policies, it would be useful to measure the returns to education.

There have been a number of studies in which returns (social and private) to education have been estimated by essentially comparing the earnings of

those with a specified level of education (more precisely schooling) to those with the next lower level of education (Chamberlain and Grilliches, 1975 ; Blaug Layard and Woodhall, 1969). An interesting methodological problem of "self-selection" has only recently surfaced in this connection : suppose, only those who believe that they can benefit from getting educated go to school and if their beliefs in fact come true, any method of estimation of benefit that does not allow for this self-selection may be misleading (Maddala, 1977).

5. Conclusion

Before concluding, a brief reference may be made to the literature on quantitative models of economic development, both to the planning and simulation models that have explicitly oriented towards policies for poverty abatement and reduction of income inequalities (Maddala, 1977: Adelman and Robinson, 1977; Bacha and Taylor, 1977; Ahluwalia, *et al* , 1977; and Adelman *et al* , 1977). These models attempt to incorporate some of the demographic variables and their interrelationships with economic variables. The simulations from these models show surprisingly little redistribution effect from almost any policy short of changing the human and physical asset distribution. Only when a number of policies are simultaneously applied, some perceptible redistribution effect emerges. These disappointing results point to the need for more empirical work in understanding and quantifying the complex economic, demographic and socio-cultural causes of poverty so that a better analytical framework for policymaking becomes available. In devising such a framework, the political and institutional factors clearly have to be brought in. To conclude :

1) It is essential to distinguish between *inequality* (of an income distribution) and *poverty*, both from measurement and policy points of view.

2) There are a large number of conceptual problems in making policy use of cross-sectional relationships (whether the cross-sections relate to countries or to households within a country).

3) Two alternative methods of defining an *absolute poverty* line have been proposed in the literature : the first defines it in terms of income or expenditure needed to ensure that a household can afford to purchase in the market a basket of "basic goods". The second defines it in terms of the required intake of "calories". Though both measures involve a number of conceptual and operational problems, perhaps the expenditure based definition is preferable.

4) Even if an adequate definition of poverty is available, the interrelationships between policies to abate poverty are not solidly established. Direct interventionist policies raise further problems, not only regarding their feasibility and efficiency, but also from a much broader point of view, that they sometimes invade into what are essentially private decisions, such as the allocation of food among family members, the decisions on family size, on migration from rural to urban areas, etc. It can be argued that the aim of policy should be to create the decision environment through appropriate incentives (and non-coercive disincentives) in which individuals decide of their own choice, to move in the direction that the society would want them to move.

5) The lack of knowledge about interrelationships and complementarities is most evident in the areas of fertility, health, nutrition and education.

6) Given the severity of the measurement problem, any unidimensional description of the nature and extent of poverty should be avoided.

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Abstract

The paper raises some conceptual and measurement problems relating to poverty with an aim towards formulation of policies for poverty alleviation. After drawing a distinction between *relative* measures of the *inequality* associated with an income distribution and *absolute* measures of *poverty* such as the proportion of population having a level of living below a normatively defined *poverty line*, the paper discusses measurement problems associated with both. Problems of interpreting and using estimated cross-sectional and time series relationships for policy formulation are discussed. Attention is drawn in particular to the conceptual and measurement problems associated with *poverty* lines based on nutritional norms. It is pointed out that a serious gap exists in the literature from a policy point of view. This gap is the lack of firm knowledge about interrelationships and complimentarities in the areas of fertility, health, nutrition and poverty.

Résumé

Ce document aborde certains problèmes conceptuels et de mesure posés par la pauvreté, en vue de la formulation de politiques susceptibles d'atténuer ce fléau social. Après avoir fait la distinction entre la mesure *relative* de l'*inégalité* associée à une certaine répartition du revenu et la mesure *absolue* de la *pauvreté*, donnée par exemple par le pourcentage de la population ayant un niveau de vie inférieur à la norme définie comme *seuil de pauvreté*, l'auteur examine les difficultés de mesure qui apparaissent dans les deux cas. Il étudie notamment les problèmes que soulèvent l'interprétation et l'utilisation, aux fins de formulation de politiques, des relations estimées sur la base de données transversales et de séries chronologiques ; l'accent est mis en particulier sur les problèmes conceptuels et de mesure que pose la définition des seuils de *pauvreté* à partir de normes nutritionnelles. Comme le souligne cette étude, la littérature spécialisée présente en effet, du point de vue de l'élaboration des politiques, une grave lacune : l'incertitude des connaissances actuelles touchant aux relations de réciprocité et de complémentarité entre fécondité, santé, nutrition et pauvreté.

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T. N. Srinivasan

Development, Poverty, and Basic Human Needs: Some Issues

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T. N. SRINIVASAN*

DEVELOPMENT, POVERTY, AND BASIC HUMAN NEEDS: SOME ISSUES†

From the earliest days when development planning was attempted in many of the developing countries, raising the standard of living of the poorest sections of the population to an acceptable level has been one of the major goals, explicitly stated as such in the development plans in some countries and implicit in others. However, over the nearly three decades of experience, the perceptions of the strategies to be pursued in trying to achieve this goal have changed.[1] The early development plans aimed at accelerating the rate of growth of real national income, focusing essentially on the process of capital accumulation and its allocation. The need for raising domestic savings as well as supplementing it by external capital flow was emphasized. The debates were on the sectoral allocation of investment, such as between agriculture and manufacturing industry, choice of technology, and import substitution versus export promotion. The question of how the benefits of growth in national income were shared by different socioeconomic groups in the society was infrequently raised. One reason for this neglect was, of course, the belief that even the poorest will benefit from growth, more so since institutional changes that were promoted at the same time, such as some land reform and an increasing role of the public sector, were supposed to facilitate this. Perhaps the main reason was that in the framework of a mixed economy that excluded any revolutionary restructuring of production and exchange relations, excessive emphasis on redistribution at an early stage in the growth process was thought to retard growth and hence the long-run feasibility of sustaining any appreciable increase in the levels of living of the poor.

The conviction that sustained and rapid growth is the desirable route toward a better life for the poor countries as well as the poor in these countries was shared by the major aid donors. Once the poor countries reached the stage of sustainable and sustained growth, that is, the "take-off" stage in the terminology of the

* The author is Special Adviser at the Development Research Center of the World Bank and Research Professor at the Indian Statistical Institute, New Delhi.

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[1] See Minhas (*18*) for a wider discussion of these issues.

times, they would increasingly look like the mature economies of the West. Furthermore, the late start of these countries would enable them to take advantage of modern technology and, with aid, to shorten considerably the period needed to reach the take-off as compared to the historical experience of the mature economies. Aid was viewed as helping this process of modernization without revolutionary change.

In the early 1960s, at least in one major developing country, India, doubts began to be raised whether in fact the poor had benefited from the growth in national income achieved in the 1950s.[2] Further, by the middle and late 1960s, there was growing disenchantment with foreign aid in some of the major developed countries for various reasons. But it did not reflect any significant rethinking of development problems. In fact, the Pearson Commission reporting to the President of the World Bank in 1969, held that during the first two decades of developmental efforts, the less developed countries grew faster than the industrialized countries did at a corresponding stage in their development. It was also argued that if only the industrialized countries would fight off their aid weariness and actively augment the flow of aid, the less developed countries would succeed in lifting themselves out of the depths of underdevelopment in reasonable time (9).

Events subsequent to the report of the Pearson Commission showed that aid weariness did not disappear. The Commission's target for aid flows was not only not achieved but the ratio of aid flow to gross national product (GNP) began to decline for some of the major aid donors. By the early 1970s, concern about environmental pollution led to a questioning of both the feasibility and the desirability of further growth of GNP in many developed countries, including the United States. This period also marked the realization that the problems of the poor in developed countries were far harder to solve through public welfare policy than had been believed earlier. These domestic concerns led to some change in the understanding of development issues as well. Many aid donors explicitly shifted the emphasis in aid policies to the problems of the poor.

The concern about the distributional aspects of growth was reflected in appeals by the International Labour Office (ILO) and others to make the creation of productive employment opportunities, rather than aggregate income growth, a primary objective of policy. "A fundamental redirection of development strategy" was called for consisting of a rural strategy that "focuses on increasing the productivity of the small farmer and the self-employed through better access to land, water, credit, markets and other facilities" and an urban strategy of "[restructuring] the modern sector to make it more responsive to the opportunity cost of labor and capital . . . [and] policies designed to reach the self-employed and to make small-scale producers more efficient" (8, pp. xvii-xviii). Subsequent emphasis in the World Bank on integrated rural development

[2] Prime Minister Nehru of India was one of the earliest to voice doubts about the impact of such strategies on the poor. The Committee on Distribution of Income and Levels of Living was appointed by the Government of India in 1960 to inquire into the changes in levels of living during the First and Second Plans, to study the trends in distribution of income and wealth, and in particular to ascertain the extent to which the operation of the economic system has resulted in concentration of wealth and means of production (11, p. 1).

strategies and the choice of urban projects for Bank support reflected this perception.

The apprehension that even the suggested shift in emphasis toward employment goals may not be enough to tackle the problem of poverty within a reasonable time led the ILO to go a step further. The declaration of principles and program of action adopted by the Tripartite World Conference on Employment organized by the ILO proposed that strategies and national development plans and policies should include explicitly, as a priority objective, the promotion of employment and the satisfaction of basic needs of each country's population. It further specified that basic needs should be understood to include certain minimum requirements of a family for private consumption, such as adequate food, shelter, and clothing as well as certain household equipment and furniture, as well as certain essential services, such as safe drinking water, sanitation, public transport, and health, educational and cultural facilities (*16*).

It is of interest to note that just as redistributional concerns were first expressed in India, employment generation in addition to income growth was included as an objective as early as 1956 in India's Second Five-Year Plan. Further, the main ideas of the basic needs approach to the problem of the poor can be traced to the paper by the late Pitambar Pant of the Indian Planning Commission (*13*). The author explicitly posed the problem of poverty alleviation in terms of providing at least a minimum level of living for the entire population. This minimum needs basket included essential items of consumption such as food, fuel and light, clothing, and shelter, as well as services such as health, sanitation, safe drinking water, and education to be provided through the government budget. The author recognized that some sections of the population might not benefit from development that creates productive employment opportunities because of the high dependency ratios in their households. These groups were to be provided their minimum level of living through income transfers. The problem was also posed of determining a rate of income growth that would not be so high as to be infeasible, but high enough to enable the minimum needs to be met. In one sense this article is a precursor of Chenery (*8*) with its emphasis on the income-earning capacity of the majority of the population, but it also goes beyond in explicitly focusing on basic or minimum needs. However, it had little influence on Indian policy until 1972, when the approach paper on the Fifth Five-Year Plan included a minimum needs program as part of the plan that was quietly dropped in the draft as well as the final version of the plan.[3]

In the remainder of the paper, it is proposed to examine the extent to which the development performance of some of the major developing countries would corroborate the premises underlying the "new" perceptions on development, evaluate the basic needs approach, and finally raise some policy issues. It will draw on both analytical studies and on actual experience in various countries, including the papers presented and the discussions at a workshop organized by the World Bank on Analysis of Distributional Issues in Development Planning and held in Bellagio, Italy, during April 22-27, 1977. A complete list of papers is given in the Appendix.

[3] In the early 1970s there was extensive discussion among Indian economists on quantifying the extent of poverty as well as on the evaluation of policies pursued toward poverty abatement. See Srinivasan and Bardhan (*23*).

POVERTY AND INCOME DISTRIBUTION: CROSS-SECTIONAL EVIDENCE AND TIME TRENDS

The extent of poverty in a country or region can be measured using either absolute or relative indicators. Perhaps the most widely used absolute measure of poverty is the proportion of the population below some poverty line. The familiar measures of income inequality, such as the Gini coefficient, variance of the logarithm of individual incomes, coefficient of variation, share in income or consumption accruing to the bottom and top deciles or quintiles, are relative measures, in the sense that they reflect the relative positions of different individuals or groups of individuals in respect of their income or consumption. It is perhaps better to describe them as summary measures of the inequality of income distribution rather than as poverty measures. There are a number of conceptual and measurement problems associated with both absolute and relative measures, none of which will be discussed in this paper. (See 22.)

Cross-sectional Evidence

Kuznets, from his historical study of the development of some of the presently developed countries, hypothesized that income inequality first increases and then decreases as development proceeds. In testing this hypothesis, Ahluwalia related the share in income of various income classes to the logarithm of per capita GNP in constant 1970 U.S. dollars of 60 (developed and developing) countries, in the form of a quadratic regression.[4] The relationship was estimated separately for the entire sample and a sub-sample of 40 developing countries. His results showed that as per capita GNP rises, the share of income accruing to the poor—say the bottom 40 percent of the population—first falls, reaches a minimum, and then rises. The estimated per capita GNP at the "turning point," at which the share begins to rise again is $468 if the entire sample is used and $371 if only the developing countries are considered. Their percent share in income falls from an average value of 17 at a per capita GNP level of $100 to 11 at the turning point, and rises to 15 at a level of $2,000. This cross-sectional result appears to confirm the Kuznets hypothesis.

There are well known difficulties with interpreting and projecting a cross-sectional relationship over time. The cross-sectional curve essentially represents an average relationship. The deviation of an individual country observation from the estimated curve could be viewed as the effect of the policies being followed as well as other relevant specific features of that country. Two types of projections can be made from the curve: in one, starting from any level of per capita GNP, one projects the per capita income for a future year and from the curve reads off the share of the bottom 40 percent. Making projections in this way, one is really comparing the expected income (hypothetical average) share of the bottom 40 percent in countries which have the initial level of per capita GNP to the expected share in countries where income has reached the projected value. This type of projection is clearly not country-specific. In the second type of projection, one starts from the given initial income level and the initial share of the bottom 40 percent, then one adds the change in the share as estimated from the curve to the

[4] The income classes were: top 20 percent, middle 40 percent, lowest 60 percent, 40 percent, and 20 percent of the population. See Ahluwalia (2, pp. 307-42).

initial share to obtain the share associated with the projected terminal income. In this exercise, some allowance is made for the country's specific initial circumstances. Projections of either type, if they mean anything at all, indicate what might happen if incomes changed but the distributional and other policy environment did not change significantly. It would be wrong, therefore, to interpret the curve and the projections from it as representing some sort of "iron law" of development. It is, however, possible to make some limited and stylized policy simulations based on the curve.

Time Trends in Poverty

Turning now from cross-sectional studies to time trends in poverty, Griffin and Khan concluded that "development of the type experienced by the majority of Third World countries in the last quarter century has meant, for very large numbers of people, increased impoverishment" (*14*). This conclusion seems to be somewhat hasty since continuous and comparable time series data on the size distribution of income or expenditure are not available for most of the developing countries. At best, data relating to two or three points in time are usually available, but even so these data sets are rarely comparable, because of changes in concepts and coverage. India is a major exception in that annual data on a comparable basis are available on consumption expenditure by households separately for the rural and urban area of each of the major states, as well as for the country as a whole. The data for India do not confirm the Griffin-Khan conclusion.

Ahluwalia used the Indian data to show, first, that in rural areas, where nearly 80 percent of India's population lives, the proportion of the population below a normatively defined poverty line fluctuated substantially over the period 1956/57 to 1973/74, falling initially from over 50 percent in the mid-1950s to around 40 percent in the early 1960s, and then reaching a peak of nearly 57 percent in 1967/68 before declining (*3*). Second, there was no evidence of a significant trend in these fluctuations over time. Third, though the fluctuations in the incidence of poverty in individual states largely follow the all-India pattern, showing no clear trend, there is a statistically significant positive time trend (that is, the proportion of people below the poverty line steadily increased) in three states, and a negative trend in one state. The state of Punjab is among those showing no clear trend—surprisingly, since real income and agricultural output grew faster here than in most other states. Fourth, for India as a whole there is a significant inverse relationship between the incidence of rural poverty and real agricultural income per head. This is also true in seven individual states (again with the surprising exception of Punjab), covering two-thirds of the rural population in India. Fifth, the relative inequality, as measured by Gini coefficients, of the distribution of per capita household consumption noticeably declined in eight states out of thirteen, while the remaining five showed no trend. Thus Ahluwalia found no significant increase in the proportion of poor in India, and relative inequality appeared to have decreased. Indirect evidence, such as the rising expectation of life at birth, and declining mortality (including infant mortality) and fertility rates would seem to corroborate the conclusion that there could not have been a serious decline in the living standards of the poor.

It might be argued that the fact that nearly half the Indian population falls below the poverty line in spite of over 25 years of development planning is in itself proof of the failure of the development strategy pursued by India. It is beyond the scope of the present paper to evaluate India's development efforts. It suffices to state:

1. Whatever its other results, Indian planning did not result in growth rates of real national income as high or as steady as those in some other developing countries.

2. Even the moderate growth achieved has decelerated since the late 1960s—a period that was also marked by a steep drop in the external resource inflow, the onset and strengthening of inflation, and a substantial drop in the growth of real public investment, as well as what some believe to be a slowing in the growth of food output, despite the Green Revolution. Not surprisingly, in the late 1960s the incidence of poverty rose some after falling from the middle 1950s onwards.

3. The economic policies pursued, such as the bias against export activities, use of administrative controls as a resource allocation mechanism and, above all, the failure to enforce legislated institutional changes, such as land reform, meant that both growth and income distribution performance were worse than they could otherwise have been. India is clearly not an example where a successful growth strategy failed to help the poorer sections of the society.[5]

Based on data for six years in the 1960s, instead of only two as used by Griffin and Khan, and three different poverty lines corresponding to a calorie intake of 95, 92, and 90 percent, respectively, of the requirement, Naseem showed that the proportion of the rural population of Pakistan below the first poverty line decreased initially and then increased, while there is no trend if the other two poverty lines are used (19). However, it should be pointed out that there are conceptual difficulties with using a calorie requirement based poverty line. These are discussed later.

Contrasted with India's unspectacular growth record, Brazil has had an average annual growth of real income exceeding 6.5 percent since 1950. But data on the size distribution of income are available only for the years 1960 and 1970 from the demographic census data and for the year 1972 from a special household survey. The census data do not include income in kind, direct tax payments, and unrealized capital gains. Some of the controversy on the Brazilian income distribution performance arises out of differing interpretations and adjustments made to the census data. Other data of varying quality and quantity are available relating to average wages, occupational wages, factor shares, and distribution of earnings in the formal urban sector. While it is hazardous to base statements about time trends on only two or three observations, Fishlow reported a consensus among scholars that relative inequality increased in the decade of the 1960s, though not enough to force down the absolute incomes of the poor (9). However, some would argue to the contrary on the basis of the reported increase in infant mortality rates in some areas. Also, the regional economic disparities in Brazil where, for structural reasons, the Northeast continues to be relatively poor, have to be kept in mind. Among those who do not deny that income distribution

[5] For further details see Bhagwati and Desai (5), Bhagwati and Srinivasan (6) and Srinivasan and Bardhan (25).

deteriorated in a relative sense in the 1960s, there are two prevalent schools of thought. One focuses on the unequalizing effects on incomes of wage increases for skilled labor, demand for which increasingly exceeds supply as aggregate growth accelerates. The other stresses the importance of the post-1964 wage squeeze, which slowed down inflation somewhat, but with rapid growth also allowed shares of profits and top remunerations to increase. Bacha and Taylor are "agnostic but predisposed toward the wage squeeze explanations" (4). Fishlow rejects the hypothesis of "unequalizing inevitable effects of growth" arguing that the "Brazilian experience seems to have been one in which the strains of growth have been amplified rather than counteracted by policy" and that a policy of increased governmental transfers that are linked to educational investment in rural areas is not only feasible but will help offset some of the concentration in incomes (9).

Korea and Taiwan provide examples of countries where real income growth was both rapid (with annual growth rates exceeding 7 percent since the early 1960s) and apparently shared—and increasingly—by those at the bottom of the income distribution. Reliable data are available for Taiwan on a continuous basis only from the mid-1960s. Somewhat less reliable data for two years in the 1950s show that Gini coefficients then were comparable to those in other less developed countries. The Gini coefficient for all households in Taiwan remained virtually constant at about 0.33 between 1964 and 1968, and then declined by over 11 percent between 1968 and 1972. Both Korea and Taiwan were Japanese colonies and went through major structural changes following the Second World War, redistributing land and other productive assets not destroyed during the war. Both have followed similar policies in respect of foreign trade. Ranis argued that (20)

> the dominant cause of the relatively favorable income distribution performance in Taiwan . . . [was] the massive shift of rural households from agricultural to non-agricultural activity in the presence of a dynamic agriculture and in the absence of massive rural/urban migration . . . Taiwan continued to invest heavily in its decentralized infrastructure . . . encouraged rural industry directly via rural electrification grid, the maintenance of equality in power and fuel rates as between rural and urban locations, and the establishment of rural-industrial estates, bonded factories and processing zones located with an eye to rural location and mobility . . . [succeeded] in the maintenance of a surprisingly high labor share in urban industrial *cum* service activities [through] a labor-intensive output mix and technologies, intimately tied up with the relative mildness of import substitution combined with [subsequent] thorough liberalization efforts.

In the Korean case also the share of agriculture in employment declined substantially while the share of the manufacturing sector increased with remarkably little capital deepening as reported by Rao (21). Within manufacturing substantial growth of labor-intensive export activities has occurred. Rural-urban income differentials were narrowed through a variety of policy instruments, including intervention in the determination of grain prices. For the economy as a whole the average real wage has increased by about 7 percent per year during 1963-75. While the regime has not encouraged union activity, and strikes have

been illegal, there is apparently government pressure to improve the earnings level of low wage groups. Emphasis on primary education and a successful campaign of adult education have reduced illiteracy to negligible levels. This has helped the industrialization process by making available well-trained and trainable workers.

The brief review of data suggests that it is simplistic to argue that in spite of growth poverty has increased in developing countries.[6] It does clearly indicate, however, that other policies that were (or equally were not) being followed along with the emphasis on aggregate income growth had a lot to do with success or failure in achieving growth as well as equity. Also, it is not easy to isolate the effect of changes in "initial conditions" on which policies must be brought to bear—such as those wrought by social revolution (China, Cuba) or by war (Korea, Taiwan)—either in bringing about equity initially or in increasing the chances of success of equity-promoting policies subsequently.

There is no denying, however, that the extent of absolute poverty in the less developed countries as a whole, and in some of the poorer, larger, and more populous among them, is indeed staggering. It is this, rather than any claims of its logical evolution in development theory with emphasis first on income growth, then on employment, and finally on basic needs, which necessitates a careful analysis of the proposed basic needs strategy.[7]

BASIC NEEDS APPROACH: DISTINGUISHING FEATURES

The approach to the problem of poverty contained in Chenery (8) and even in the Minimum Needs Program of the Indian Fifth Plan in essence is a strategy of insuring that adequate real purchasing power is placed in the hands of the poor. Except for the socially provided services, the consumption pattern is to be determined by private market decisions. The Indian approach is to determine the necessary level of purchasing power on the basis of the cost of the minimum consumption needs basket, again excluding socially provided services. Except for those groups among the poor who cannot take advantage of employment and income generation opportunities and who are to be provided transfer income, the poor are to be reached through the income generation process.

The basic needs approach, on the other hand, does not rely solely on income generation or transfers, and places primary emphasis on the production and delivery to the intended groups of the basic needs basket through "supply management" and a "delivery system."[8] In a system in which production and consumption decisions are primarily mediated through the market, the failure of

[6] Needless to say, the responsibility for the particular use (critical or otherwise) of the data and the interpretations derived lie with the authors of the papers presented at the workshop.

[7] There is also a cynical interpretation of the conversion of some developed countries to the basic needs approach. By linking aid to performance of developing countries in providing the basic needs of their population (and given the inherent difficulty of a successful basic needs strategy), such developed countries can de facto reduce their aid commitment while still appearing to be concerned about poverty! Further, insofar as basic needs goods are primarily agricultural, emphasis on basic needs will have the added consequence of slowing down industrialization of developing countries and hence growth of their demand for non-renewable resources.

[8] While there are by now a number of articles and pamphlets on the basic needs approach, the clearest and most balanced account is given in Streeten (24).

the poor to get their basic needs presumably reflects not only the unequal initial distribution of real purchasing power, but also market imperfections and failures. In such a context redistribution of purchasing power alone may be insufficient to insure that the poor receive their basic needs: market interventions may be necessary on a continuous basis.

It can be argued that by selective direct interventions in the production and distribution processes (rather than through creating purchasing power in the hands of those who need it and expecting them to consume the basic needs basket), the basic needs approach may lead to the provision of basic needs to people at much lower levels of aggregate income per head than would otherwise be possible. Further, it is possible that in tackling nutritional deficiencies and similar problems, the income route may be inefficient, if only because ignorance of nutritional principles or preference for less nutritious foods as incomes rise. The key issue then becomes one of delivery: is it possible to insure that the poor get a nutritionally adequate diet in a cost-effective way? A similar issue arises in the provision of health services and water supply. If the government or the ruling elite's preferences result in the public budget being used for arms, airports, big urban hospitals, and higher education, instead of rural clinics, water supply, roads, and primary education, the key question becomes how a shift in these preferences might be brought about. In analyzing the delivery issue its political implications are inescapable: the question really is "what sort of feasible production organization, institutional reform, and interventions are required in this or that particular country to provide basic needs on a sustainable basis?" Some of these issues will be taken up in the policy discussion below. But first it is necessary to discuss the quantification of the basic needs bundle.

Measurement of Basic Needs

Even if the basic needs program were to be focused simply on eliminating inadequacies in the caloric content of food consumption, quantification would not be easy.[9] A person's calorie "requirement" depends on his age, sex, and normal activity, so there is a distribution of calorie requirements for a given population at a point in time.[10] Where a single number is used to characterize this distribution, it is very often calculated so as to incorporate a substantial safety margin, in the sense that if every member of the population took in this specified number of calories per day, the actual calorie requirement of, say, at least 95 percent of the population would be met. While the true measure of the population with deficiency in calorie consumption is that part of the population whose members actually consume less calories than their individual requirements, the usual estimates are based on a comparison, for the population as a whole, of the actual consumption with the single number estimate of the calorie requirement for the population as a whole.[11] Estimates of a population's calorie deficit made this way

[9] Some years ago alarms were raised about protein deficiency in the diets of the poor and the dire consequences thereof. It was later established that protein deficiency is part of a broader problem of inadequate food and energy intake. Protein deficiency by itself without other deficiencies is infrequently observed.

[10] A person's requirement can vary from day to day. See Sukhatme (25).

[11] Household survey-based data give total or per capita calorie consumption of each household thus averaging out intra-household variations. An additional element of bias arises out of this situation.

can exceed or fall short of the true value: to consider an extreme example, if everyone actually consumed the same number of calories but the individual requirements varied, the estimated proportion of the population with calorie deficiency could be either 100 or 0 percent, depending upon whether the identical actual consumption was less or greater than the norm. The true proportion, of course, will be somewhere in between. Sukhatme showed that if, instead of using a poverty line based simply on average calorie requirements, allowance is made for variations in individual calorie requirements, the estimated incidence of poverty is brought down from about 50 to about 25 percent in urban areas, and from about 40 to about 15 percent in rural areas (25). The literature on malnutrition has very little to say on the effects of mild malnutrition.[12] This aspect becomes relevant if for lack of resources or other reasons it is not feasible to meet the calorie requirement of the entire population fully.

Another, perhaps more serious, problem is that nutritional intervention alone, better water supply, or curative medicine may have little effect on the mortality or morbidity of a poor country, though if they are combined their impact can be considerable. This suggests that the quantification of basic needs, if feasible at all, will have to be in terms of a bundle of things together rather than specific requirements independently derived of the elements constituting such a bundle. This issue is discussed further in the policy section below.

It is sometimes asserted that the great strength of the basic needs approach is that by focusing directly on nutrition, health care, and so forth, it will have a very favorable impact on fertility, infant mortality, or labor productivity. But these effects may be present regardless of whether the poor live better because they have higher incomes, or because their basket of basic needs is delivered to them. This being the case, the issue is really whether a basic needs approach will succeed in raising the quality of life of the poor more effectively than other types of policies. Again this depends on the policy framework.

It is clear that it makes little sense to attempt to define universal standards of basic needs, and that efforts at global modelling along this direction or at global cost estimates for meeting basic needs are futile.[13] The measurement problem may lead some to conclude that it would be a sheer waste of time to wait for the results of research on resolving these, and that the need of the hour is to push governments to a commitment to seeing that basic needs are satisfied on a sustainable basis over a reasonable period of time. Many would argue on the other hand that while the cliché that "the best need not to be enemy of the good" has some measure of validity, the issue is one of arriving at an appropriate set of policies.

Policy Framework of Basic Needs

Approaches to development problems other than basic needs implicitly or explicitly face the issue of temporal trade-offs in the sense that raising the incomes

[12] The proportion of the population that is malnourished, measured as those "consuming less calories" than their requirement, can be different from the proportion obtained if malnourishment is defined in terms of body weight in relation to some standard.

[13] There are a few hardy souls who are undeterred by conceptual or data problems. For flights of fancy in global estimation, see McHale and McHale (17) and Burki and Voorhowe (7).

of the poor through redistribution now, if pushed, makes it difficult to sustain these incomes if the redistribution cuts too much into savings for growth. The literature on basic needs has not adequately discussed the issues of trade-offs among different basic needs (food, shelter, or health) at one time and over time, that is, satisfaction of a basic need now, versus more of this good or another in the future. Given that resources are scarce, increasing the supply of one set of goods involves the sacrifice of one or more other goods, if the system is productively efficient initially. Either basic needs involves the production of a different consumption basket with the same resources that were earlier devoted toward consumption, in which case investment (in the aggregate though not in composition) is not affected, or, even if resources have to be diverted away from investment activities to producing basic needs, the productivity-raising aspects of basic needs will be sufficient to offset the loss in future production possibilities that would otherwise have occurred. Whether the trade-off problem is serious or not then becomes an empirical issue. Both Sri Lanka and Tanzania have followed a basic needs-type strategy apparently at the expense of growth, and thus of future capacity to provide basic needs, and it is possible that both will find it difficult to continue this strategy.[14]

The distinction between countries in which a moderate redistribution of current income flows would be adequate to meet the basic needs of the entire population (for example, Brazil, Mexico) and countries where even the most radical redistribution feasible will still leave a large section of the population with deficiencies in their consumption of basic needs (Bangladesh, India, Pakistan) is clearly important from a policy angle. The temporal trade-off mentioned earlier is far more serious in the latter group of countries. In the other group, policies to close the basic needs gap need not necessarily involve major structural change.

The extreme fuzziness in the basic needs literature on policy aspects can be illustrated with reference to nutrition programs. As mentioned earlier, it is believed that raising the incomes of the poor need not eliminate their nutritional deficiency since, left to themselves, the poor may spend their additional incomes either on foods of lower nutritional content than those consumed at low levels—for example, replacing coarse with finer cereals, such as rice and wheat—or on non-food items. On the other hand, direct nutritional-supplementing programs oriented toward target groups, such as pregnant or lactating mothers or school children, have often run into substitution problems: for example, if pregnant women treat the special foods merely as substitutes for what they would have eaten at home, or where the supplementary food provided in a school program is offset by reducing the food intake of children at home. This may not be altogether bad, in the sense that the household as a whole benefits either because others eat more than they would otherwise have, or because some resources are released for consumption of other items. But the primary objective, namely to reach the target groups, is not achieved. Indirect evidence for this phenomenon has come from several studies which show only insignificant differences between the average weight gain or health situation of intended beneficiaries of special feeding programs and the weight or health observed in control groups. Besides being

[14] There is some doubt whether Tanzanian income inequality has declined as much as claimed by some.

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ineffective, such programs are very costly ways of doing wrong things. The Applied Nutrition Programs that have been part of the Five-Year Plans in India for over a decade have run into similar problems.

It was mentioned earlier that there is a significant complementarity among health, sanitation, water supply, and nutrition programs. In the absence of a safe water supply and control over communicable diseases, efforts at improving the nutritional status of the population may be ineffective and costly. And in the absence of adequate nutrition, resistance to diseases will be lower and the cost of curative health programs will be higher. A critical minimum effort may be needed in all these directions simultaneously if each is to have any effect at all! The impact of the spread of education on raising the productivity of investment in all these areas in general and in nutrition programs in particular may be significant but is as yet not fully researched.

Another important issue in providing many of the basic needs is the question of appropriate technology and delivery systems. A water supply scheme which would be prohibitively costly if it used the urban technology of advanced countries may become feasible if local initiatives and resources are used in conjunction with a technology which does not necessarily involve individual house connection to water mains. Thus the sociopolitical institutional framework in which the basic needs programs are to be implemented may be the overwhelming determinant of their feasibility and effectiveness.

The importance of the content and the system of delivery of health care cannot be underestimated. Reference has already been made to the inadequate budget share and the ill-conceived delivery system (modern large urban hospitals) of health care in many of the developing countries. However, there are countries (even if the People's Republic of China is left out), such as Sri Lanka, or regions within a country, such as Kerala in India, where the conception and delivery of health care have differed markedly from that elsewhere in developing countries. Critical evaluation of these efforts in a comparative framework would yield valuable policy lessons, as would a similar analysis of policies toward education and literacy. It is no coincidence that the contrast in the educational policies of Korea and Taiwan on the one hand and of Brazil on the other is remarkable.

Apart from the vagueness of a basic needs approach in respect of crucial policy aspects, there is an inherent contradiction in the position adopted by some basic needs proponents. It blames the existing sociopolitical framework with its vested interests for preventing the poor from sharing in the fruits of development, while at the same time these institutional bottlenecks are assumed to be somehow less relevant for a basic needs strategy.

Distributional Policies: Models, Facts, and Politics

There are by now a number of computable development models incorporating redistributional considerations in one form or the other. The consumption vectors in some of the early exercises in the 1960s on input-output based consistency models for India were derived using estimated Engel curves and alternative Lorenz ratios of the distribution of consumption expenditure. An updated version of this type of exercise was part of the Fifth Five Year Plan (*12*). These exercises were of limited use since the policies that were to bring about the reduction in

inequality of consumption expenditure were not part of the model. By contrast, the models for Brazil, Korea, Malaysia, and the Philippines attempt to link income generation to factor endowments through factor prices in a general equilibrium framework in which most factor and commodity prices are determined endogenously. Some of these models, for instance, the one for the Philippines, include a demographic subsystem as well.

The conclusions that emerge from the policy simulations of the Korea and Philippines models are:

1. The size distribution of income remains exceedingly stable even in the face of substantial policy interventions.

2. Further, the relative degree of poverty and wealth as a whole is much less affected than the location (rural or urban) or poor and wealthy.

3. Limiting population growth leads to a deteriorating income distribution and increasing poverty in the short and medium term; beneficial effects emerge only in the very long term. Rural-urban migration is the most important demographic variable in improving income distribution, up to a 25-year horizon.

4. Appropriate trade strategy will help increase the absolute incomes, as well as the share, of the poor.

5. Agricultural terms of trade are the most important policy instrument for improving the lot of the poor.

7. Above all, only a massive, wide-ranging, balanced and continued attack on poverty and maldistribution of income has much chance of succeeding; lesser modifications to existing strategies will fail. Successful planning of income distribution can be devised using an integrated array of policies, without changing the fundamental rules of the economy (*1*).

It appears that the specification of these models explained some of their counter-intuitive results. The result from the Korea model that any increase in agricultural productivity would be absorbed through a reduction in the agricultural terms of trade, and hence would increase inequality, stemmed directly from the model's peculiar lack of attention to foreign demand for agricultural output; considerations of comparative advantage and access to the world markets were modelled inadequately in respect to the agricultural sector. For small open economies, such as Korea, this does not make sense. The result that limiting population growth had negative effects on income distribution, except in the very long run, seems to arise from the effect on the agricultural terms of trade of the shift in demand for agricultural products, relative to their supply, which is caused by lower population growth. This suggests that the agricultural sector had been inappropriately modelled. The remarkable insensitivity of "size" distributions to policy changes may be due to the fact that these models basically describe the functional income distribution, the size distribution being derived more or less mechanically from it. The flexibility of money wages and prices built into the model, along with some payment flows fixed in nominal terms, meant that substantial changes in exogenous demand had limited effects on the overall level of economic activity and the distribution of income.

The models for Brazil reviewed in the paper by Bacha and Taylor focus on the savings-investment equilibrium (*4*). As exogenous demands for investment, exports, or government consumption shift, relative prices and employment (and hence income flows) adjust to maintain the macro-economic balance, while the

exact mechanisms of adjustment vary from model to model. As investment demand increases with growth, income distribution becomes more concentrated, to the benefit of high saving groups. While the model results are by no means conclusive, Bacha and Taylor believe that their models are no worse, and perhaps better, than other explanations of Brazilian income inequality.

The above discussion suggests that general equilibrium neo-classical models with fairly smooth price adjustments may not be satisfactory tools for analyzing dynamic processes arising out of discrete jumps, rather than gradual changes, from an initial position of disequilibrium. Indeed most of these models are essentially comparative static in character, and in the dynamic models the postulated dynamic adjustment mechanisms, such as the determination of aggregate investment and its sectoral allocation, are often simplistic. It is conceivable that structural changes (in ownership of assets, labor force participation, skill acquisition, and demographic characteristics) are the dominant forces in effecting any significant changes in income distributions and available models are inadequate to portray the process of structural change.

Country Experiences

In evaluating the policies pursued in countries that have experienced improvement in their income distribution (Korea, Taiwan) and deterioration (Brazil, Colombia, the Philippines) two divergent characterizations are possible. One could attribute the "success" of Korea and Taiwan more to the change in their "initial" conditions brought about by the violence of war, occupation by non-native regimes (mainland Chinese in Taiwan) and the interest of the dominant military allies of the regime (the United States in both Taiwan and Korea) than to their subsequent economic policies. In this view, the success of Korea and Taiwan was not replicable in other countries with different initial conditions. The other characterization, while not denying the importance of initial conditions, would suggest that the mix of economic policies actually pursued did matter a great deal. Taiwan, while initially following import substitution policies in consumer goods, soon enough switched to a policy of encouraging labor-intensive industrial consumer goods. On the other hand, Colombia and the Philippines maintained an import-substitution strategy, extending it to more capital-intensive intermediate and capital-goods industries. The location of industrial estates in rural communities enabled Taiwan to pursue a balanced agricultural and non-agricultural rural growth. Korean growth involved very little capital deepening in the aggregate and its emphasis on labor-intensive manufactured exports was similar to that of Taiwan. This enabled Korea to absorb a growth in the labor force of more than 3 percent per annum during 1963-75 and to reduce unemployment significantly. Both in Taiwan and Korea, real wages rose significantly once the labor surplus phase was over. Rural-urban wage differentials were not allowed to deteriorate, and in fact were improved by government interventions in the determination of agriculture's terms of trade. The contrast with the policies pursued in the other group of countries, particularly in Brazil, could not have been greater. The success of Taiwan and Korea, it could be argued, strengthened the case for a feasible reformist strategy in other countries.

Political Framework and Distributional Policies

At the risk of sounding naive and ignorant politically, a few remarks on the politics of income distribution will be offered. It is obvious that except in the unlikely situation where everyone benefits from a policy change, the gain to the poor in a redistribution policy has to be at the expense (at best relatively and at worst absolutely) of the non-poor. If a reformist strategy oriented toward redistribution is to be successfully implemented either the regime has to be sufficiently authoritarian to be able to impose it, or, in a liberal and plural framework, those in power have to be able to count on or able to mobilize the support of a broad coalition of necessarily different interest groups that nonetheless advocate the reforms proposed for their own reasons. Some would argue that historically speaking major redistributions of wealth have resulted only after a war or occupation by a foreign power or they have been imposed by an authoritarian regime or a violent revolution. However, these events are either exogenous or unlikely to be deliberately promoted by governments in power. Reformist, rather than radical, strategies are likely to be the only feasible options for improving distribution in most countries. While it is of great interest and importance to understand how viable, progressive coalitions of interest groups could be formed in different situations, this process is not easily modelled nor can it be orchestrated from outside. The brighter side of the picture is the fact that the technological and institutional (in a broad sense) conditions under which a reformist strategy could be pursued in the third quarter of the twentieth century are not the same as those that existed in countries where redistribution took place after violence of one sort or another. For instance, the technology of the so-called Green Revolution is, if anything, scale-neutral. New high-yielding varieties raise output per acre as compared with traditional varieties, even if no additional inputs of fertilizer or water are used. To the extent that this is valid, lack of thoroughgoing land reform is less serious a bottleneck than it would otherwise have been. To say this is not to minimize the need for land reform.

SUMMARY AND CONCLUSIONS

Before offering some concluding remarks, it is useful to summarize briefly the above discussion. The cross-country data seem to support the hypothesis of Kuznets that as development proceeds, income inequality worsens first before it improves. But clearly this is not an iron law of development as is evident from the variations in the performance of different countries. There is no strong evidence to suggest that the problem of absolute poverty in developing countries has worsened despite growth in GNP in the last three decades. In fact, the evidence is mixed: poverty has been significantly reduced in some but not in others of the group of fast growing countries. Similar mixed evidence was obtained with respect to slow growing countries as well. A shift of development policy, to the provision of basic needs to target groups through selective interventions in the production and distribution processes, in spite of its appeal on the surface, appears to be based on an inadequate understanding of the conceptual and measurement problems in quantifying basic needs and on an almost naive belief

that the very same institutional bottlenecks that prevented the benefits of growth from reaching the poor to any significant extent, would somehow be absent if the policy is the provision of basic needs to the poor. It appears that the only sensible approach is to emphasize growth as in the past, but supplementing (rather than supplanting) the growth strategy with policies toward better distribution of benefits of growth and experimentation with alternative approaches and delivery systems for providing food, education, health, water supply, and sanitation to the poor. The question then is whether such a "reformist," as contrasted with a "revolutionary," strategy depends for its adoption and success more on favorable initial conditions, which in the past have been brought about by exogenous events such as war or occupation, than on the economic policies pursued during the course of development. No firm answer seems to emerge from the analysis of the development policies and performance of the developing countries since the Second World War.

It would be a serious error to conclude that the growth performance of the developing countries is insignificant and that there has been no improvement in the levels of living of the poor. The growth rates achieved by these countries since 1950 are impressive compared to their own past record and to the record of presently developed countries when they were at their initial stage of development. Nor have the poor been completely left out of the development process. Indicators such as expectation of life at birth, mortality rates (in particular, infant mortality), and school enrollment rates do suggest that some improvement has taken place in the levels of living of the poor. Undoubtedly growth achievements have fallen short of expectations. But it would be tragic if the serious misunderstanding of the performance of past development strategy leads to the adoption of development policies based on ill-defined concepts such as basic needs, to the detriment of growth. A development strategy cannot be fully articulated on the basis of the need to provide a limited set of goods and services to a part of the population. Nor can any success achieved in the provision of basic needs be sustained in the future without growth. Instead of turning into a blind alley, students of development should devote their efforts to the difficult task of understanding the sociopolitical characteristics of the development process. Such an understanding is the first step on the road toward developing a framework for defining and evaluating alternative development strategies for poverty alleviation.

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APPENDIX

PAPERS OF THE WORLD BANK WORKSHOP ON ANALYSIS OF DISTRIBUTIONAL ISSUES IN DEVELOPMENT PLANNING, BELLAGIO, ITALY, APRIL 22-27, 1977

1. I. Adelman, M. J. Hopkins, S. Robinson, G. B. Rodgers, R. Wery, "A Comparison of Two Models for Income Distribution Planning"
2. M. S. Ahluwalia, "Rural Poverty and Agricultural Growth in India"
3. M. S. Ahluwalia and J. Duloy, "Poverty Alleviation and Growth Pessimism: A Reexamination of Cross-Country Evidence"
4. E. L. Bacha, "The Kuznets Curve and Beyond: Growth and Changes in Inequalities"
5. E. L. Bacha, and L. Taylor, "Brazilian Income Distribution in the 1960s: Facts, Model Results and the Controversy"
6. C. L. G. Bell, "A Simple Dualistic Economy in a Comparative Statics Setting"
7. M. Bruno, "Distributional Issues in Development Planning: Some Reflections on the State of the Art"
8. H. B. Chenery and N. Carter, "International Aspects of Poverty and Growth"
9. A. Fishlow, "Brazilian Income Distribution: Does Trickle-Down Really Work?"
10. K. Griffin and A. R. Khan, "Poverty in the Third World: Ugly Facts and Fancy Models"
11. G. Lamb, "Distributive Politics in Tanzania"
12. D. Lehmann, "The Death of Land Reform"
13. ————, "The Politics of Armaggedon: Chile 1970-73"
14. M. Lipton, "The Technology, the System and the Poor: The Case of the New Cereal Varieties"
15. C. Lluch, "On Simple Macroeconomic Models"
16. G. Pyatt, "Labor Markets and the Efficiency of Labor"
17. G. Ranis, "Equity with Growth in Taiwan: How Special is the Special Case?"
18. D. C. Rao, "Economic Growth and Equity in Korea"
19. G. B. Rodgers, "Demography and Distribution"
20. F. Stewart, "Inequality, Technology and Payments Systems"
21. P. Streeten, "Basic Needs: An Issues Paper"
22. L. Taylor and F. Lysy, "Vanishing Short-Run Income Redistributions: Keynesian Clues about Model Surprises"

THE WORLD BANK
Headquarters:
1818 H Street, N.W.
Washington, D.C. 20433, U.S.A.
European Office:
66, avenue d'Iéna
75116 Paris, France
Tokyo Office:
Kokusai Building,
1-1 Marunouchi 3-chome
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CHAPTER II

The Structural Nature of Poverty in India

F. Franco S. J.

Introduction :

Poverty in India has been a much-discussed phenomenon; a great deal has also been done to reduce its severity and dimensions. At the same time, one is left with the feeling that there remains, in many minds, the unstated belief that poverty, like malaria, is a disease contracted by individuals at birth, due to some external, unavoidable natural causes. Like malaria–eradicating programmes, anti-poverty programmes tend to conceive the poor (and poverty) as a target group which can be sprayed with benefits so that every year a number of them can cross a certain magical line (the poverty line) and be cured of poverty, as one is cured of malaria.[1] This unconscious belief assumes that poverty is mainly an individual phenomenon capable of being quantified and analysed by counting heads.

This paper makes a deliberate attempt to state the opposite: poverty is not only or even mainly the problem of some individuals — however numerous they may be — who are deprived of the necessities of life, but a necessary corollary of a society which is organised and structured in a particular manner.

The *logical* theme developed in the paper runs as follows: economic activities or practices play a decisive role in shaping the life of society. Economic growth may not, necessarily, be equated with growth in the welfare of people, but economic development is an important determinant of the latter. A tradition of economic theory, which tends to be constantly relegated, by interested parties, to the archives of history, attributes to the economic surplus generated by society a prominant role in the analysis and understanding of socio-economic change. The size and composition of this surplus determines, to a great extent, the pattern of future development. Effective control over the

distribution of the surplus results in control over the pattern of development and change; it, therefore, follows that the crucial factor in the analysis of societal change is the analysis of the *means* by which people achieve control over the surplus. It is, ultimately, the effective ownership of various assets that entitles individuals and groups to control the distribution of the surplus. This effective ownership must be understood not in terms of legal rights alone, but rather in terms of existing power relations: an unequal distribution of assets is concomitant with an unequal distribution of power. Asymmetrical power relations determine a social structure that in turn maintains and reproduces an unequal and unjust pattern of asset-distribution. The circle is closed and the movement repeats itself. Poverty is not only a situation of deprivation for individuals or groups, but a set of unequal power-relations existing within a particular society, affecting all its members. These power-relations determine a concrete situation in which a number of people are unable to control their own lives and destinies. Poverty is not a line or a number, but the result of structural relations of dominance. An analysis of poverty must, therefore, explain the unequal distribution of assets and, finally, identify the groups that control the distribution of the surplus and the distribution of power.

Pedagogical considerations have been responsible for altering the logical order of the argument in the exposition that follows. The first section poses the problem of the coexistence of growth and poverty which must finally be explained by structural causes. The second section analyses the unequal distribution of assets in India using the conceptual terminology developed by Amartya Sen; it should be clear that the use of Sen's conceptual framework is subordinated to the understanding of the centrality of the surplus. This approach creates a definite boundary between Sen's analysis and the argument developed in this paper. The third section contains the main theoretical assumptions and explains the conditions that generate poverty; it is logically prior to the other two sections. The last section examines the nature and behaviour of the groups controlling the surplus and follows generally the ground already explored by other political economists like P. Bardhan and R. Sau.

Two further clarifications are in order: *first,* there is a certain bias in the paper towards economic facts; it must be constantly borne in mind that we understand the term "economic" as always including relations of power among people; at the same time, limitations of space have prevented us from treating other semi-autonomous social forces and processes like caste, in greater detail. *Second,* we have neither dealt with the policy implications emerging from this analysis nor have we attempted a critical review of anti-poverty programmes.

I. COEXISTENCE OF GROWTH AND POVERTY

The past thirty years have witnessed a dramatic transformation of the Indian economy, which is reflected in the growth rates experienced by some key indicators. During the period 1951–1985, national income and per capita income have grown at 3.5 and 1.4 per cent per annum, respectively.[2] Net domestic product at 1970–71 prices, has more than doubled in the last 25 years: from Rs. 24,360 crores in 1960–61 to Rs. 57,286 crores in 1984–85. The growth measured by these indicators has been reflected in a number of areas.

(i) Creation of a broad and varied industrial infrastructure: for instance, crude oil production which was non-existent in 1950–51 has reached the level of 29 million tonnes in 1984–85; fertiliser consumption which was almost non-existent in 1950–51 has reached the figure of 8.4 million tonnes in 1984–85; this amounts to a four-fold increase over the last ten years.[3]

(ii) Outlays during the various plans have been largely financed from internal resources, creating no problems of debt-servicing similar to those experienced by many developing countries today. Development has largely been self-sustained.

(iii) A three-fold increase in food-grain production during the past years has made the country self-sufficient with a surplus stock, at the end of 1985, amounting to more than 23.73 million tonnes, which is approximately 15.8 per cent of the annual production. India's dependence on

food imports has ended. This has made possible the creation of a public distribution system and the use of foodgrains for the generation of employment in the rural sector.

(iv) A phenomenal increase in banking facilities especially as regards the quantum, form, and terms of credit to the agricultural and industrial sectors: deposits have increased from Rs. 1,160 crores in 1956, to Rs. 84,719 crores in 1986; the number of branches of commercial banks has increased, in the same period, from 5,078 to 51,385.[4]

The past thirty years have definitely seen more growth than the previous twenty centuries, or to put it differently, growth of this magnitude in India is a post-Independence phenomenon. A number of observations support this statement.

(i) In 1950, income per head in India was Rs. 466 (at 1970-71 prices) and this low level of income could hardly have grown from a much lower base.

(ii) If an average Indian in the year zero A.D., had yearly enjoyed Rs. 230 worth of goods (at 1970–71 prices), growth at only 0.5 per cent per year would, by 1950, have brought him to an amount of Rs. 31.48 lakhs per year.

(iii) Historical reconstructions suggest that income per person in India stagnated between 1600 and 1900, and fell between 1900 and 1950. The colonial "drain", however it may be measured, during the British rule, must be held responsible for this stagnation. Mass outflows of revenue were directed to the metropolis. S. Habib and U. Patnaik have estimated that during the crucial decade of 1795–1805, a quarter to a third of the UK's domestic capital formation was financed by the Indian tribute.[5]

(iv) The comparison, in terms of area cultivated, yield per hectare and agricultural output, between the pre and post-independence rates of growth, shows that the exponential rates increased from 0.4 to 0.8 per cent, from negative to 1.4 per cent and from 0.4 to 2.6 per cent, respectively.[6]

Though substantial, these rates of growth do not compare favourably with the performance of other countries. Agricultural output in China and India has trebled in twenty-five years, but China started with much higher levels of output than India. This means that China's increase in agricultural output has to be attributed to considerable increases in yield per hectare. Per capita steel production In India is about 16 kgs, while the world figure is estimated at 161 kgs in the period 1973–83. A glance at Table 1 shows that India's industrial growth rate has been comparatively low.

Recent studies on industrial production in India agree that after the mid-sixties, there has been a significant decline in the growth rate.[7] At the same time, further increases in agricultural output will have to depend more and more on raising the yields of various crops, since further area extension is not feasible.

In short, the growth experienced by the post-Independence Indian economy has been unparalleled in its own history, but compared to the growth of other developing countries, it has been a slow and painful process. The past thirty years have also witnessed the concomitant phenomenon of mass poverty, that is, no mere pockets in backward areas, but a staggering number of people living below the poverty line throughout the country. The poverty line is usually defined in terms of the minimum number of calories (around 2400) required for a human being to live and do ordinary work, and hence this measure of poverty does not include other subsistence requirements like housing, clothing, health and education. In this sense, it is a real minimum.

Estimates of the number of people living below the poverty line have been presented in Table 2. In spite of the controversy raised by Dr Sukhatme and others,[8] V.M. Dandekar, in a recent paper, presents two sets of estimates of the rural population below the poverty line (see Table 3).

An analysis of Tables 2 and 3 shows that:

(i) the number of those below the poverty line has gone on increasing (at least until the mid–1970s), while the economy has been growing;

(ii) the great majority of those below the poverty line live in rural areas; in other words, approximately 80 per cent of the rural population lives below the poverty line. They are landless agricultural labourers, marginal farmers, rural craftsmen etc;

(iii) there has been a slow decline in the percentage of people below the poverty line (from 49.5 to 44.4) probably due to the effect of the anti-poverty programmes sponsored by the Government. As some have pointed out, it is very likely that the situation of those at the bottom has deteriorated further.

Our attempt so far has been to measure the extent of poverty following an economic yardstick. This approach is one-sided and partial because it does not take into consideration social, political and psychological aspects of poverty. The mass of the poor in India is largely composed of those who are at the same time socially discriminated against (Adivasis, Harijans, backward castes) and have no political voice of their own. Poverty is not only a state of material deprivation but of human and psychological as well. When a section of society has been for years branded, in word and deed, as useless and inferior, the result is the acceptance of these labels by the poor. When self-respect and self-esteem break down, when one lives without a future, when taking risks endangers survival itself, then material deprivation results in the *dehumanisation* of man.

The paradox is that economic growth and mass poverty seem to thrive in a strange symbiosis, disproving the theory — defended in the 1960s — that once growth has been achieved, its effects will automatically trickle down to the poor. Experience has proved beyond doubt that one-third of the population has not tasted the benefits of growth. Growth is a necessary but not – by itself – a sufficient condition for the development of all, it does not lead to a more humane life for the majority of the population. It is in this sense, that we distinguish between growth and development. The question remains: why does this happen?

II. ENTITLEMENT APPROACH

Amartya Sen has put forward a novel explanation of poverty on the basis of the *entitlement* approach. In simple terms, his theory means that poverty depends on two main factors: *first,* a person's *ownership bundle,* i.e., the number and the type of assets he possesses, and *second,* his *exchange entitlement,* i.e., what he can command in the market with these assets. This depends on the legal, social and political characteristics of society as well as on his own position in it. To give an example, an extreme situation of death due to deprivation can occur because food is available but the person does not own anything with which food can be bought (exchanged); or a person may have money to buy food but food is so scarce, its price so high, that it can hardly be bought with the existing assets. It follows that to avoid poverty (a situation of acute deprivation), everybody should have a sufficient number of assets and, the exchange entitlement should be equivalent to the owned assets.

The *thesis* presented in this paper is that the socio-economic structure of India has deliberately kept the ownership bundle of the majority down to the barest minimum and has made the exchange entitlement as unfavourable as possible to them. Poverty, therefore, is a *man-made phenomenon,* in the sense that it is the result of the self-interest of the powerful few who have established a type of socio-economic structure which necessarily creates and perpetuates poverty.

In what follows we attempt to show the unequal distribution of ownership-bundles (assets) in India and the pattern of unfavourable exchange entitlements.

Unequal Distribution of Income

An individual's income is a flow of money and services per period of time and it depends on the quantity and quality of the assets (stocks) he possesses and utilises. Land gives rise to income in the form of rent and profits; shares and debentures generate income in the form of dividend; acquired skills like the ability to manage an enterprise, to maintain accounts, or to handle a computer give rise to incomes in the form of salaries.

For the great majority in India their physical capacity to do manual work, their labour–power, generates income in the form of wages. An unequal distribution of assets over the entire population will result in unequal income flows accruing to various people. We start from a brief analysis of income to move into a study of the asset position.

The share, in personal income, of the bottom 20 per cent has fallen from 9 to 4 per cent in the rural areas and from 7 to 4 per cent in the urban areas (see Table 4). This is confirmed by the All India Household Survey of Income conducted by the NCAER in 1962 and 1967–68. The study shows that the share of the bottom 50 per cent declined from 22.5 to 19 per cent while the share of the top 10 per cent increased from 32.8 to 36.1 per cent of the total disposable income. The Reserve Bank of India (RBI) figures show that in rural areas the bottom 20 per cent of the population has only 9 per cent of the aggregate income, while the top 5 per cent has 17 per cent of the total income. In urban areas, the position is almost the same except that the few rich are richer and the many poor are poorer as compared to the situation of the rural population.

The same picture emerges from a study conducted in 1971–72: 54 per cent of the rural population in the lowest expenditure class (below Rs. 18 per month) share 30.8 per cent of the total disposable income, while in the urban areas, 35 per cent of the population in this expenditure class shares only 13 per cent of the total disposable income.[9] This seems to confirm the trend that income distribution is relatively more unequal in the urban than in the rural sector.

Income distribution has lately been measured by private consumption expenditure. Table 5 shows the distribution of private consumption expenditure from the Sixth Plan draft. The pattern of unequal income (private consumption) distribution has not changed significantly. The bottom 40 per cent of the population in rural areas accounted for 21.6 per cent of total private consumption, while the top 10 per cent accounted for 25.6 per cent. The situation is worse in urban areas.

In contrast, I. J. Ahluwalia claims that "the available information on the distribution of income suggests no evidence of

increasing inequalities over time."[10] As U. Patnaik has rightly pointed out, Ahluwalia's analysis is based on NSS data regarding consumption expenditure. It is well known, as Ahluwalia admits,[11] that an analysis of income distribution based on consumption expenditure data, is vitiated on two grounds; first, the data are generally biased because of wide-spread under-reporting by the higher income groups, and second, because either nominal consumption is recorded, ignoring the effect of inflation on the poor, or differential deflators are not used to capture the differential prices faced by various classes. It must also be remembered that there may be, in general, a tendency in high-income groups to save more, while low-income groups will probably have to dissave. This means that "income distribution at any point of time is bound to be more skewed than consumption distribution."[12]

The problem of income distribution can also be analysed from a sectoral perspective. The distribution of the per capita National Domestic Product (NDP), and the number of workers in the non-agricultural and agricultural sectors is given in Tables 6 and 7.

V. M. Dandekar remarks that in the non-agricultural sector, the per capita NDP in 1970–71 was already 4.2 times greater than in the agricultural and that by 1980–81 the gap had widened to 5.7 times. This unequal distribution of the NDP has clearly benefited the top 10 per cent of the population at the expense of the rest. Dandekar relates the behaviour of the per capita NDP at 1970–71 prices to the disturbing fact that the per capita consumption of foodgrains has hardly increased over the last thirty years.

The reason is that in 1954–58 the per capita NDP in the non-agricultural sector was already around 60 per cent higher than that in the agricultural sector. Further increases in the per capita NDP in the non–agricultural sector would not have resulted in the rise of per capita consumption of foodgrains, as its demand had already been satisfied. On the other hand, the per capita NDP in the agricultural sector has remained unchanged and this may explain the inability of the rural poor to increase the per capita consumption of foodgrains. Dandekar

concludes that "in spite of increased production of foodgrains and availability of imports, if needed, the per capita consumption of foodgrains in the economy has hardly increased over a period of thirty years. In other words, in spite of an almost 66 per cent increase in the per capita NDP over thirty-four years, the problem of hard poverty remains almost untouched. An increase of 66 per cent in the per capita NDP over thirty-four years is not great. What is worse is that these small gains have remained confined to a small section of the population, may be 20 per cent, may be 25 per cent, may be at most 30 per cent. The remaining 70 to 80 per cent of the population has stayed where it was thirty years ago."[13]

This analysis confirms our hypothesis that the condition of mass poverty cannot be explained away in terms of food scarcity; it must rather be explained by the unequal distribution of income. We turn now to examine the distribution of assets.

Unequal Distribution of Rural Assets

The distribution of assets in rural India is highly skewed in favour of a few. The following observations support this statement.

1. *Operational holdings and operated area*: There has been a marked increase in the number of small and marginal (below 2 hectares) operational holdings from 49.63 million in 1970–71 to 66.6 million in 1980–81. They constituted 74.5 per cent of the total holdings in 1980–81, but operated only 26.3 per cent of the total operated area (see Tables 8 and 9). On an average, 1.1 million marginal holdings come into existence every year. The annual rate of marginalisation has been around 4 per cent, significantly higher than the 1.9 per cent annual rate of growth of the rural population. The conclusion seems to be inescapable: marginalisation is definitely due to immiseration. Holdings above 10 hectares have decreased marginally from 2.77 million in 1970-71, to 2.15 million in 1980–81. They constituted 2.4 per cent of the total holdings in the same year, but operated as much as 22.8 per cent (37.13 million hectares) of the total operated area.

2. The RBI Debt and Investment Survey showed that the top one-eighth ranked by asset value, possessed 53.3 per cent of the total assets. U. Patnaik believes that the top one-eighth of the rural households account for at least 75 per cent of the total marketable surplus.[14]

3. It has been argued that land reforms have made an impact on the unequal distribution of rural assets. In a recent contribution D. Bandyopadhyay points out that as a result of ceiling laws, 2.97 million hectares were declared surplus and only 1.15 million hectares had been distributed by December 1982. Of the undistributed area, 0.66 million hectares are under litigation and 0.35 million are reported to be unfit for cultivation. He suggests that if the ceiling for unirrigated land were to be reduced to 12 hectares per family, and other minor changes introduced, the estimate of surplus land would be at least 3 to 4 million hectares. He adds that during the decade of the seventies, 12.93 million hectares from large holdings "had been consciously and wilfully dispersed obviously with a view to avoiding ceiling laws."[15]

4. Eviction of tenants and indebtedness have had a very negative influence on the rural poor. The number of landless agricultural labourers has increased from 31 million in 1964–65 to 55 million in 1981. The number of those who have only labour power as an asset has almost doubled.

5. The life of the rural poor depends, to a great extent , on the use of common property resources (CPR) like village pastures, forests, wastelands, village ponds etc. A recent study shows that between 84 and 100 per cent of the poor households gather fuel, fodder and fibre items from the CPR. During the past 15 years, the size of the CPR has been declining due to physical loss of resources (submersion of grazing land on account of dam building), deterioration in productivity and gradual transfer of such land into private hands. The distribution of part of it to the poor has resulted in a high rate (63 to 91 per cent) of transfer to the rich, as well as in its under utilization because of the lack of complementary inputs from the poor. This phenomenon has been particularly glaring in tribal areas.

6. It has been extensively demonstrated that the technical revolution in agriculture has only succeeded with a few crops, grown in small pockets and it has largely benefited the rich farmers. In an interesting study of one of the richest talukas (Borsad) of Gujarat, B. Singh shows that where the growth of agriculture is highest the incidence of poverty is most severe.[17] Analysing the impact of technological change on Indian agriculture, C. H. Hanumantha Rao concludes that "technical changes have contributed to widening the disparities in income between different regions, between small and large farms and between landowners on the one hand and landless labourers and tenants on the other."[18] He also points out that technical inputs (irrigation, HYV, tractorization, fertilizers) have been *intensively* used in big holdings, and though output and employment have increased, the relevant question is to examine whether a much more *extensive* utilisation of the same resources would not have raised output and employment much more. Many today are of the opinion that the answer is definitely in the affirmative.

7. New cultivating methods necessitate a high dose of investment and this is totally beyond the means of medium and small farmers. Credit facilities distributed through the Primary Agricultural Credit Societies (PACS) benefit large farmers: only 36.3 per cent of the small farmers borrowed from PACS, as compared to 51.3 per cent of the large farmers.[19] The fact that the small farmers do not avail themselves of credit facilities affects their economic position negatively in a number of ways. For example, they are unable to take advantage of the Crop-credit Insurance Scheme since granting of insurance is linked to the credit distribution that takes place through the PACS.[20]

Inequality in the Distribution of Industrial Assets

Industrial assets are legal titles to ownership of capital, in the form of shares, debentures, equities, etc. They entitle their owners to a flow of income in the form of dividends. If we take the population of the country as a whole, it is relatively easy to see that the ownership of these assets is heavily concentrated in a very small urban section. The bulk of the rural masses, the salaried employees and the industrial work-force have no claim

on these assets. Even among the owners of industrial assets the degree of inequality is very high.

Several studies in the past have stressed the concentration of industrial power in the hands of a few. R. K. Nigam and N. C. Chowdhury, in their study entitled "Corporate Sector in India", revealed that in 1957–58, 88 per cent of the jointstock companies in the private sector had a paid-up capital of less than Rs. 5 lakhs and they accounted for only 15 per cent of the total paid-up capital. As against this, 0.4 per cent of the total number of companies at the top of the pyramid, accounted for 34 per cent of the total paid-up capital, and one per cent of the companies accounted for 47 per cent of the total paid-up capital. The study conducted by the RBI in 1975 for 1650 non-financial, non-public limited companies, relating to the year 1973–74, shows that 22.4 per cent of the companies at the top of the pyramid with a paid-up capital of Rs. 1 crore and above, accounted for 74.8 per cent of the total paid-up capital of all companies. These companies also accounted for 65.4 per cent of the value of production, and 71.5 per cent of the gross profits of all companies.[21] It is worth mentioning that ten years earlier, they had accounted for only one-third of the total paid-up capital.

The Annual Survey of Industries (1981–82) shows that the highest group by size of capital (Rs. 25 lakhs and above) included only 5.3 per cent of the total number of factories, but they commanded 92.5 per cent of the total fixed capital, they manufactured 73.6 per cent of the total gross output and they contributed 81.2 per cent of the total net value added.

The growth rate of the twenty big houses in India shows that during the 1963–64 to 1966–67 period, the annual growth rate in assets was of the order of 21.6 per cent; it declined in the next five-year period (1966–67 to 1972–73) to 6.6 per cent. due mainly to the anti-monopoly legislation passed by the Government and to the hesitation on the part of the Ministry officials in granting licences. A reversal in the licensing policy after 1972 resulted in a new spurt of growth; in the next three-year period (1972–73 to 1975–76), the growth rate increased to 12.5 per cent.[22]

It must be emphasised that this concentration of power has been achieved with the help of the public sector financial institutions. The Dutt Committee on Industrial Licensing found that about 56 per cent of the total assistance provided by financial institutions (IFCI, IDBI etc) had gone to the large industrial houses. Birla obtained 25 per cent of the total assistance granted to 20 large houses; 70 per cent of LIC term-loans and 62 per cent of the State Bank of India loans went to the large industrial houses. It is also important to remember that the family control of these big houses requires a minimum ownership of total assets. For example, ownership of 0.36 per cent of the total assets enables the Tata family to control more than 1,600 crores. In the case of Birla, the family owns 0.18 per cent of the total assets and controls about Rs. 1,500 cores.[23] All this indicates that government and financial institutions provide the bulk of share capital; therefore these families can exercise control over the affairs of the companies without much risk.

An understanding of the structural nature of poverty requires that the unequal distribution of industrial assets be seen in the light of the following two facts:

(i) Critics of the maze of bureaucratic procedures which seem to be the greatest impediment to the growth of the industrial sector in India, should remember that the general public has contributed considerably to their formation and growth, because of the extensive financial help given to the private sector by the State-owned financial institutions and banks. We must remember that around 70 per cent of the tax revenue received by the Government comes from indirect taxes which affect the common man. If one considers also that real interest rates charged on these loans have been quite low, one is led to the conclusion that the private industrial sector has been able to syphon off a considerable amount of resources from the most vulnerable sections of society.

(ii) Growth rates in the industrial sector have experienced a significant decline after the mid-sixties and this phenomenon has become the object of debate recently.[24] The stagnation of the industrial sector is confirmed by the rising trend in the capital-output ratios not only in the manufacturing sector but also

across the board.[25] There is a general consensus that industrial productivity has experienced a serious setback. In other words, public funds in the form of financial assistance to the powerful few have not even been productively utilised.

Inequality of Human Capital

The term 'human capital' refers to the quality of human labour-power, to the acquired skills of a person and his state of health. It is primarily determined by the availability of health facilities, and educational opportunities. Present data tend to suggest that the distribution of these assets is highly unequal in India, resulting in an unequal distribution of human capital assets.

As regards *health,* Table 10 provides a comparison between India and other developing countries. Infant mortality in India is more than double that in China. This is due to the comparatively high incidence of death among children between one and four years of age. Life-expectancy for men is higher than for women. This contrasts with the normal trend in more healthy environments where women have a higher life-expectancy than men. This limited analysis shows that health conditions in India are still far from satisfactory and that they are specially unfavourable to women and children. It is reasonable to assume that the mass of the rural poor are the worst affected.

Table 11 confirms the existence of a glaring discrimination, in the distribution of heatlh services, between urban and rural areas Eighty per cent of the total number of doctors practise in urban areas, while only 20 per cent are established in rural areas. Of the total number of hospitals, 85 per cent are established in cities, and only 15 per cent are located in rural areas. *Nutritional Standards* reveal a paradoxical picture (see Table 12). Given the present production levels of foodgrains, vegetable, fat and sugar, Dandekar calculates that the per capita availability of calories is 2054 per day and this is only 10.69 per cent short of the recommended requirement of 2300 calories per day. He adds, "we may therefore say that in 1985 India's population had a diet which, on an average, was adequate in respect of calories. But in view of the known inequality in the distribution of purchasing power in the population, the conclusion is inescapable

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that at least half the population lives on diet inadequate even in respect of calories. There is enough evidence to show that a large majority of those with consumption of calories lower than the recommended, have purchasing power lower than the average. Hence, the low consumption of calories in their case cannot be attributed to what is called inter-personal variation in calorie requirements. The low calorie consumption in most cases must be regarded as a consequence of low purchasing power and hence a sign of poverty"[26]

On the basis of NSS data for 1971–72, Dr. V.K.R.V. Rao shows that *"first,* the nutritional inequality as between the bottom one-third and the top one-third of the population is much higher in the case of the rural sector as compared to the urban sector in respect of total calorie intake and also the calorie intake from each of five food groups; *second,* nutritional inequality is much higher in the case of both the rural and other urban sectors in respect of items other than cereals and pulses reflecting the effect of purchasing power inequality on the consumption of those other food items."[27]

The availability of safe drinking water in the rural areas is highly inadequate; only one out of every ten villages has safe drinking water.[28]

Educational standards in the country, as measured by the number of illiterate, are still very low. According to the 1981 census, 63.8 per cent of the population is still illiterate. For women the situation is worse, since 75.2 per cent are illiterate. Reasons for the dismal performance of the educational policies in the country are not difficult to find.

(i) During the period 1950–65, the annual rate of growth of primary schools was 5.76, of middle schools 30.46 and of higher education 40. As late as 1975–78, the rate of growth of higher education was three times greater than that of primary education. In spite of policy statements to the contrary, the educational approach has had a clear urban bias.

(ii) Total Government expenditure on education as a percentage of GNP has been very low. It increased very marginally from 1.3 per cent in 1950–51 to 3.4 per cent in 1984-85.

An international comparison of Government expenditure, as percentage of the GNP, in 1982 between various countries, shows that India spent 1.9 per cent of the GNP on education and 20.2 per cent on defence; Mexico spent 13.1 per cent on education and 1.6 per cent on defence; the figures for Sri Lanka were 7.4 and 1.4 per cent, for Egypt 9.2 and 12.7 per cent and for Brazil 4.6 and 4.3 per cent respectively.[29]

(iii) The allocation of even these meagre resources has been biased, against the poorer sections. The per capita annual expenditure on primary education during the Sixth Plan, works out to Rs. 0.33 on primary education, Rs. 0.50 on secondary and Rs. 3.00 on higher non-technical education. To understand the implication of this bias against primary education, we must analyse the next problem.

(iv) The most acute problem affecting the availability of educational services to the poor is the high drop-out rate at the primary and secondary levels of education. This is due to economic reasons, to the almost non-existence of proper buildings and facilities and to the dismal performance of teachers in rural areas. At the end of 1977-78, about 20 per cent of the children who had reached school-going age did not enter schools at all; and of those (80 per cent) wo did enter nearly *half* dropped out by class V and nearly *three-fourths* dropped out by class VII; only about 15 per cent reached class XII, and less than one per cent got the first degree. The main beneficiaries of the entire educational system are just 1 per cent of the total population of children in the country.

It is in the light of these figures that one must question the difference in expenditure between primary and higher non-technical education discussed earlier. The failure of the educational strategy to produce a more egalitarian distribution of human capital assets is confirmed by the simultaneous growth of specialised institutions of learning which have attained international standards. Professional and technical institutions in India have turned out one of the largest supplies of technical manpower in the world. Unfortunately, the entrance to these institutions remains mainly confined, in spite of the reservation policy, to those students from the high-income groups who can afford

to pay exhorbitant tuition-fees for extra classes at the crucial examination levels (Standards X and XII).

Inequality in Employment Opportunities

For the millions in India who possess labour-power, that is, the capacity to work as the *only* asset which can be exchanged for food and other necessities, total or partial unemployment is one of the main causes of poverty. The distribution of work opportunities is unequal between urban and rural areas, between man and woman, between the organised and unorganised sectors and finally between the affluent and middle-class groups of city-dwellers.

Unemployment figures are very unreliable. The Draft of the Sixth Five Year Plan points out that the "most inclusive and significant indicator of the magnitude of unemployment" is the calculation of unemployed *days* rather than unemployed persons.[30] This person-day unemployment has been placed at 130 million days per week in 1973 which is equivalent to 18.4 million persons being unemployed on a typical day. For 1978 the estimate works out to 19.5 million, and for 1983, to 21.8 million.

In both rural and urban areas, the most affected are the poorest households. The same Draft remarks that in 1972-73, households with a per capita monthly expenditure of less than Rs. 11 (i.e., well below the poverty line) had unemployment rates of about 22 per cent and 29 per cent in rural and urban areas, respectively; the rate for households with a per capita monthly expenditure of Rs. 100 and above, was 2 per cent in rural and 5 per cent in urban India. The planners conclude: "thus for the poor, the curse of unemployment and the curse of poverty coexist though unemployment is not the only cause of their poverty"[31].

Unfavourable Exchange Entitlement for the Poor

There are about 250 million people in India who live below the poverty line because they do not possess a sufficient number of assets. Tragic as this fact is, it only represents one side of

the picture. The other side is equally dismal because their exchange–entitlements, the number of goods they can get in exchange for their assets, is being constantly reduced.

The majority of the poor in India still depend on agriculture. The terms of trade between agriculture and industry can be taken roughly as one of the indicators to measure the erosion of the exchange entitlement of the poor.

An anlysis of Table 13 reveals the following:

(i) The ratio of output prices to input prices has been declining: output prices have failed to rise as fast as input prices. The agricultural sector has to pay more for the inputs required than it gets by selling its output.

(ii) The crude barter terms of trade, defined as the ratio of agricultural commodity prices to manufacture prices has been steadily declining after 1974–75.

(iii) U. Patnaik shows that up to the end of the 1970s, the trend in the terms of trade (taking 1960–61 as the base year) was in favour of agriculture. This may explain the investments in agriculture which took place during those years and also the flow of funds from the urban to the rural sector. When the base is taken as 1970–71, the trend declines by about 13 per cent for 1975–78, and it has remained more or less the same subsequently.[32]

(iv) In spite of the bias against agriculture inherent in the Laspayere Index used by Rath, a recent study on his work, in which the terms of trade are analysed with reference to particular crops in each state, concludes that "the terms of trade between product—supply and input—demand, (taking 1970–71 = 100) reveal that from 1970–71 to 1980–81, the terms of trade have moved against the cultivators in 14 states for ten crops." If we exclude sugarcane and a few other crops, we must conclude that there is "overwhelming evidence of the deterioration in the terms of trade against the cultivators during the 70s."[33]

(v) Taking into consideration the annual growth rates of marketed surplus, and the annual deterioration in the terms of

trade, "the compound average annual loss to farmers is 5.92 per cent ... This loss is transferred to the non-agricultural sector through the price mechanism ... it is a disguised effective tax rate."[34] One could argue that the unfavourable terms of trade affect mainly the rich cultivators. Though there is a lot of truth in this statement, it is difficult to see how in such a situation the exchange entitlement of small and poor farmers producing mainly for self consumption, as well as that of the mass of landless labourers, could have improved.

(vi) It is not only that the assets of the poor are insignificant, but even when they are deposited in the rural branches of scheduled banks, they are not matched by a corresponding flow of credit. On the basis of Rs. 100 deposited in rural areas, only Rs. 55.1 is granted as credit, while in urban areas, the proportion is 100:74:6.[35] These figures indicate the extent to which the meagre assets of rural India are transferred to urban centres.

The exchange entitlement of the poor has been affected directly by the combination of inflation, indirect taxation, and by the lack of effective implementation of minimum-wage laws for agricultural labourers in most areas of the country. Because of these reasons *the real wage rate* has fallen.

Money wages of agricultural labourers have been proverbially low, and implementation of laws regarding minimum wages has been disregarded almost everywhere. *India Today* (30–3–1988) carried out a survey regarding the implementation of the Minimum Wages Act by State ministers and Congress(I) leaders in Madhya Pradesh, and discovered that they pay less than the Act stipulates and that most workers are not even aware of the existence of these laws.

Inflation rates in India have not been, by and large, excessively high: 7.7 per cent from 1973 to 1983.[36] Nevertheless, the purchasing power of the rupee has declined from 96.2 paise in 1961 to 15.7 paise in March 1986.[37] This erosion in purchasing power cannot be effectively absorbed by the majority of the poor who do not benefit from in-built mechanisms (like DA) applying only to the salaried classes.

The price index for food (see Table 14) has increased almost five times in twenty years and money wages received by agricultural labourers in India have certainly not risen proportionately. U. Patnaik contends that while "money wages have risen during 1963–64 to 1974–75, when adjusted by the consumer price index for agricultural labourers, real wages are seen to decline drastically in the case of female workers. Since days employed annually have also declined, the real earnings have fallen even more than have real wage-rates."[38] This situation, she also argues, is reflected in the sharp rise that has taken place in real indebtedness.

Conclusion

Following A. Sen's conceptual understanding of poverty it is easy to perceive its nature and magnitude in India. The highly unequal distribution of all types of assets, including human capital assets and the lack of opportunity to use labour-power leaves at least one-third of the population without effective means of satisfying their basic needs. At the same time, the scarce assets of the poor encounter systematically unfavourable conditions for exchange. The net result is that a large number of people live just above or below the poverty line and a few keep on accumulating assets. It is in this sense that poverty is a man-made phenomenon.

This understanding of poverty has an "economic" bias. This must be clearly stated, because poverty is neither a mere economic situation of deprivation nor a question of numbers and percentages. The economic aspect must be seen as an important but partial component of a process taking place in individuals. This process is one of *dehumanization*. The mass of the poor are not only economically disadvantaged but a large section of them is also socially discriminated against. Tribals, Harijans and other members of the backward castes form a great proportion of those living around or below the poverty line. The combined effect of socio-economic deprivation is severe on the kind of life they are able to lead. Fatalism, a poor self-image low risk-taking capacity, fomented divisions and rivalries along ethnic, religious and caste lines ... all these cannot but have a profound psychological impact. This is the total effect that

must be understood, if we are to look at the phenomenon of poverty as a process which makes people more dependent, more voiceless, more exploited and ultimately incapable of controlling their lives and destinies.

The picture we have drawn of poverty as a process, underlines its structural nature. Given the present set of socio-economic relations among sections of society, poverty tends to perpetuate itself, to be created anew. In other words, the socio-economic structure is such that the conditions for the reproduction of poverty are inherent in the system. We turn now to analyse this phenomenon.

III. REPRODUCING THE CONDITIONS OF POVERTY

The Importance of the Surplus:

The reproduction of any society depends primarily on the set of productive activities which maintain its life. Any productive activity can be defined as a process in which inputs are transformed into outputs (material aspect), simultaneously generating an understanding of itself among those persons participating in it (conceptual aspect). Productive practice, therefore, comprises both physical and mental activity; it is a combination of content with meaning, of physical output and conceptual understanding. For the time being, we deal only with the material aspect of productive practices.[39]

Material production can be fruitfully conceived as a *circular* process in which inputs are transformed into outputs, which in turn are used as new inputs for a new productive activity. The continuation and maintenance of a productive activity in time require that the output be large enough to replace the used inputs, so that at least the same activity can be undertaken again on the same scale. Economic surplus can be defined as the output *net off* all goods and services necessary for the replacement and maintenance of all inputs including labour. If the economic surplus or net output is nil, the productive activity or set of all productive activities will merely reproduce itself time after time. When the net output is positive, when an economic surplus is generated, the conditions for growth and development have been established.

This brief description of economic life is clearly too simple to capture all the complexities involved in the reproduction of social life. At the same time, it gives us a fairly clear picture of the working of the economy because it underlines the crucial role played by the economic surplus in determining the pace and pattern of growth. The latter does not only depend on the quantitative and qualitative nature of the surplus, but also on the *manner of its disposal.*

Relations between Production and Distribution

In real life the process of producing the surplus is almost indistinguishable from the process of its distribution among various sections of the population. Text-books in economics separate these two processes and an attempt is made to explain the appropriation of the surplus by the same laws that are supposed to regulate production. Traditional theory maintains that the distribution of the surplus generally depends on the productivity of factors of production, that is, on their effective contribution to the process of production. This latter interpretation cannot be defended even as correct economic analysis.[40] From a holistic point of view, it is unfair to analyse the distribution of the surplus as if it were a purely technical problem. In what follows, we propose to analyse the processes of production and distribution of the surplus.

Production is not only a technical activity transforming inputs into outputs. It is a fundamental activity always undertaken within a specific set of relations existing among the groups of persons engaged in it. This set of relations is ultimately defined in terms of people's positions in the structure of power that controls the process of production. The same set of relations, conditions the nature of the production process and is also the result of that process. Productive inputs and outputs necessarily include social components which are not generally mentioned in most economic text-books. To put it differently, a productive activity not only reproduces the economic life of society, on the same, enlarged or diminished scale, but also a set of power relations (domination and subordination) under which the persons involved in this process operate.

We have mentioned before, that a productive practice is a meaningful physical activity. The understanding of the activity grows from the way in which it is actually performed and, at the same time, this understanding sets the boundaries which limit the development of this activity in the future. It is, therefore, important that we devote some time to analysing the way in which concepts describing production are generally used. One can speak of production in terms of inputs or go beyond that and call them capital and labour. The consequences and implications of this terminological shift (from inputs to capital and labour) must be clearly realised. The use of the term "capital" presupposes the deliberate attempt to understand it only as means of production (tools, implements, machinery), while in fact the concept of "capital" also includes specific social relations of power and control between those who own the means of production and those who possess only their capacity to work. In the same way, the term "labour" seems to refer only to the expenditure of human energy during the process of production, hiding the fact that it also refers to a specific type of labour, namely wage-labour. The latter must be understood as a contractual relationship between the owners of capital and the owners of labour-power. It is natural, therefore, that the concomitant understanding of productive practices be influenced by the positions of the different actors in the process of production. Those involved in productive practices will conceptualise them only in accordance with the relative positions they occupy in the structure of power that controls production.

When we understand production in this way, we are led also to the analysis of the unequal power structure in which it takes place. The objective position within the power structure is determined by the effective ownership of assets (ownership bundle) and more particularly by ownership of and control over the means of production. In short, effective control of productive assets results necessarily in control over the whole production process. This control enables a few people to determine finally what is to be produced (the final product-mix) and how (technology) the combination of inputs and outputs will be effected. Production, therefore, is determined by the prior distribution of productive assets in society.

The distribution of the economic surplus among various groups or classes does not depend on their contribution to the productive process, but on the effective ownership of productive assets. Effective control of the shares in a company or of a piece of land, entitles individuals and groups to a share of the surplus in the form of dividends, rent or profits. Assuming, for the sake of simplicity, a socially determined basket of commodities necessary for the maintenance of all those engaged in productive activities, any output over and above this basket, accrues to people because of their special claims on the surplus, based on their ownership bundle.

The analysis of production and distribution leads to the following conclusions:

(i) The amount and quality of the ownership-bundle determines the relative share to be appropriated from the surplus. Since the future pattern of growth for the whole society depends on those who can dispose of the surplus, the former is in the hands of the few who have been able to accumulate assets in the past.

(ii) Production and distribution are two sides of the same coin. Concentration of economic power through a disproportionate appropriation of the surplus leads to effective control over productive activities, while the pattern of production tends to reinforce the unequal distribution of assets. In a market economy, the type and quantity of commodities to be produced as well as the technology to be used in their production, appears to be determined by commodity and factor prices-by the market. On the surface, this is true, but at a deeper level of reflection and analysis, market demand for commodities and factors is not independent of the way in which the surplus has been distributed. Clarification of this point requires an explanation regarding the disposal of the surplus.

The economic surplus can be used for consumption (more precisely extra-consumption or luxury consumption) or for investment. In the former case, it provides extra purchasing power to those who appropriate it. In a market economy, the demand for luxury goods will increase and market researches will immediately sense this opportunity and attempt to direct productive potential into these areas. Since the market operates, at least

in theory, on the democratic principle that only votes (rupees) count, those who can control a sizeable quantity of votes (rupees) will finally get what they want. Notice how the same vicious circle operates: control over the surplus creates effective demand for luxury goods, and this, in turn, attracts new investments in the sectors producing these goods. It is no exaggeration to say that the pattern of demand influenced by income and asset distribution will determine the sectors into which investment will flow.

We can also look at the disposal of the surplus from the point of view of investment. First, the preferences of the upper income groups will determine the division of the surplus between present consumption and savings. Second, expected returns from various productive sectors, will influence the areas in which part of the savings are to be invested, and the type of technology to be used. The contention of this paper is that the expected returns on investment have been higher in the capital-intensive sectors; hence, investible funds have been channelled into these sectors. A detailed analysis of the factors contributing to this process falls outside the scope of this paper. Suffice it to say that many industrial houses have obtained relatively cheap and abundant credit from the financial institutions; indeed, when the nominal rates of interest are adjusted for inflation, it turns out that the real rates of interest paid by large investors, have been very low. This has favoured investment in the more capital-intensive sectors and in the more capital-intensive methods of production. As a consequence, expansion of employment in this sector becomes very costly since it requires more refined skills and a much greater capital per man ratio. Wages for those who find employment in this sector have risen, thereby depressing the demand for labour further.

Though productive practices constitute the basis of society, they require another set of practices to hold them together: such practices may be called *integrative.* Thye are of two kinds: exchange and political practices.

Exchange and trading practices are conducted by a sizeable proportion of the population in India. They are responsible for bringing buyers and sellers together. The interaction between them takes place through a network of interconnected markets

controlled by those who have access to liquid assets; in many cases these persons are different from the owners of means of production. In the rural sector, trading practices are generally linked to money-lending and productive practices.

At a higher level, the totality of economic practices is held together by those engaged in 'political' practices: administrative, judicial and legislative. Society is always characterised by groups possessing varied and, at times contradictory interests, which generally correspond to the various practices. It is the responsibility of 'political' practices to achieve the smooth integration of all productive practices. Political activity proper — the legislative and executive branches — decides the ultimate common goal of society so that all its members may act together, through various practices, towards it. Ultimate power and authority always rest with those engaged in the sub-set of political practices, which we have called proper. The judiciary acts as mediator of conflicts and the administration (bureaucracy) implements the goals decided by the political authority.

The main characteristic of those engaged in political practices is the availability of coercive power (police, army) to ensure the execution of its decisions. This end may also be achieved through the mass communication media.

The goal of the integrative practices is to hold the whole structure together; hence they are a vital source of power. If control over the surplus results in the power to regulate economic growth as well as to recreate the power relations existing in the economic sphere, control over integrative practices ensures the maintenance of these power relations over the whole of society. It is easy to see why political power is avidly sought.

Structure of Poverty Reproduction

We are now in a position to explain the existence of poverty in India as a structural phenomenon. Figure 1 serves as a brief summary of the argument which will be developed presently.

As we have shown, poverty is the result of the unequal distribution of ownership bundles as well as exchange entitlement biased in favour of the rich. This unjust structure

FIGURE 1

necessarily results in the control of productive practices by a few who, on the basis of their ownership titles, can, at the same time, appropriate large portions of the economic surplus; in short, economic power is concentrated in the hands of those controlling the surplus.

As we move down, to analyse the mechanism through which the surplus is disposed of, we notice that the demand for luxury consumption increases and this in turn, calls for investment in the sector producing luxury goods. This tendency reinforces and complements investment in the capital-intensive sector. Demand factors are not the only ones responsible for this gradual shift from labour-to capital-intensive methods of production.

A number of effects follow from this diversion of investment resources to the capital-intensive sector:

(i) The productivity of the great majority decreases since the ratio of investment per capita falls alarmingly in the rural and informal sectors.

(ii) The income of these people may fail to increase proportionately or fall, and hence effective demand becomes narrow-based. It tends to be concentrated in those who can spend on luxuries and reduces the capacity of the majority to purchase the available surplus of food-grains.

(iii) Because of the labour-displacing nature of these productive activities, employment opportunities may tend to fall; at the same time, the gap between new employment opportunities generated in the high-investment sector and the rising supply of labour (due to demographic pressures) increases, with the result that there is a low expansion of employment opportunities.

In India, black money forms an important source of surplus utilisation. An official estimate calculates that, for 1983-84, the total amount of black income generated was around 30 per cent of the Gross National Product (GNP) calculated at factor costs, or a sum of Rs. 36,786 crores.[41] This large flow of income is used to increase luxury consumption and to speculate in urban

property. Black money also plays an important role in establishing smooth linkages between integrative practices and productive activities. For instance, it facilitates the cheap and easy availability of finance, the procurement of licences, access to cheap raw-materials, and these may be used to pressurise the authorities so that infrastructure facilities like electricity, water, and transportation are made available quickly on required sites. In this way, black money influences integrative pratices to facilitate the type of investment required by those controlling the surplus.

At the end of the whole process, the unequal distribution of resources is maintained or hardly altered. As the circular flow of economic activity is completed, the conditions of poverty are created anew.

The right-hand side of the figure describes the role that integrative practices play in keeping the system going. Trading practices ensure that the market mechanism allocates resources in a manner which does not alter economic power relations. It is true that, at times, control over these practices may create semi-independent power centres in various parts of rural India. In the long run, however, they must be linked to centres of productive power to be able to survive.

Political practices tend, in general, to sanction the legitimacy of this process; but this does not exhaust the role that the State plays as the ultimate controller of these practices. It is to this new aspect of the State that we must now turn our attention.

IV. STRUGGLES FOR POWER

Control over the whole gamut of integrative practices rests ultimately with the State. Some theories of the State describe it as a mere tool in the hands of those who control the economic surplus. This explanation is too simplistic and does not take into consideration the active role of the Indian State and the differences among the various groups that control the surplus. This final section deals with these problems.

Pivotal Role of the State

In post-Independence India, the State was conceived as the guardian of a set of integrative practices which were designed to usher in a socialist society. The State also took on the responsibility of planning all productive activities and itself engaged in a number of productive practices which were supposed to form the core of economic development. Appropriate fiscal and monetary policies were to help equalize the disposal of the surplus; thus, the State would act as a powerful force to redress the imbalance inherent in the socio-economic structure.

On the one hand, there is today a general feeling that the importance of State planning has declined. On the other hand, the role of the State as an economic agent engaged in productive practices, has increased. The State owns 60 per cent of all productive capital, it runs 8 of the top 10 industrial units, it directly employs two-thirds of all the workers in the organised sector, it holds—through nationalised financial institutions—more than 25 per cent of paid up capital in the joint-stock sector and regulates private investment through a complex bureaucratic machinery. Besides its control over productive practices, the State regulates the allocation of large amounts of credit to various sectors, it has the monopoly of railway and air-transport, intervenes decisively in trading practices through a number of regulatory devices (price and quantity controls), it has set up an extensive distribution system for essential commodities and controls foreign trade in commodities and capital.

The increasing involvement of the state in productive practices has resulted in a greater proportion of the surplus being directly appropriated by it. This might have helped to offset the inherent inequalities of the system and to allocate resources in such a way that a massive assault on poverty could be mounted. This possibility has not been realised. The reasons for this failure must be analysed in some detail.

The Main Competing Groups

Many political economists feel that the theoretical mode based on a two-class (dominant and dominated) analysis of

Indian society, has become irrelevant because it assumes a homogeneity and commonality of interests in the ruling class. The real nature of the dominant class in India is quite the opposite. P. Bardhan has argued that this class is composed of the two top deciles of the population, and characterised by the existence of competing interests and rivalries among its members. According to him, these groups can be classified in three categories: the industrial class, the rich farmers and the professional class.

The *industrial class* comprises some of the top business families and a number of entrepreneurs who are in the process of being co-opted because they share a similar perception of interests. As a class they are not a post-Independence phenomenon; they had already established their claims during the Independence movement. During the last thirty years they have received generous support from the State in a number of ways: credit facilities provided by the State-owned financial institutions, a developed infrastructure of essential services created by the State, and most important of all, the assurance of a sheltered domestic market. Commenting on the Government's latest policy of nationalising "sick mills", Bardhan remarks that "the Government has acted as a risk-absorber of the last resort and as a charitable hospital where the private sector can dump its sick units."[42] Other recent developments need to be mentioned:

(i) Unlike many other developing countries, the linkages of this class in India with foreign capital are minimal at the level of equity participation. In recent years the number of technical collaborations with foreign firms has been increasing—an indication that this route of penetration of foreign capital into the industrial sector is becoming more popular.

(ii) The growth of the small-scale sector has been poor. Many enterprises are begun only to take advantage of government subsidies and others are linked to the major houses through sub-contracting.

(iii) Caste alliances have played an important part in the development of this class in the past; at present, these alliances

help articulate and link the predominantly mercantile sections of this class with the big industrial houses.

The composition of the class of *rich farmers* has undergone a profound change after Independence. In most states, the traditional zamindars and absentee landlords have been replaced by a group of enterprising middle castes, like the Patels in Gujarat. During the last thirty years they have received a number of benefits from the government: price support, laxity in the implementation of tenancy reforms, subsidised inputs like power, seeds and fertilizers and institutional credit through their control over the Primary Credit Societies and cooperatives. At the national level, they still lack organisational power, but they exercise a great measure of control over the political machinery at the level of the legislative assemblies. Bardhan notes a few more characteristics of this class:

(i) in the economic sphere, they have managed to diversify their investment into trading, money-lending and small processing units in an attempt to minimise the risks involved in farming;

(ii) caste plays a paradoxical role: it strengthens the cohesion of the class at the micro-level, but impedes other alliances laterally and vertically;

(iii) in the past, this class has been quite successful in securing the help of many small cultivators and marginal farmers whose interests it does not really represent.

The *class of professionals* includes the bureaucracy (civil and military), professional groups like doctors, lawyers and educators and many salaried employees. Bardhan's enumeration of the members of this class is unsatisfactory. All the same, for our present purpose it may be sufficient to stress the common factors that give a semblance of cohesion to this class. Its members share one common characteristic: they have been the main beneficiaries of the present educational system and for some middle castes education has been the most important vehicle of social mobility. Their consciousness as a group has increased in recent years. They have felt the urgent need to

protect their monopoly over educational services from the onslaught of all kinds of reservations.

Conflicts at the top and the future role of the State

As we have stated above, the most important characteristic of the class controlling the disposal of the surplus is its lack of homogeneity and the existence of conflicts within it. Let us briefly examine some of them.

The class of rich farmers represents, to a certain extent, the interests of rural agricultural India. The most vocal elements from this class believe that the industrial sector has been the main beneficiary of the development process at the expense of the farming community. We have earlier presented some evidence to suggest that there has been, in the last decade, a deterioration in the terms of trade, against the agricultural sector. On the other hand, the more articulate voices of the industrial class argue that rich farmers have benefited from a number of subsidies and credit facilities and have contributed very little to Government revenue because they have been exempted from direct taxation.

The class of professionals represented mainly by the civil and military bureaucracy has opposed the liberalisation of controls in the private sector. The conflict between the bureaucracy and the industrial class is often expressed as a controversy regarding the efficiency of the public sector *vis*-à-*vis* the private sector. A dismantling of all regulatory mechanisms would definitely curtail the extensive power of the bureaucracy. New avenues for the expansion of the State's productive involvement always appear as a guarantee that the job opportunities of the present bureaucracy will not be curtailed but expanded. Various methods are being used by the bureaucracy today to divide the corporate sector: some efforts operate from the central administration, some operate from within industrial units which are partially controlled by the capital in the hands of the State.

The net result of these conflicting interests within the dominant class can be briefly summed up as follows:

(i) The State seems to be caught in a sort of prisoner's dilemma: it must promote industrial growth and keep on

granting subsidies to the agricultural sector and at the same time the situation of the poor must not be allowed to show rapid deterioration. It must satisfy the demands of the bureaucracy by frequently granting salary-hikes, which increases non-plan expenditure.

(ii) The State, in the past, has had, to take up an accommodating and compromising stand which is manifested in the lack of clear and bold policy directives, in the inability to implement fully those policy prescriptions which were clear, and finally in the adoption of the "subsidy"– or "concession-policy" to tackle daily problems; this has led in the past to *ad-hocism,* that is, to an approach which constantly sacrifices long-term for short-term goals.

(iii) This approach has seriously affected the rate of growth of agriculture and industry. We have said before that the present growth rate in agriculture seems to have reached a threshold and that the industrial sector, has been in the grip of a fatal stagnation. In other words, even from a pure growth perspective, this situation is untenable. Under these circumstances the economy will never realise the potential rate of growth of which it is capable. With the help of the game theory, R. Sau shows how in a situation of conflicting interests among the member groups of the dominant class, the equilibrium position which is achieved by the system always represents a lower than optimal growth rate. This presupposes that coalitions among the contending partners are not possible.[43]

This scenario provides us with some clues about the future role of the State. *First,* there is a movement towards a greater centralisation and control over integrative practices. *Second,* there is a marked change in the nature and role of the State: from arbitrator of conflicting interests to *corporate State* designed on the lines of a transnational corporation, relying much more on market forces. *Third,* there is a greater stress on the power of the State *vis*-à-*vis* the power of intermediate groups and individuals. This power relies heavily on technology rather than on economic considerations and on military rather than political means.

Rajni Kothari has commented extensively on these changes.[44] His analysis presupposes a greater integration within the dominant class—what he calls the 'classes' (upper and middle) — than present trends seem to justify. Accommodative politics is not yet dead.[45]

TABLE 1: **Industrial Growth Rates (%)**

1.	India	4.3
2.	Bangladesh	8.1
3.	China	8.4
4.	Egypt	10.6
5.	Indonesia	8.6
6.	Republic of Korea	11.2
7.	Pakistan	7.2
8.	Sri Lanka	4.8

Source: World Development Report, 1985.

TABLE 2: **Estimates of Poverty**

Year	*Author*	*Rural*	*Urban*	*Total*
1960–61	P. D. Ohja	180	24	204
	P. K. Bardhan Dandekar & Rath	(43.2%)	(28.8%)	(42.5%)
1967–70	P. D. Ohja	221.5	49	270.5
	P. K. Bardhan B. S. Minhas Dandekar & Rath	(53.4%)	(50.0%)	(41.0%)
1977–78	VI Plan	238.6	55.2	293.8
		(47.9%)	(40.7%)	(46.3%)
1980–85	VI Plan	259.6	57.2	316.8
	(Revised)	(50.7%)	(40.0%)	(48.4%)

Source: Tables given by R. Datt and K.P.M. Sundaram, *Indian Economy,* New Delhi : S. Chand and Co., 1978, p. 298.

TABLE 3: **Percentage Below Poverty Line**

Years	*NSS Data*	*Revised**
1960–61	32.1	—
1971–72	46	46
1972–73	53.9	54.9
1977–78	51.9	49.5
1983	48.9	44.4

* Based on a different estimate of weights for food and manufactured food articles, Dandekar believes that "the estimates for 77-78 and 83 appear reasonable and in line with the estimates of 46 per cent for 1971-72, but the estimate for 72-73 appears to be on the higher side; it seems unlikely that the proportion of the rural population increased almost by 9 per cent points in one year."

Source: V.M. Dandekar, "Agriculture, Employment and poverty", E.P.W., Sept. 20–27, 1986.

TABLE 4: **Personal Income Distribution**

Fractile Group	*Estimate of the Reserve Bank of India*		*Estimate of Iyengar and Mukherjee*		*Estimate of* N.C.A.E.R.	
	1953–54 to *1956–57*		*1952–53 to 1956–57*		*1960*	
	Rural	*Urban*	*Rural*	*Urban*	*Rural*	*Urban*
Top 5%	17.0	26.0	14.0	17.5	—	31.0
Top 10%	25.0	37.0	34.0	25.0	33.6	42.4
Top 50%	69.0	75.0	—	—	79.3	83.0
Bottom 20%	9.0	7.0	7.5	8.5	4.0	4.0

Source: Report of the Committee (Mahalanobis Committee) on Distribution of Income and Levels of Living, p.14.

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Poverty Debate in India: A Minority View

N S Jodha

Rural socio-economic change is often inadequately captured by social science research in the field. This happens partly due to perceptions of the researchers and partly due to inadequacies of research tools and approaches. This paper illustrates the situation by presenting evidence on incidence of rural poverty in two villages of Rajasthan as examined through different approaches, during 1963-66 and 1982-84. Households that have become poorer by conventional measurement of income in fact appear better off when seen through different qualitative indicators of their economic well-being. The paper suggests the need for supplementing conventional measurements of income by qualitative indicators of change to arrive at a realistic understanding of rural socio-economic change.

The Fallacy:

—The first step is to measure whatever can be easily measured: This is ok as far as it goes.

—The second step is to disregard that which cannot be measured or give it an arbitrary quantitative value: This is artificial and misleading.

—The third step is to presume that what cannot be measured easily is not very important: This is blindness.

—The fourth step is to say that what cannot be easily measured really does not exist: This is suicide.

A Smith, *Super Money*

I
Introduction

THE paper represents a minority view in the context of mainstream situation where, following the seminal work by Dandekar and Rath [1971], researchers are competing with each other in proving higher and higher incidence of poverty in India with the passage of time. Secondly, the data used here, though rich in depth, covers a small sample. According to this paper part of the problem lies in the methods and distance with which we are accustomed to look at the field realities. Consequently, contemporary field-oriented social science research is often marked by contradictions and inconsistencies between the results obtained by macro- and micro-level studies, between the observed or experienced realities and the results generated by field research and between observed developments and the ones indicated by field research. This problem is acute in studies of rural change. Factors underlying such changes are too detailed and at times too complex to be captured by standard and simplistic methods. Hence, inconsistencies between results from different field studies can be largely attributed to methodology. This paper discusses methodological aspects of rural economics, and suggests the need for supplementing standard techniques with methodological approaches appropriate to the field. A case study covering two villages in Rajasthan is presented to illustrate the gap between incidence of poverty when assessed through two different approaches.

II
Methodological Gaps

Methodological deficiencies of field studies in social sciences are often associated with: (i) the concepts and categories used for identification of rural realities; (ii) the yardsticks and norms employed for assessment or measurement of rural realities; and (iii) the 'communication gaps' between researcher and respondent while using (i) and (ii) mentioned above.

The concepts and categories used to identify and classify rural realities are often too restrictive to encompass the details of petty but collectively significant components of rural characterisation. Appendix A presents a few examples. They indicate the possibility of disregarding variables and their interactions, while using the formal/standard concepts for identification of different facets of rural household economy.

What applies to the choice of concepts and categories also applies to choice of norms and yardsticks. The limited coverage of rural realities, owing to the use of restrictive categories, is further reduced by using standard yardsticks to measure them. The factors that do not lend themselves for easy assessment/measurement through these yardsticks are often bypassed while measuring and quantifying different variables.

These limitations are now increasingly recognised and the need for supplementing the formal concepts and norms by qualitative approaches is emphasised [see Streeten 1974, McCloskey 1983, Sen 1983, Chambers 1986].

Realising the gap between what is reported through formal field studies and reality researchers have attempted to dilute or widen the standard categories and yardsticks. Despite that, inconsistencies between results from different field studies persist. They exist because of several factors, which we may call 'communication gaps'. These gaps take place in three forms:

(i) Difference in the connotation of the same concepts as they are understood by the respondent and researcher. For instance, the connotation of 'manday' or 'man-hour' of labour input as understood, estimated, and reported by a 'not so time-conscious' farmer, may be different from the investigator's understanding.

(ii) Qualitative difference in the yardsticks and norms used by researcher and respondent for measurement of variables. For instance, a farmer reports use of farmyard manure in terms of cart-loads, the researcher attempts to understand and record it in terms of quintals. Establishing quantitative equivalence between such categories is often difficult.[1]

(iii) Difference in the degree of precision/vagueness attached to the quantitative information by the respondent while giving the response and by the investigator while recording it. For instance, a farmer often reports quantitative information in terms of range of units or hyphenated terms (e g, 10-12 mandays spent on weeding a plot), while the investigator seeks and, using his best judgment, records it in precise terms. The analyst often goes a step further and subjects these data to sophisticated quantitative techniques which are sensitive to variations as small as a fraction of an hour.

Appendix B illustrates some possible 'communication gaps'. Their extent depends on the difference in the background and working environment of the respondent and the researcher, the relative degree of seriousness with which investigations are taken up by the two, and the ability of investigator to establish precise equivalence between the respondent's report and the researcher's intended record or actual record.

Depending on the degree of 'communication gaps', the results of different field studies of the same phenomenon in the same area/community may differ. Other things being equal, the possibility of such gaps being wider is greater in the macro-level studies than those of micro-level studies. There are greater opportunities for participant observation as well as prolonged and more intimate contact between the respondent and researcher that help narrow down the 'communication gaps'.[2]

It is not difficult to imagine the distortions (under-reporting/over-reporting), generated by these gaps in values of different variables recorded through household surveys. Table 1 illustrates the point on the basis of data culled from different studies with which the author has been associated. The data reported in Table 1 relate to the cases where the extensive approach to data gathering was supplemented by subsequent detailed purpose-specific, intensive investigation, following the first stage screening of data. Although the number of observations in most cases is small, they do help illustrate the point.

Important implications of the methodological gaps include generation of inconsistencies of the result from different studies on the same subject and the possibility of

misleading the whole approach of future research as well as future policies relating to specific subjects.

One way to reduce the gaps is to supplement the researchers' approach by the respondents' approach of looking towards the issues being studied. One may profitably look at categories and norms used by the respondent for identification and assessment of variables affecting him or her.

In the following section this approach has been attempted. For the purpose of illustration we have taken one of the most debated themes of the day, viz, the change in incidence of poverty in rural areas.

III

Approach and Data

For studying the change in incidence of poverty we have data for two periods of time covering a sample of farmers[3] from two villages in the arid zone of western Rajasthan. There are several criteria—e g, change in household income, consumption level, extent of employment, etc, used by social scientists to assess the change in poverty levels. We have data on net household or per capita income collected by using the conventional concepts and yardsticks to measure income. Additionally, we have included the categories or concepts which farmers/villagers themselves use for assessing changes in their own economic status. These indicators of their economic status or poverty levels not only help in assessment of change but they also facilitate the understanding of the process of change. They tend to capture existing situation as it operates rather than capture its formally quantifiable proxies. Through use of these norms or indicators, it is easier to reduce the above 'communication gaps' and capture the past despite long periods of recall. Their major limitation is that they involve a more 'investigation-intensive' approach to field research, because they require researchers to approach the respondents' level of thinking and the issues studied. They put greater emphasis on participant observation.

The choice of these 'unconventional' indicators of change in the present study emerged from anecdotal information collected during resurveying the study villages in 1978. They were initially studied (through prolonged stay there, i e, over 20 days in every month for three years ending 1965-66). The anecdotes suggested the possibility of substantial change in the economic status of households considered poor during 1963-66. The anecdotes were used for developing specific questions and a list of variables, which in the village context, were considered as real indicators of change in the people's economic status over time. These indicators guided the participant observation as well as collection of quantitative information from 95 selected households. Those households belonged to two villages, one each in Nagaur and Jodhpur districts of Rajasthan. They constituted a part of a larger sample of households studied in 1963-66. Information about and from these 95 households was collected in instalments during 1977-78, 1982-83, and 1983-84 during field work for other projects.[4] Additionally, details about the whole village situation were collected. Broad information on major changes (since 1963-66) observed in the study villages was also gathered from *chokala* (clusters of neighbouring) villages. The information indicated that study villages were not atypical in terms of these changes. The sub-sample of 95 households consisted of farm households only. It included 35 small and marginal farm households, i e, who owned less than 4.5 hectares of arid land.

Farmers' Perception of Change

Income data of the sample households were collected using the standard concepts employed by farm management studies in India. Net income data covered the following sources: crop production, animal husbandry, labour/bullock hire, remittances, rental, petty trading, and property income. Net income figures were arrived at by deducting paid out and imputed costs of all in-

Table 1: Differences in Values of Selected Variables According to Method of Data Gathering

Variable	Number and Type of Observation	Unit of Measurement	Value as Per the Choice of Methods (b)		Difference in Values		Reasons for Difference: Items Bypassed by (A) and Captured by (B)
			Method(A)	Method(B)	Absolute A-B	$\frac{A-B}{A} \times 100$	
Average income	78 house holds (hh) (4 villages)	Rs/hh	6814	7564	−750	−11.0	Income from casual, routine activities based on common property resources [Jodha 1986].
Gross returns	19 hh 23 plots, (1 village)	Rs/ha	291	334	−43	−14.8	Casual harvest of minor crops for self-provisioning, etc [Jodha et al 1978].
Per worker/day engagement in farm activities	12 hh 44 workers (2 villages)	Hours/day	6.75	9.58	−2.53	−41.9	Petty and routine farm activities [Jodha et al, 1978, Ryan et al, 1984].
Value of food consumption	32 hh (4 villages)	Rs/person (for 3 week one in each season	68	79	−11	−16.2	Food items from common property resources/petty self-provisioning arrangements [Jodha 1986].
Use level of tractor	12 tractors (2 villages)	Hours/week	73	105	−32	−43.8	Most part of tractor hiring [Jodha 1974].
Extent of land tenancy	Total leased in/out land. 86 hh (6 villages)	ha	67	120	−53	−79.1	Tenancy status of plots initially concealed [Jodha 1981].
Cost of food borrowed during drought year	26 hh (2 villages)	Rs/hh	648	822	−174	−26.9	Costs due to interlocked factor markets [Jodha 1977[.
Capital investment	78 farms hh	Rs/ha	382	471	−81	−21.27	Accretionery process of capital formation. [Jodha 1967].
Cost of credit from institutions	23 borrowers (5 villages)	Cost as per cent of principal	9	22	−13	−144	Cost of borrowing beyond interest rate [AERC 1971].

Notes: (a) Based on data/information for selected cases, from the studies referred in the last column.
(b) Method 'A' indicates the conventional extensive approach to data gathering through one or two shot surveys using structured questionnaires. Method 'B' involves prolonged and intensive interviews and in most cases participant observations besides what is indicated under 'A'.
(c) These reasons can be related to items mentioned under appendices A and B.

puts from gross income. Being so standardised and so often used, these concepts hardly need further elaboration. However, it may be added that the main purpose of collecting income information during the base period was to relate it to the process of capital formation by the sample households. The income data during the second period were collected to ascertain the extent of contribution of common property resources (pasture, forests, etc) towards household income.

The terms in which villagers narrated change in their own economic status are unconventional, and they require explanation. They are classified under the following five major groups:

(i) reduced reliance of the poor on traditional patrons, landlords, and resourceful people for sustenance, employment, and income;
(ii) reduced dependence on low pay-off jobs/options;
(iii) improved mobility and liquidity position;
(iv) shifts in consumption patterns/practices; and
(v) acquisition of consumer durables.

Information on most of the above items was available from benchmark data on resource endowment, production, marketing, and consumption activities of the sample households. For the resurvey period, it was purposely collected to see the change.

The indicators of change perceived by the villagers can be grouped under categories which are more familiar to economists and used in their professional communication.

They are: (a) indicators of enlarging opportunity sets or increasing number of choices (e g, in the matter of employment, borrowing, marketing, etc);
(b) indicators of consumption activities with high income elasticities (e g, travel, slack season purchases, length of maternity feeding of women, etc);
(c) indicators of investment in lumpy consumer durables (e g, pucca structures of houses, compounds to houses, etc).

Changes in Incidence of Poverty

The incidence of poverty in the ongoing debate on the subject in India is judged with reference to poverty line and the changes over time in the proportions of population below the poverty line. Though conceived in terms of per capita conusmption expenditure the poverty line is indicated by a figure of monthly per capita income, such as Rs 15 for rural areas at 1960-61 prices, according to Dandekar and Rath [1971] and Rs 65 at 1977-78 prices, according to the Indian Planning Commission (1981). Per Capita annual income of Rs 180 (at 1964-66 prices) may be considered as a poverty line comparable to the one suggested by Dandekar and Rath [1971]. The proportion of sample households in study villages falling below this income level during the two periods is indicated in Table 2. However, our further analysis follows a different approach. As a first step we compare for each household the annual per capita income (i e, constant at 1964-66 prices) during the two periods (i e, 1964-66 and 1982-84). The proportion of households shlowing more than 5 per cent decline in their per capita annual income is considered as indicator of increased incidence of poverty. The increased incidence of poverty thus revealed is compared with the changes in the economic status of the people revealed by qualitative indicators of change as perceived by the villagers.

The analysis of the income data (Table 2) showed that the average per capita annual income of the sample households was Rs 162 during 1964-66. This increased to Rs 1,050 at current prices during 1982-84. However, when the income was deflated and expressed in terms of constant prices (1964-66 prices),[5] the figure came down to Rs 175. To arrive at average annual income figures for the base period, the year 1963-64 was not included, because it was a severe drought year. The household by household comparison of per capita income during the two periods (including by pooling the data of households which had split since the benchmark period), indicated that for 38 per cent of the households, the per capita annual income had declined by more than 5 per cent of the base period income. For 47 per cent of households income increased by more than 5per cent. The remaining households, where per capita annual income changed only within $\pm$ 5 per cent, have been treated as the cases where per capita incomes remained constant during the reference periods.

According to the above figures, 38 per cent of the sample households have become poorer during 1982-84 compared to 20 years ago. If one goes by the poverty line, i e, per capita income of Rs 180 per year, the proportion of households below it has increased from 17 per cent in 1964-66 to 23 per cent during 1982-84. But the latter does not include all the households that constituted the group under poverty line during the base period. In other words some households who were below the poverty line in 1964-66 have risen above it during 1982-84.[6]

Table 3: Indicators of Declining Indispensibility of Patron's (Rich People's) Support/Mercy/Patronage for Employment, Income and Sustenance of Poor Households[a]

Indicators	Per Cent of Households during	
	1963-66	1982-84
Households with one/more members working as attached/semi-attached labour	37	7
Households residing on patron's land/yard	31	0
Households resorting to off-season borrowing of foodgrain from patrons	77	26
Households taking seed loan from patrons	34	9
Households marketing farm produce only through patrons	86	23
Households taking loan from others besides patrons	13	47

Note: a Details in this and the following four tables relate only to 35 households whose per capita annual income (at constant prices) had declined during 1982-84 compared to 1964-66.

Table 2: Details of Income Position of Sample Households at Two Points of Time (*Per capita annual net income in Rs*)[a]

Details	Average Situation during		
	1964-66[b]	1982-84	
		At Current Prices	At Constant Prices[c]
Average per capita annual income (Rs)	162	1050	175
Contribution of different sources of income (per cent)			
—Crop farming	48	43	—
—Animal husbandry	27	33	—
—Labour/bullock hire	14	11	—
—Others (rent, remittance, etc)	21	23	
Proportion of households with per capita annual income (at constant prices)[c]			
—less than Rs 180 (i e, poverty line) (per cent)	17	—	23
—showing increase of more than 5 per cent over the period (per cent)	—	—	47
—showing decline of more than 5 per cent over the period (per cent)	—	—	38
—showing positive or negative change up to 5 per cent over the period (constant income) (per cent)	—	—	15

Notes: a Data relates to 95 sample households from two villages one each from Jodhpur and Nagaur districts in Rajasthan.
b 1963-64 being a severe drought year its income figures are not considered.
c At 1964-66 prices.

Qualitative Indicators

If one goes by the qualitative indicators of poverty or absence of it as mentioned earlier, a completely opposite picture seems to appear. Tables 3 to 7 illustrate the phenomenon. These tables give details about only those (35 of 95) households whose per capita annual income has declined by more than 5 per cent during the period under review. Furthermore, these tables present the extent of change in terms of proportion of households whose situation as per the above-mentioned indicators has changed during 1982-84 compared to the base period.

Table 4: Indicators of Reduced Dependence on Low Pay-off (Inferior) Jobs in Case of Poor Households

Indicators	Per Cent of Households during	
	1963-66	1982-84
Households engaged in[a]		
—food gathering	100	20
—fuel gathering	100	63
—fodder gathering	100	23
Households having members engaged in part-time petty jobs[b]	100	23
Households with members seasonally out-migrating for job	34	11
Households withdrawing their children from school during crop season for work help, earning etc	17	6

Note: a Only items like wild fruits during summer season, and fuel/fodder during post-harvest period are considered. In these cases supply is not a constraint to reduce peoples' dependence on them.
b Jobs like helping in fencing, etc, for getting one meal as wage.

Table 5: Indicators of Improved Mobility and Liquidity Position of Poor Households

Indicators	Per Cent of Households during	
	1963-66	1982-84
Households selling over 80 per cent of their marketed produce during post-harvest period	100	46
Households retaining up to 25 per cent of surplus for sale up to next rain	0	6
Households purchasing key provisions in bulk	0	6
Households relying on day-to-day petty purchases of key provisions[a]	100	51
Households making cash purchases during slack season festivals, etc	6	51
Households possessing ready cash up to Rs 200 or more at home during slack season	0	26
Households having members who travel by paid transport more than twice a year to outside the district	17	78

Note: a Provisions like chilly, onion, gur, oil, etc.

Table 3 indicates the extent of decline in the reliance on patronage and the support of the rich (patrons) for the employment and sustenance of the poor households, i e, the households that have become poorer since 1964-66 (Table 2). Some of the indicators, such as the practice of attached labour, seed loan in kind (at exorbitant interest rate), marketing produce only through patrons, depending solely on patrons for credit, and residence on patron's land necessitating supply of unpaid and unaccounted labour services to the patrons, have inherent an element of exploitation of the poor. The poor people's ability to dispense with these practices is the surest indicator of their improved economic status. Despite several socio-economic reform measures such as anti-bonded labour laws, etc, the poor people continue to accept these exploitative arrangements by patrons. They tend to give up these arrangements only when they become economically more independent.[7]

The inferior or low pay-off jobs (including food gathering from the fast-declining common property resources) are usually taken up by the poor in the villages [Jodha 1986]. The recourse to such jobs declines as one improves his or her economic condition. Table 4 indicates that the group of households that have become poorer in 1982-84, as per the formal income criteria, had relied more on these inferior options during the base period when they were relatively rich. Now, despite increase in their poverty (i e, reduced per capita income) their preference for inferior jobs has declined, as indicated by proportion of households under relevant categories under Table 4.

Several indicators in Table 5 reveal that general liquidity of the group of households that have become poorer is better now (i e, in 1982-84) than it was during the base period, when income-wise they were relatively rich. Their ability to make purchase of provisions in bulk by paying for it in a single instalment, cash purchases during summer season festivals, and keeping significant amount of cash in hand during the slack season are definite signs of improvement notwithstanding the decline in their formally recorded income position.[8]

The consumption pattern, particularly in terms of inclusion of items which poor people rarely use, is another indicator of substantial change in the economic condition of these people. Now there is a much higher proportion of the concerned group of households (Table 6) who frequently consume better quality food items,[9] offer better maternity diet to women for a longer period, and where women and children regularly wear shoes. The only item where the situation seems to have deteriorated is the proportion of households regularly using milk and milk products. This is, in fact, a side-effect of improved milk marketing facilities in the villages. The sale of milk has helped raise the share of livestock income in total income (Table 2), but has also reduced the opportunities for self-consumption of milk and milk products.[10]

Table 6: Indicators of Shifts in Consumption Pattern of Poor Households

Indicators	Per Cent of Households during	
	1963-66	1982-84
Households occasionally consuming green vegetables during non-crop season	0	100
Households consuming curries mainly made from cereals[a]	100	14
Households using milk/milk products regularly	34	6
Households consuming sugar regularly	0	20
Households consuming rice on non-festive occasions also	0	14
Households with adults skipping third meal in the day during the summer (scarcity period)	86	20
Households where women and children wear shoes regularly	0	86
Households where maternity feeding to women provided up to a month or more	6	23

Note: a As per the local saying one who cannot afford vegetables, etc, eats cereals with the help of poor quality curry made of cereals only.

The situation regarding the changes in the possession of consumer durables seems more impressive (Table 7). Pucca structures of houses, provision of doors and gates, compound walls, separate quarters for humans and livestock in the house, and better facilities for women are important indicators of positive change in the economic status of the people. The higher proportion of the households possessing these items in 1982-84 compared to the base period indicate a substantial improvement in their economic position.

The detailed explanation of these changes falls outside the scope of this paper. However, it may be mentioned that a combination of factors has led to the improved condition of the households in the study villages. Occurrence of these factors observed in several villages of the districts of Nagaur, Jodhpur, Pali, and Sikar in western Rajasthan would suggest that the changes refelcted through study villages may extend to wider areas of the region.

The possible factors responsible for improved economic conditions of sample households include the following:

(i) A continuous spell of good rain years during 1974 to 1978.

(ii) Possibility of double cropping in sandy loam soils without change in rainfall or irrigation due to *raya* (a minor oilseed) crop

for post-rainy season, brought by seasonal migrants to Punjab in the early 1970s and its spread in the dry region without any research and extension effort. The net returns from this crop are higher than the main rainy season crop like pearl millet.

(iii) Coverage of larger area by moisture conserving practice of bunding, which in association with timely ploughing through tractors helped in adoption of hybrid pearl millet like BJ4.

(iv) Facility of milk marketing which generated regular cash income and also induced changes in the composition of animal holding discouraging ownership of unproductive animals.

(v) Reduced incidence of guini-worm among adult workers in the recent years which often incapacitates them during the crop season. This happened due to Drought Prone Area Programme (DPAP) provision of piped groundwater supply for drinking, replacing traditional practice of using pond water.

(vi) Off-season employment under rural works programme/DPAP and regular off-farm jobs to some people.

(vii) Institutional reforms helping people in getting lands including house sites and reduction in indebtedness.

(viii) Gains to poor as a byproduct of factionalism among the rural rich, where each faction tried to woo the poor for their support.

Table 8 summarises the changes in the situation with reference to some of the factors mentioned. The data relate to the 95 sample households.

TABLE 7: INDICATORS OF CHANGE IN ASSET POSITION OF POOR HOUSEHOLDS

Indicators	Percentage of Households during	
	1963-66	1982-84
Households having houses with		
—fully pucca structure	0	14
—partly pucca structure	9	52
—only kutcha structure	91	34
—gate with doors	6	43
—compound wall/fence	13	52
—separate provision of stay for humans and animals	6	52
—private place (bath room, etc) for women	0	23
Households possessing:		
—quilts of cotton	6	20
—quilts of old rags	94	80
—radio	0	7
—bicycle	0	3

TOWARDS RECONCILIATION

(i) The first inference from the perusal of information under Table 2 on the one hand and Tables 3 to 7 on the other, is that the extent of increased incidence of poverty reflected by Table 2 is not borne by the qualitative indicators of change under the remaining tables.

Part of the explanation could be that we have considered all households, whose per capita annual income has declined by more than 5 per cent of base period income, as having become poorer over time. They may include some households who were rich enough and a fall of 5 per cent in their income did not make them much poorer. However, the data for households grouped according to level of decline in income were also examined. The emerging number of observations in each group became too small to be meaningfully reported. However, the inferences from retabulation, which could help to satisfy the above objection may be mentioned:

(a) The proportion of households showing qualitative improvement in economic conditions as per the above indicators were not very different in the case of sub-groups of high and low income households, which suffered decline in their per capita annual income as per Table 2.

(b) Even the 23 per cent of sample households who were below poverty line (i e, per capita annual income of Rs 180 at constant prices (Table 2), had a fairly large proportion of households that showed improvement in their economic status as per the qualitative indicators discussed above.

(c) There was a small number of households in the group that neither faced decline in their per capita annual income nor slipped below the poverty line and yet did not show improvement in terms of qualitative indicators.

Thus the main explanation may lie in the use of specific approaches to assess and record economic change affecting the rural households. Furthermore, change in economic status revealed by qualitative indicators is an outcome of gradual change over a period of time. Difference of per capita net income at two points of time may not capture this change. The measurement of income at one point in time captures only the current transitory component of income. The permanent components (accumulated transitory components) of income in the past are not captured . This reinforces the need for revising the research aproach to understand the dynamics of rural change, and to cover permanent components, of income besides the transitory components, each of which may not move in the same direction.

(ii) The reported case study is to small in its coverage to encourage any generalisation of results. However, this does indicate the need for complementing formal concepts and norms by more informal categories and methods to capture a greater extent of reality through social science research in the field. It also underscores the importance of participant observations and in-depth micro-level investigations in field studies

(iii) Intensive and qualitative information gathering may prove costly. Hence, this approach can be used for generating relevant indicators (proxies) that can form part of the large-scale, formal data-gathering projects. Furthermore, the insights received through such intensive investigations can help in the better interpretation of results from extensive studies.

TABLE 8: POSSIBLE FACTORS UNDERLYING QUALITATIVE IMPROVEMENT IN CONDITION OF SAMPLE HOUSEHOLDS SINCE 1963-66[a]

Factors	Units of Observation	Average (Per Year) Situation during		Remarks.
		1963-66	1982-84	
Extent of *raya*[b] crop	Per cent of total cropped area	0	26	
Extent of hybrid pearl millet	"	0	38	
Extent of irrigation	"	1	4	
Extent of tractor cultivation	"	7	68	Mostly by hire
Extent of bunding	No of plots	43	134	Cumulative totals
Households selling milk	No	5	36	
Unproductive animals per productive animal	No	6	2	Cows and buffaloes only
Off-farm regular jobs	No	7	29	
People affected by guini-worm[c]	No	58	4	
Litigation cases	No	27	5	
Non-workers per worker	No	3.9	3.2	
Households benefitting from:				
i Institutional reforms	No	0	18	Got land animals, debt reduction etc, since 1986.
ii Factionalism among the rich	No	0	29	

Notes: a Data relate to 95 sample households only.
b *Raya*, a high value small oilseed post-rainy season crop, has spread without any research or extension effort in the region.
c Guini-worm disease caused by drinking water from ponds. Piped water supply under DDAP scheme helped reduce it.

(iv) A factor which can enhance the complementarity of the macro-level and highly quantitative studies on the one hand and intensive and micro-level research on the other is close links of principal researchers with the field situation.

(v) This case study indicates the need for a fresh look at the conceptualisations underlying the measurement of the level and change in rural poverty. The complementary use of quantitative and qualitative concepts can help improve our understanding of the dynamics of poverty.

(vi) To the extent that the incidence of poverty can be partly inferred from observance of poverty indicators, the next problem relates to the possibility of measurement of these indicators for comparative studies. To the extent a part of the indicators of change discussed in this paper may be area or community-specific, their use for inter-community comparisons will be limited. Thought may be given to evolution of some indices on the pattern of currently debated 'Quality of Life Index' as against gross domestic product, etc, as a better indicator of a nation's economic well-being.

Notes

1 In ICRISAT's village level studies, the measurement problems have been handled by physical weighing or measuring of the quantities reported in volumes. Such conversions were done on random basis to evolve equivalence between two categories. See Binswanger and Jodha [1977].

2 Various types of measurement errors emanating from aforementioned factors will influence the results depending on the type of analysis. For instance, if a variable is measured with a random error, that will not affect the estimate of its mean and regression estimate if it is the dependent variable in a multivariate regression. But it still will bias towards zero its coefficient if it is used as a right-side variable in a regression. On the other hand, systematic measurement error may cause more or less problems, depending on the mode of analysis and nature of the error. Systematic measurement error will bias the mean but may not bias the regression. This may be added that systematic mismeasurement over time should not lead to the obfuscation of changes in the variable that is being mismeasured. If mismeasurement errors themselves do not change over time, valid conclusion on dynamics can still be drawn.

3 Our sample does not include a landless household. There were hardly any landless households (except traders, etc) in the study villages. In fact, landlessness of the type observed in high population areas can hardly survive in the arid lands. Furthermore, a number of sample households of benchmark period had split over time. For the purpose of comparison at two points of time data of such households were pooled to reconstitute original households.

4 Data during 1963-66 were collected as a part of the field work for the author's PhD thesis [Jodha 1967] and land transformation studies of Central Arid Zone Research Institute (CAZRI). The data for subsequent periods were gathered while collecting information for ICRISAT's research projects on Farmers' Group Action for Watershed Based Resource Development in 1977-78, and Role of Common Property Resources in Farming Systems in 1982-84 [Jodha 1986].

5 Income during 1982-84 was deflated by the extent of increase in gold price in the villages. The logic of using the change in gold price as index of inflation is that one *tola* (10g) of gold fetched the same quantity of bajra (pearl millet)—the staple foodgrain of the people—in 1982-84 as it fetched in 1964-66. However, gold price per *tola* has increased by about six times since then. For further details on this approach see Jodha [1985]. The calculations based on changes in consumer price index for agricultural workers in Rajasthan during the period under review also indicated the price change of similar magnitude (i e, 5.7 times).

6 In terms of rainfall and crops 1963-64 was a complete drought year. As per the *annawari* system of crop assessment 1964-65 had bumper crops, while 1965-66 had average crops. The year 1982-83 had above average crops while crops were below average during 1983-84. On an average cropwise the period 1964-66 was slightly better than 1982-84. This influenced the income positions of the sample households to some extent. Of 95 sample households, 35 had less per capita income during 1982-84 compared to 1964-66. A part of it could be due to life cycle related factors such as increased number of members especially dependents in the households. However, due to a variety of factors 22 of the 35 households had income below poverty line during 1982-84. This included seven households who were already below poverty line and 15 households who were above it during 1964-66. There were 11 households who moved above poverty line during the same period.

7 Reduced reliance on patronage of rich (and on inferior) options such as Common Property Resource (CPR)-activities, could be both supply-determined and demand-

Appendix A

EXAMPLES OF CONCEPTS/CATEGORIES AND YARDSTICKS/NORMS USED BY SOCIAL SCIENCE RESEARCHERS TO IDENTIFY AND MEASURE VARIABLES COMPRISING RURAL REALITIES AND FACETS OF REALITY LIKELY TO BE BYPASSED BY THEM

Concepts and Norms	Aspects Covered	Facets Bypassed
Household income	Cash and kind inflows (including imputed values of major non-traded items).	Ignores time context and transaction partner context of income generating activity; disregards flow of low value self-provisioning activities with significant collective contribution to sustenance of the people.
Farm production	Production from all farm enterprises.	Series of intermediate activities (often considered as consumption activities), which facilitate the final output from farm enterprises in self-provisioning societies.
Food consumption basket	Volume and quality of formally recorded food items.	Ignores seasonally varying streams of self-provisioning items/services.
Household resource endowment	Only privately owned land, labour and capital resources.	Ignores households' collective access to common property resources; access to power and influence too.
Factor/product market	Competitive, impersonal interactive process of framework.	Ignores distortions, imperfections, etc, due to factors like influence, power, affinities and inequities.
Farm size grouping	Based on owned or operated landholdings (often standardised for productivity and irrigation).	Ignores totality of asset position including household's access to common property resources, its workforce which determines households' ultimate potential to harness land resources and environment for sustenance.
Labour input	Labour as standard unit expressed in terms of man-hours or mandays, etc, (Differentiation based on age and sex not withstanding).	Disregards heterogeneity of labour of same age/sex in terms of differences in stamina and productivity; ignores differences in intensity of effort of a self-employed worker and hired worker. (In appropriate imputation of value of the labour of self-employed worker is done on the basis of wage rate of hired or attached labourer).
Capital formation	Acquisition of assets.	Ignores accretionery process, and petty accretions which are important collectively.
Depreciation of assets	Book-keeping-value based reduction in the worth of the asset.	Ignores continued usability and recyclibility.
Efficiency/ productivity norm	Quantity and value of final produce of an activity (based on market criteria)	Ignores totality of the operation of the system directed to satisfaction of multiple objectives rather than single criterion.

Appendix B

EXAMPLES OF 'COMMUNICATION GAPS' (UNDER THREE CATEGORIES)

(1) Possible differences in connotation of same concept as understood by respondent and researcher.

Concept	Connotation As Per:	
	Researcher	Respondent
Food consumption	Total food	Major food items excluding petty self-provisioning
Produce	Total	Final produce excluding items harvested during the intra-season period.
Manday	Formal work hour 8-10 hours, etc	Total work time often more than 8-10 hours.
Hired labour	Hired + exchanged	Only hired.
Unemployment	Involuntary unemployment.	Disguised unemployment treated as full unemployment.

(2) Possible gaps in yardsticks guiding respondent's quantitative responses and researcher's recording of responses which may make it difficult to establish perfect equivalence between the reported and recorded quantities.

	Item	Researcher
Length/area	Modern units (metre, hectares, inches, etc	Traditional—foot-lengths, steps, arm-lengths, finger widths.
Weight/volumes	Modern measures such as kilograms, quintals, litres, etc,	Cart-loads, bag fulls, volume based measures (barrels, etc).
Production	Modern measures, quintals, etc	Self-sufficiency periods of subsistence-requirement, e g, total production equal to 6 months of requirements, etc.
Time	Precise—days, hour, etc	Vague in terms of proportion of a day or a week, etc, i e, half-a-day, ¼ of a day, etc.

(3) Degree of precision/vagueness associated with responses as they are given and recorded.

Item	Recording by Researcher	Reporting by Respondent
Labour input	Exact days/hours	Ranged units, e g, 5-7 hour, 10-12 days, etc.
Grain yield	Exact quantities in modern measures/units (quintals/kgs, etc)	Range: e g, 5-6 bags or 50-55 quintals, etc.
Input use/output sold	Exact quantities	Range in terms of proportion: ⅓ to ⅔ of bag, etc.

determined options. However, in our study we have included only demand induced cases. For instance, the patrons now given up by the concerned poor households were still (at the time of resurvey), in the same business of offering facilities like site for living, crisis period food and money supply, etc. However, they didn't have many of relevant customers to work as attached workers. The poor who left their patrons now have their own house site and united facilities of credit, marketing, etc, from others, including from co-operatives. The factionalism between rural rich indirectly favouring the poor, on the one hand, and some public programmes, on the other, seem to have helped the poor in getting rid or exploitative patronage (Table 8).

In the case of dependence on CPRs, only those activities have been considered where supply was not a constraining factor. They included collection of wild fruits (*ker sangari*, etc) during summer season and fuel/fodder accumulation during the period soon after the harvest of crops.

8 The very first anecdote which provoked me to undertake this investigation related to the liquidity position of the rural poor. During my 1978 revisit to one of the villages, I was talking to a villager whose room I rented during my early (1963-66) stay in the village. A woman labourer arrived there to collect her wages for the work she did for my ex-landlord. To avoid her, he pleaded non-availability of change and called her two days later. The woman promptly untied a knot in her *lugari* (sari), took out change and said "you need change for how much-Rs 100? Rs 50?". Contrast this with the situation during 1963-66, when, if by mistake I failed to carry change, there was nobody in the village who could offer me change for Rs 100, and I had to visit the district place/neighbouring town to get change for Rs 100.

9 Of the 35 households more than 20 used to offer tea made with *jaggery* during my frequent visits to their houses for data during 1963-66. During revisits I found all of them using sugar instead of *jaggery* for the same purpose.

10 The cash nexus induces farmers to part with practically all of their milk supplies, leaving little milk for self-provisioning or for sharing (buttermilk, etc) with others in the villages. Cases were observed where households producing as much as 10 litter of milk a day brought milk from the tea shop to prepare tea for the visitors (including myself).

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Dimensions of Rural Poverty: An Inter-Regional Profile

L R Jain
K Sundaram
S D Tendulkar

This study considers six inter-related dimensions of poverty and seeks to (a) provide region-level estimates for all the six variables; (b) measure and analyse inter-regional disparities in the indicators of poverty; (c) examine the spatial distribution of regions by reference to the quartile-wise ranking along each of the dimensions of poverty; (d) identify spatial patterns of contiguity by mapping; and (e) analyse the inter-relations among the chosen indicators by means of bivariate quartile-wise cross-tabulation.

THIS paper presents an inter-regional profile of rural poverty in the early seventies in several dimensions.

Regions considered in this study are those delineated by the National Sample Survey Organisation (NSSO) for their twenty-seventh round nation-wide survey of consumer expenditure. In this survey, NSSO divided the country into 62 agro-climatically homogeneous regions each consisting of two or more districts with typically more than one region per state. Our study is confined to 56 out of these 62 regions. (see Section II for the discussion of the data base and related issues).

In this study, we consider six inter-related dimensions of poverty, namely (1) the average private consumer expenditure per capita per month (AVCE); (2) the Gini coefficient summarising the size distribution of AVCE (denoted by GINIC); (3) the proportion of the rural population below the poverty line (POVT); (4) the poverty-gap ratio (PGR); (5) The Gini coefficient (GP) for the size distribution of consumer expenditure within the set of the poor; and (6) the Sen Index (SI) that captures the intensity dimension of poverty by combining POVT, PGR and GP.

The paper seeks to

a) provide the region-level estimates for all the six variables listed above;

b) measure and analyse inter-regional disparities in the indicators of poverty (Section III);

c) examine the spatial distribution of regions by reference to the quartile-wise ranking along each of the dimensions of poverty (Section IV);

d) identify spatial patterns of contiguity by mapping (Section V); and

e) analyse the inter-relations among the chosen indicators by means of bivariate quartile-wise cross-tabulation (Section VI).

Concluding observations appear in Section VII.

II

Data Base and Related Issues

The study is based on the data relating to the National Sample Survey (NSS for short) on Consumer Expenditure carried out between July 1972 and June 1973 during the 27th round. The survey covered 72,270 rural households on a stratified sampling basis. (The survey results have been published in *Sarvekshana*, Vol VI, nos 3-4, January-April 1983.)

The rural areas have been divided into 62 regions covering 21 states on the basis of agro-climatic homogeneity. The present study is confined to 56 out of 62 regions and excludes the following six regions: two regions of Manipur and single-region states of Meghalaya, Himachal Pradesh, Tripura and Delhi. Other union territories were not covered by the survey. The exclusion of the six regions is a carry-over from our earlier study [5] which sought to *explain* the inter-regional variations in rural poverty. In that study and in its extension [3] by the present authors, the omission of these six regions was dictated by the absence of information on one important explanatory variable. For each region within a state, region code, description of the region and composition (in terms of districts/tehsils) of the region are given in Appendix Table I and shown in Map A-I.

In computing the alternative measures of poverty for each of the 56 regions, we first derive state-specific poverty lines. We start with the widely used all-India rural poverty line of Rs 15 per capita per month at 1960-61 prices. This is first adjusted for inter-state price-differentials for the base year. This adjustment was made on the basis of the Fisher price index for each state compared to all-India as base and applicable to 40-60 per cent fractile group of the rural population. This set of price relatives was derived by Chatterjee and Bhattacharya [1] for the year 1963-64 and the same is assumed to apply to 1960-61 as well. The resultant poverty lines at 1960-61 prices are adjusted for price changes between 1960-61 and 1972-73 by reference to state-specific consumer price indices for agricultural labourers. Each state-specific poverty line at 1972-73 prices so derived is assumed to apply to all the regions within that state.

As regards the computational procedures, we have essentially followed the interpolation methods suggested by Kakwani [2] to derive the different indicators of poverty used in this per (For details, see [3]).

III

Regional Dimensions of Poverty: A Summary View

In this section we present and analyse the estimates of six indicators highlighting different dimensions of poverty for the rural areas of 56 NSS regions covering a little more than 97 per cent of the all-India rural population. The six indicators used in this analysis are:

a) POVT or the proportion of the rural population below the poverty line or what is called the head-count measure of poverty;

b) AVCE or the average private consumer expenditure per capita per month as a measure of the average level of living in the region;

c) GINIC or the Gini coefficient summarising the size-distribution of AVCE indicative of the extent of relative inequality in levels of living within a region;

d) the Sen-Index (SI) capturing the intensity-dimension of poverty that brings within its ambit not only the head-count measure of poverty but also;

e) the Poverty-Gap Ratio (PGR) which indicates the gap between the poverty-level per capita expenditure and the average per capita expenditure for the subset of the poor population relative to the poverty level per capita expenditure; and

f) the Gini-coefficient summarising the relative inequality in the (truncated) size-distribution of per capita consumer expenditure within the set of the poor (or GP).

It may be noted that AVCE and GINIC, besides being important in their own right as indicators of rural poverty are the two proximate variables that have been shown to explain in a substantial measure the inter-regional variations in POVT and SI (see [3]).

We begin our analysis by considering statistics which summarise the variations across 56 regions in respect of each of the six indicators listed (see Table 1). The detailed estimates of the six indicators for each of the 56 regions are presented in the Appendix Table II.) The summary statistics relate to the minimum and the maximum values defining the range of variation, the value of the unweighted mean of the 56

observations $\bar{x}$, the all-India average which is the weighted mean across 62 regions $\bar{x}^*$ and the unweighted coefficients of variation across 56 regions defined alternatively by reference to $\bar{x}$ and $\bar{x}^*$.

The following points may be noted:

1) Comparing the unweighted mean values (defined over 56 regions) and the all-India averages, one finds that the all-India POVT is *lower* (if only slightly). This is so, despite the fact that the all-India value of AVCE is lower and that of GINIC higher than the corresponding unweighted mean values across 56 regions. Also, the all-India Sen-Index SI is lower even though the all-India values of two of SI's component arguments, PGR and GP—respectively the Poverty Gap ratio and the Gini-coefficient of consumption among the poor—are higher than their unweighted counterparts relating to 56 regions.

2) Except in the case of GP and PGR, the inter-regional coefficients of variation (CV for short) of the indicators are higher when defined with respect to their all-India average values $\bar{x}^*$ than when defined with respect to $\bar{x}$.

3) Whether we consider CV's with respect to $\bar{x}$ or $\bar{x}^*$, inter-regional disparity as measured by CV is the least in respect of GINIC which summarises the relative inequality within the region. The inter-regional disparity is the highest in respect of Sen-Index, SI.

4) The coefficient of variation of GINIC is lower than that of GP, though the mean value of the latter is only about a half of the mean value of the former. To put it differently, even though *within a region* the inequality in the size distribution of per capita consumption expenditure among those below the poverty line is much lower than that relating to consumption of the total population, the *relative variability across regions* is higher is the former case.

IV

Quartile-wise Analysis

To facilitate further analysis, we have grouped 56 regions into 4 quartiles of 14 each when the regions are ranked in ascending order according to each one of the six indicators. Table 2 gives for each indictor:

a) the upper-terminal value of the indicator;

b) the percentage of the total rural population in the quartile; and

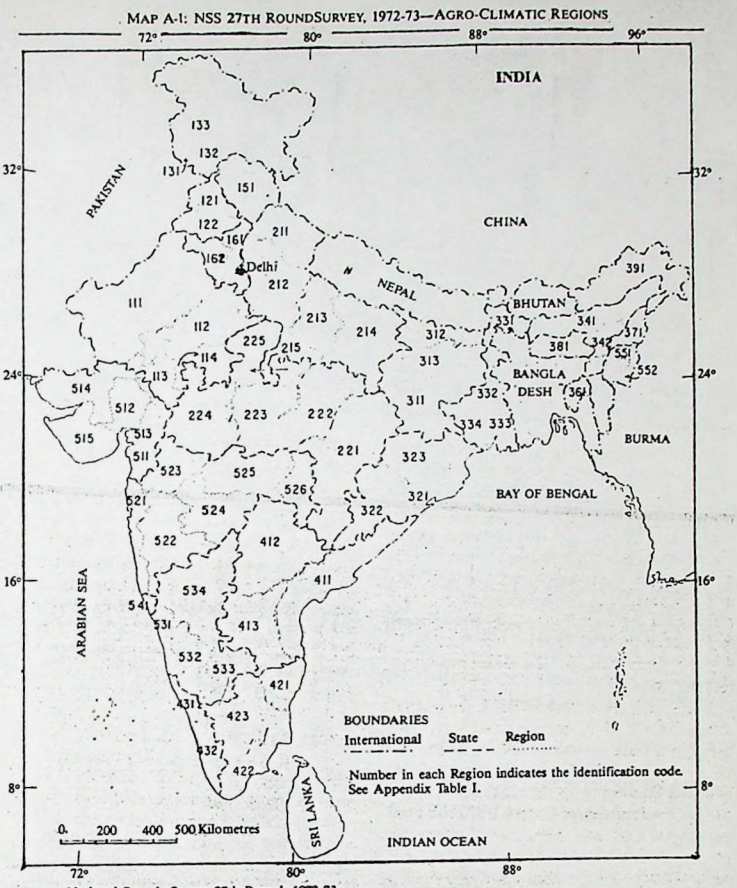
c) the percentage of the total rural poor population in the quartile.

When we combine the upper-terminal value for the first quartile with the minimum value of the variable given in Table 1 (column 3), we get the full range of the variable according to quartiles.

For all the indicators considered, the regions are densely concentrated over a narrow range in the second and the third quartile. A possible exception especially at the lower end is the Sen-Index.

When we divide the percentage given in line (c) by that given in line (b) we get the head-count ratio in that quartile relative to the head-count ratio for all the 56 regions. If we multiply this quartile specific relative head-count ratio by the all-India head-count ratio given in Table 1 (column 6), we can approximate the weighted average head-count ratio in each quartile. The quartile specific head-count ratios are given in Table 3. Quartile specific head-count ratios can be seen to progressively decline when the regions are ranked according to the size of AVCE. A progressive rise in the quartile specific head-count ratio can be observed when the regions are ranked according to the Sen-Index and its constituent elements (Table 3, lines 3 to 6). GINIC is the only ranking variable for which the head-count ratio does not exhibit monotonic relationship across quartiles. In fact, the quartile-specific head-count ratio varies within narrow bound between 43 and 50 per cent when the regions are ranked according to GINIC.

MAP A-1: NSS 27TH ROUNDSURVEY, 1972-73—AGRO-CLIMATIC REGIONS



Source: National Sample Survey 27th Round, 1972-73

V

Patterns of Contiguity

A visual picture of the quartile-wise ranks for the 56 regions in respect of each of the six ranking variables is presented in the maps (1 through 6) that follow. While the maps are self-explanatory, we offer brief comments on the important patterns of contiguity, revealed by these maps, especially as they relate to the lowest and the highest quartiles.

Let us consider the map representing the quartile-wise distribution of regions ranked in terms of the average per capita private consumption expenditure or AVCE. Of the 14 regions in the lowest quartile, 8 are contiguous regions located in the states of West Bengal (2), Orissa (2), Andhra Pradesh (1), Madhya Pradesh (2) and Bihar (1). In addition, all the three regions of Tamil Nadu fall in the lowest quartile of AVCE. In fact, but for the presence of the inland southern region of Andhra Pradesh (which falls in the third quartile of AVCE) breaking the contiguity between inland northern region of

Andhra Pradesh and the coastal northern region of Tamil Nadu, the contiguous low income belt would have stretched even longer from the eastern plains of West Bengal to Kanyakumari in Tamil Nadu.

When we shift our focus to the other end of the spectrum, we again find a contiguous stretch of 8 regions in the north-west belt of Haryana (2), Punjab (2), Rajasthan (2) and parts of Madhya Pradesh (2) in the highest quartile of AVCE. Further, the contiguity of these eight regions with three contiguous regions of Gujarat is broken by the presence of the dry areas region of Gujarat which is located in the third quartile when ranked by AVCE.

We turn now to the two maps (2 and 3) depicting the quartile- wise ranking of regions in terms of the two alternative measures of poverty, namely, the head-count ratio (POVT) and the Sen-Index (SI). As regards POVT, we find that all the 14 regions in the highest quartile form a contiguous east-west belt spread all the way from West Bengal to Rajasthan encompassing three regions of West Bengal, two regions of Orissa, one region of Bihar, two regions of Madhya Pradesh, four regions of Maharashtra and one region each of Gujarat and Rajasthan. The picture is almost identical when the regions are ranked in terms of Sen-Index with two variations. In the east, the central plains region rather than the Himalayan region of West Bengal lies in the fourth quartile of SI. More significantly, the substitution in the fourth quartile of SI of the inland northern region of Maharashtra by the inland central region of the same state, results in breaking the Maharashtra-Gujarat contiguity observed in the case of the fourth quartile on the basis of POVT.

At the other end of the scale, we have in the last quartile of SI a long contiguous belt

TABLE 2: SUMMARY OF INFORMATION REGARDING THE QUARTILES OF SELECTED VARIABLES ACROSS 56 REGIONS

Ranking Variables for Quartiles		Quartiles of Regions Q_1	Q_2	Q_3	Q_4
(1)		(2)	(3)	(4)	(5)
AVCE	(a)	Rs 38.38	Rs 43.43	Rs 46.60	Rs 76.24
	(b)	24.92	27.01	31.49	16.62
	(c)	31.88	28.98	28.51	10.60
GINIC	(a)	0.2583	0.2862	0.3039	0.3855
	(b)	25.74	24.29	31.19	18.82
	(c)	23.74	25.88	30.12	20.23
POVT	(a)	0.3777	0.4693	0.5939	0.8500
	(b)	13.81	37.34	28.87	20.02
	(c)	7.42	32.84	31.28	28.43
SI	(a)	0.1121	0.1708	0.2428	0.4300
	(b)	16.77	29.89	31.78	21.60
	(c)	10.05	25.90	33.78	30.24
GP	(a)	0.1023	0.1333	0.1498	0.1807
	(b)	15.27	31.80	26.55	26.42
	(c)	10.44	27.07	30.14	32.32
PGR	(a)	0.2265	0.2700	0.3051	0.3982
	(b)	22.95	24.26	28.99	23.84
	(c)	16.18	20.86	31.62	31.31

Notes: (1) Each quartile consists of 14 regions ranked according to the variable given in column (1), (2) a: Upper terminal value, (3) b: Percentage of total rural population in the quartile, (4) c: Percentage of total rural poor population in the quartile and (5) Totals corresponding to b and c relate to 56 regions.

TABLE 3: QUARTILE SPECIFIC HEAD-COUNT RATIO ACCORDING TO THE QUARTILES OF SELECTED INDICATORS ACROSS 56 REGIONS

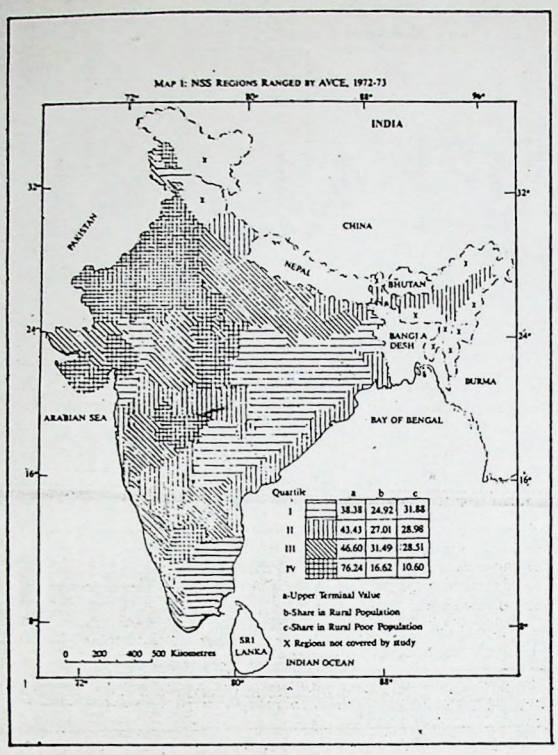
Sl. No.	Ranking Variable	Head-Count Ratio in Quartile 1	2	3	4
(1)	(2)	(3)	(4)	(5)	(6)
(1)	AVCE	60.13	50.43	42.55	29.98
(2)	GINIC	43.35	50.08	45.39	47.49
(3)	POVT	25.26	41.34	50.92	66.74
(4)	SI	28.17	40.23	49.96	65.80
(5)	GP	32.13	40.01	53.36	57.50
(6)	PGR	33.14	40.41	51.26	61.73

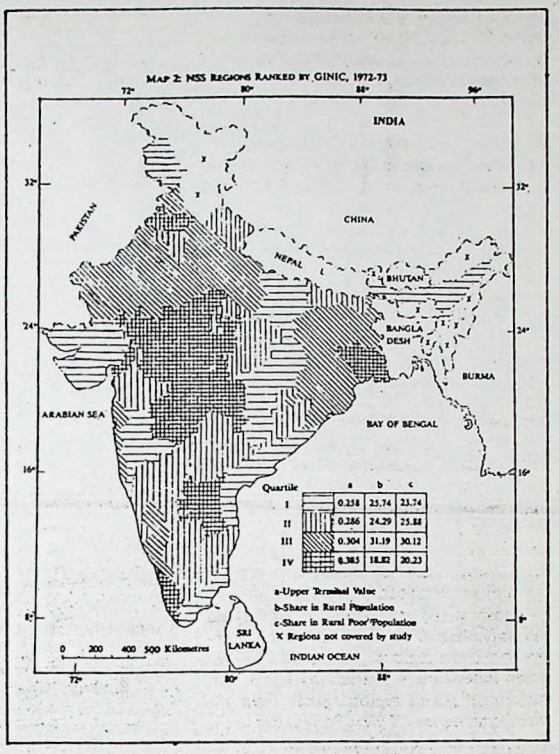
Source: Calculated from Tables 1 and 2.

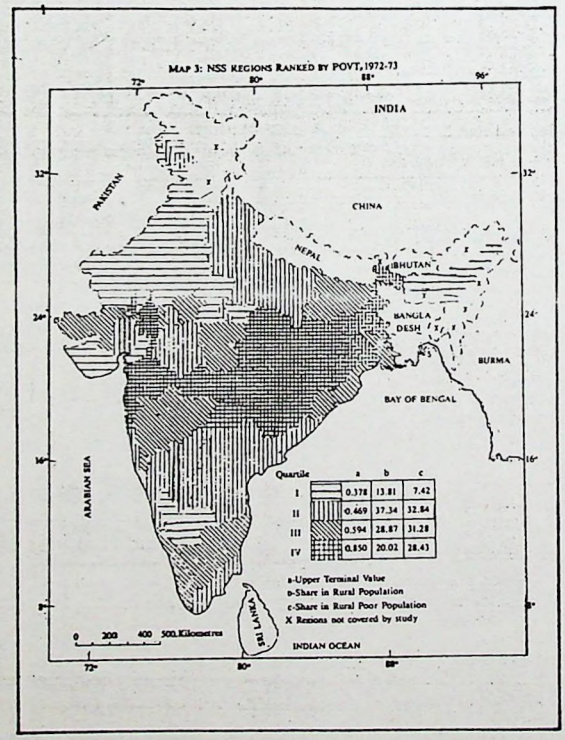
TABLE 1: SUMMARY STATISTICS OF THE VARIABLES

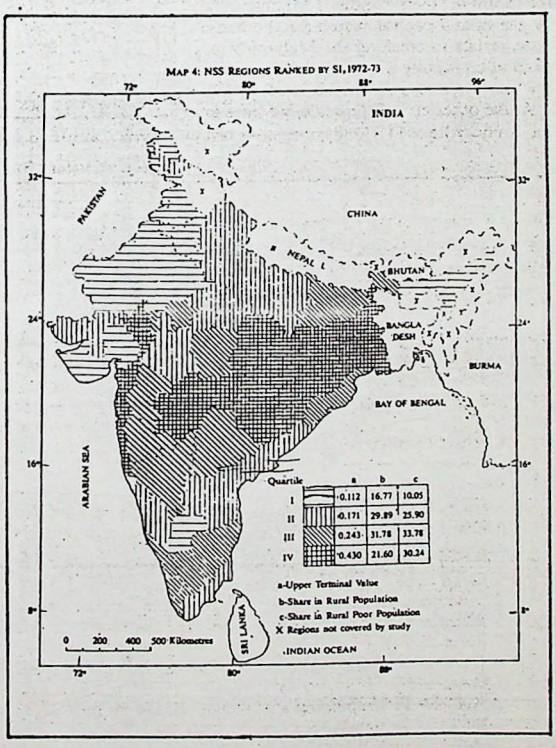
Sl No	Variables	Minimum	Maximum	Mean 56 Regions	Mean All India	CV(1) Per Cent	CV(2) Per Cent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)	Headcount Ratio (Per Cent) (POVT)	11.04 (162)	85.02 (322)	47.33	47.03	36.23	36.46
(2)	Average (per capita) consumer expenditure (Rs. per month) (AVCE)	28.19 (322)	76.24 (122)	45.24	43.98	22.76	23.59
(3)	Gini coefficient for entire population (Ratio) (GINIC)	0.1864 (341)	0.3855 (513)	0.2839	0.3056	14.30	15.10
(4)	Sen-Index (Ratio) (SI)	0.0327 (162)	0.4223 (322)	0.1810	0.1787	51.36	52.04
(5)	Poverty-Gap Ratio (Ratio) (PGR)	0.1514 (131)	0.3982 (323)	0.2683	0.2792	21.32	20.86
(6)	Gini coefficient among the poor (Ratio) (GP)	0.0714 (131)	0.1807 (323)	0.1286	0.1399	22.03	21.83

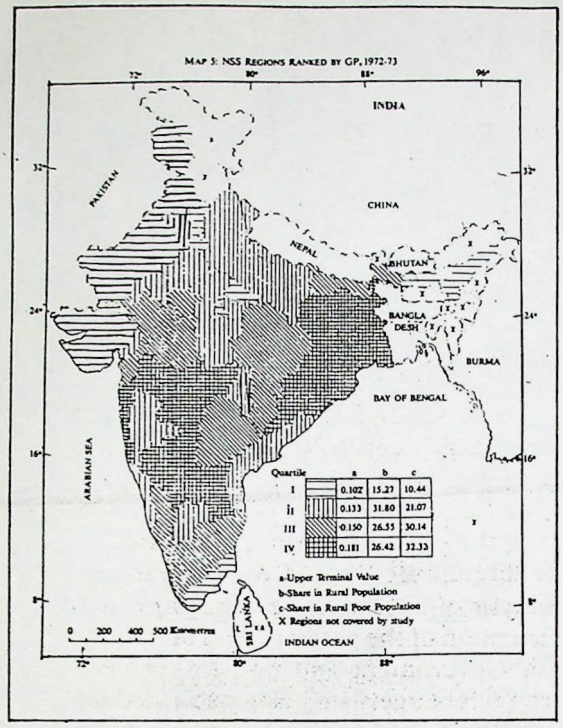
Notes: 1 Mean value of the variable for 56 regions in column (5) is an unweighted average of observations for the 56 regions.
2 Mean value of the variable for All India in column (6) is derived from the all-India tables covering all the 62 regions.
3 CV(1) in column (7) gives the unweighted coefficient of variation across 56 regions with respect to the unweighted mean for 56 regions given in column (5).
4 CV(2) in column (8) gives the unweighted coefficient of variation across 56 regions with respect to the all-India mean values given in column (6).
5 Numbers within brackets in columns (3) and (4) refer to the code numbers of the regions having minimum and maximum values of the variable, respectively.

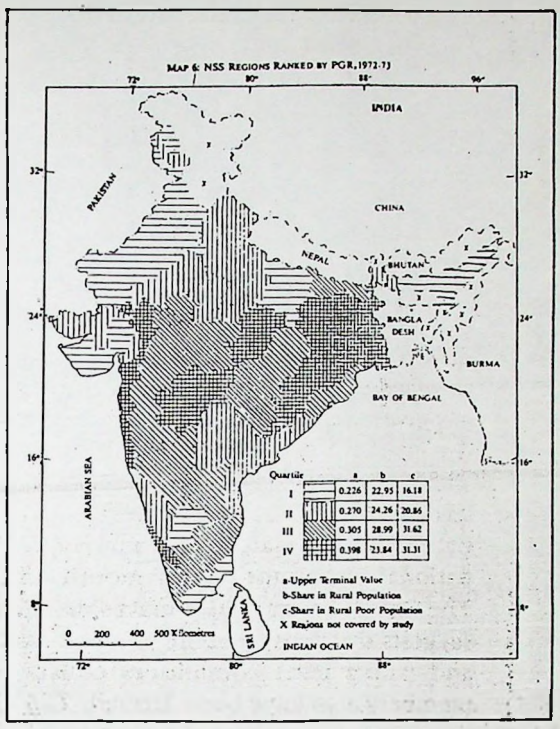

MAP 1: NSS REGIONS RANGED BY AVCE, 1972-73
INDIA
PAKISTAN
CHINA
NEPAL
BHUTAN
BANGLA DESH
BURMA
ARABIAN SEA
BAY OF BENGAL
SRI LANKA
INDIAN OCEAN
0 200 400 500 Kilometres
Quartile a b c
I 38.38 24.92 31.88
II 43.43 27.01 28.98
III 46.60 31.49 28.51
IV 76.24 16.62 10.60
a-Upper Terminal Value
b-Share in Rural Population
c-Share in Rural Poor Population
X Regions not covered by study


MAP 2: NSS REGIONS RANKED BY GINIC, 1972-73
INDIA
PAKISTAN
CHINA
NEPAL
BHUTAN
BANGLA DESH
BURMA
ARABIAN SEA
BAY OF BENGAL
SRI LANKA
INDIAN OCEAN
0 200 400 500 Kilometres
Quartile a b c
I 0.258 25.74 23.74
II 0.286 24.29 25.88
III 0.304 31.19 30.12
IV 0.385 18.82 20.23
a-Upper Terminal Value
b-Share in Rural Population
c-Share in Rural Poor Population
X Regions not covered by study


MAP 3: NSS REGIONS RANKED BY POVT, 1972-73
INDIA
PAKISTAN
CHINA
NEPAL
BHUTAN
BANGLA DESH
BURMA
ARABIAN SEA
BAY OF BENGAL
SRI LANKA
INDIAN OCEAN
0 200 400 500 Kilometres
Quartile a b c
I 0.378 13.81 7.42
II 0.469 37.34 32.84
III 0.594 28.87 31.28
IV 0.850 20.02 28.43
a-Upper Terminal Value
b-Share in Rural Population
c-Share in Rural Poor Population
X Regions not covered by study


MAP 4: NSS REGIONS RANKED BY SI, 1972-73
INDIA
PAKISTAN
CHINA
NEPAL
BHUTAN
BANGLA DESH
BURMA
ARABIAN SEA
BAY OF BENGAL
SRI LANKA
INDIAN OCEAN
0 200 400 500 Kilometres
Quartile a b c
I -0.112 16.77 10.05
II -0.171 29.89 25.90
III 0.243 31.78 33.78
IV 0.430 21.60 30.24
a-Upper Terminal Value
b-Share in Rural Population
c-Share in Rural Poor Population
X Regions not covered by study





in the north and north-west. We have in this belt two of the three regions of Jammu and Kashmir, two regions of Rajasthan and the whole of Punjab and Haryana each comprising of two regions. A ranking by POVT extends this contiguous belt further south by taking-in the northern region of Madhya Pradesh.

At this point, it would be useful to compare the rankings in terms of AVCE on the one hand and that in terms of the two measures of poverty on the other. Given the inverse relationship between AVCE and the two measures of poverty, one would expect that in general the regions falling in the lowest quartile when ranked in terms of AVCE will be located in the highest quartile when ranked in terms of either POVT or SI. This is partly confirmed by our maps. In the eastern segment, seven out of the eight regions falling in the lowest quartile in the AVCE ranking are also located in the highest quartile when ranked in terms of POVT. Similarly, in the north-west, the four regions of Punjab and Haryana and 2 regions of Rajasthan located in the highest quartile in terms of AVCE are in the lowest quartile when the regions are ranked in terms of POVT or SI. However, it is noteworthy that, while the extreme poverty belt turns south to take in parts of Andhra Pradesh and the whole of Tamil Nadu when we consider AVCE, it extends further west to bring in the regions of Maharashtra when we consider either POVT or SI.

Moving away from extreme values, we find in the second quartile on the POVT ranking two sets of five contiguous regions. The first of these covers the entire state of Uttar Pradesh in the north. The second set consists of all the three regions of Andhra Pradesh and two regions of Karnataka in the south.

When we consider the ranking in terms of relative inequality in private consumption expenditure or GINIC we find that eight of the fourteen regions in the highest quartile form one contiguous belt—essentially covering the dry regions of Rajasthan, Madhya Pradesh and Maharashtra.

Two more comments are necessary on the foregoing regional patterns.

The wide east-west belt in the highest quartile of POVT contains four of the six regions of Maharashtra which were severely affected by drought in 1972-73 so that the wide geographical spread in the west could be year-specific.

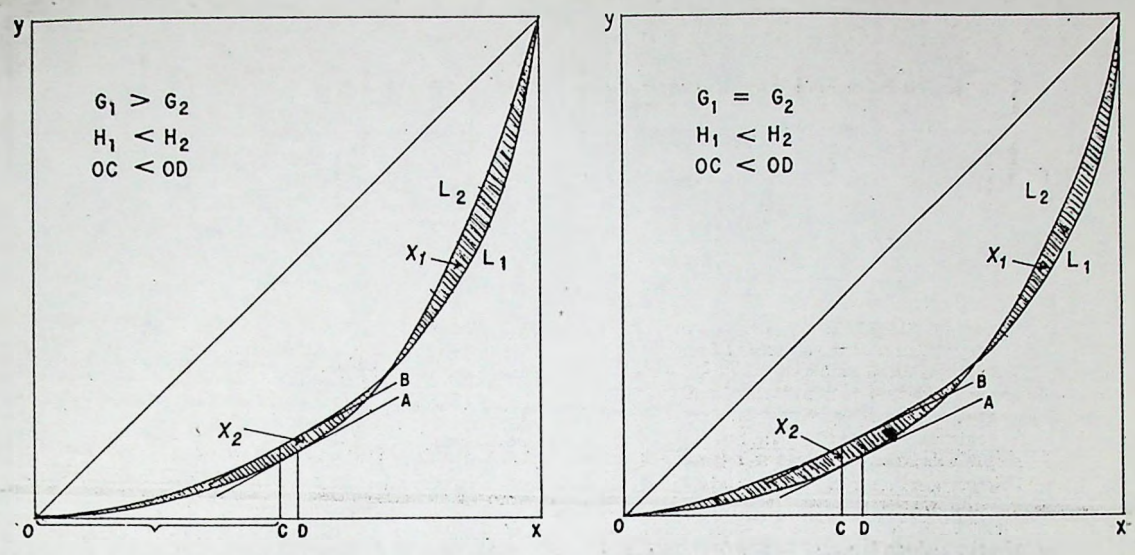
One region from Rajasthan, namely western Rajasthan is located in the highest quartile of AVCE and in the lowest quartile of POVT and SI. This is something of a surprise in that this happens to be one of the driest regions of the country with low levels of agricultural productivity (see [4]).

VI

Associations among Poverty Indicators Viewed through Quartile-wise Cross-Tabulation

In this section, we present and analyse certain broad associations on the basis of the cross-tabulation of results when 56 regions are grouped into 4 quartiles of 14 regions each according to alternative ranking criteria taken two at a time. This takes us beyond a summary measure of association like the product-moment correlation coefficient or the Spearman's Rank Correlation coefficient and provides spatial content to such associations. The broad order of association between any two given variables would be reflected in the number of entries along the diagonal in the 4 x 4 cross-tabulations involving the quartile groups of regions. In each case, the diagonal will have to be appropriately defined taking into account the expected direction of association between the two variables under consideration.

For example, when the two variables, say, the head-count measure of poverty (H) and the Sen-Index (S) are positively associated, the diagonal elements will be defined as the set of pairs of ($Q_1(H)$, $Q_1(S)$), ($Q_2(H)$, $Q_2(S)$), ($Q_3(H)$, $Q_3(S)$ and ($Q_4(H)$, $Q_4(S)$) where $Q_i(x)$ is the ith quartile (i = 1, 4) for variable x (x = H, S). When the variables are inversely associated as for example, head-count measure (H) and per capita consumption expenditure (C), the diagonal elements will be defined as the set of pairs of ($Q_1(H)$, $Q_1(C)$), ($Q_2(H)$, $Q_2(C)$), ($Q_3(H)$, $Q_3(C)$), ($Q_2(H)$, $Q_2(C)$ and ($Q_4(H)$, $Q_1(C)$). Once the diagonal is appropriately defined, the off-diagonal elements would indicate the regions which do not conform to the expected association. In understanding such 'non-conforming' regions, we turn to quartile-wise ranking of those regions in the dimension(s) of the



x : Cumulative percentage of the population having PCTE x or less

y: Cumulative percentage of total consumer expenditure accruing population with PCTE x or less

appropriate auxiliary variable(s). When a given 'non-conforming' region 'defies' such analysis, we call it an 'outlier'.

The following points may be noted about our method of analysis. The quartile-wise grouping of regions adopted in this exercise ignores the level of the variable for a given region a well as the intra-quartile rank of that region. In principle, it is possible to define finer fractile-groups for the cross-tabulation. In the limit, one would end-up considering pairs of ranks of a given region with reference to the ranking variables. A summary measure of rank-order correlation coefficient is based on such pairs of ranks. However, the quartile-wise grouping, besides providing a spatial content, helps one to meaningfully bring in the auxiliary variables in a manageable fashion.

In each cell in a given two-way tabulation, besides specifying the region-codes belonging to that cell, we provide two other indicators of the relative importance of the regions in that cell. These indicators are: (a) percentage share in total rural population (for 56 regions) located in the regions figuring in that cell; and (b) percentage share in total rural *poor* population (for 56 regions) located in the regions figuring in that cell.

The following discussion is organised in two parts. The first part examines the relationship between the head-count measure of poverty (POVT for short) on the one hand and the average (per capita) consumer expenditure (AVCE) and the Gini coefficient (GINIC) summarising the size distribution of AVCE. The second part focuses on the inter-relationships between the Sen-Index of

TABLE 4: QUARTILE-WISE CROSS-TABULATION BETWEEN HEAD-COUNT RATIO (POVT) AND AVERAGE PER CAPITA CONSUMER EXPENDITURE (AVCE) ACROSS 56 REGIONS

Quartiles According to PGR			Quartiles According to POVT			
			Q_1	Q_2	Q_3	Q_4
Q_1		Region-code	—	412,422	132,421,423	311,511,221, 222,322,323, 113,332,334
	a		—	4.89	5.04	20.02
	b		—	4.71	5.30	28.43
Q_2		Region-code	342	411,341,534, 211	312,431,321, 333	521,523,525, 526,331
	a		0.10	10.43	11.45	5.03
	b		0.08	9.07	13.27	6.56
Q_3		Region-code	131,532	413,531,224, 212,213,214, 215	313,514,432, 522,114	—
	a		0.87	20.78	9.84	—
	b		0.58	18.07	9.86	—
Q_4		Region-code	513,515,161, 162,133,533, 225,121,122, 111,112	512	223,524	—
	a		16.62	1.24	2.54	—
	b		10.60	0.99	2.85	—

Notes: (1) Region-codes and description of regions are given in Appendix Table 1.
(2) a. Percentage of total rural population in the cell.
(3) b. Percentage of total rural poor population in the cell.
(4) Totals corresponding to a and b relate to 56 regions.
(5) Upper terminal values of the quartiles according to the various classifying variable are given in Table 2.

poverty (SI) and its component elements, namely, POVT, poverty-gap ratio (PGR) and the Gini coefficient of the size distribution of AVCE among the set of the households (GP).

As a convention in the rest of the paper, we refer to the combination of the ith quartile according to x and the jth quartile according to y as the combination (i, j) in x-y cross-tabulation. For example, the combination of the 2nd quartile according to AVCE and the 1st quartile according to POVT is referred to as the combination (2, 1) in the AVCE-POVT cross- tab.

In our earlier study (see [3] and [5] we found that AVCE had a statistically significant negative effect on POVT and was the dominant variable explaining the inter-regional variations in POVT among 56 regions. GINIC while also being statistically significant in its partial positive impact on POVT was relatively less important than AVCE in explaining the inter-regional variations in POVT. This is also obvious from the product-moment correlation coefficients of -0.8259 between POVT and AVCE and 0.2776 between POVT and GINIC. Consequently, we use POVT-AVCE as the main two-way classification with POVT-GINIC being used as an auxiliary classification to isolate the pure outliers.

Given the expected negative relationship between POVT and AVCE, we define the diagonal elements in the reverse direction. Consequently, 1st, 2nd, 3rd and 4th quartiles of AVCE are to be paired with respectively 4th, 3rd, 2nd and 1st quartiles of POVT. These diagonal pairs consisting of 31 regions together account for 68.87 per cent of the rural population and 70.37 per cent of the rural poor population (see Table 4 for details). There is a strong negative association between AVCE and POVT especially at the lower and the upper ends of the AVCE scale. This is brought out by the following empirical regularities. There are 14 regions in the lowest quartile of AVCE out of which 9 are located in the highest quartile of POVT. Similarly, out of the 14 regions in the highest quartile of AVCE, 11 are found in the lowest quartile of POVT.

In principle one could raise an auxiliary question: whether the strong negative association between AVCE and POVT is due to a combination of a strong negative association between AVCE and GINIC and a positive association between GINIC and POVT. For this purpose, we examine whether the regions located along the diagonal (as defined) of AVCE-POVT cross-tab are also found in the same location in the AVCE-GINIC cross-tab. A comparison of Tables 4 and 5 indicates that only 2 out of 9 regions in (1, 4) combination and 2 out of 11 regions in (4, 1) combination in the AVCE-POVT and AVCE-GINIC cross-tabs are the same. This confirms the earlier finding (see [5]) that *POVT is governed more by the level of AVCE than by the relative inequality in AVCE around that level.*

Let us now consider the regions which do not fall along the inverse diagonal in the AVCE-POVT cross-tab. We may distinguish two types of off-diagonal elements. First, we have those regions which *do better* in terms of having a *lower* head-count ratio than is indicated by their quartile-wise location along the AVCE-scale. Let us call them *left-of-diagonal elements* in view of their location in the AVCE-POVT cross-tab. Similarly, we have the *right-of- diagonal elements* in the AVCE-POVT cross-tab which *do worse* in terms of having a *higher* head-count ratio than is suggested by their quartile-wise location along the AVCE- scale. Using the earlier notation of (i, j) in the x-y cross-tab denoting the ith quartile of x combined with jth quartile of y, we can distinguish the various cells in the AVCE-POVT cross-tab as follows:

a) Diagonal-elements: (1,4), (2,3), (3,2) and (4,1)
b) Left-of-diagonal elements: (1,1), (1,2), (1,3), (2,1), (2,2), (3,1)
c) Right-of-diagonal elements: (4,2), (4,3), (4,4), (3,3), (3, 4), (2,4)

Let us examine the category (b) of the left-of-diagonal elements. It would be plausible to postulate a positive relationship between GINIC and POVT for a given level of AVCE. This would suggest that a region

TABLE 5: QUARTILE-WISE CROSS-TABULATION BETWEEN THE HEAD-COUNT RATIO (POVT) AND GINI COEFFICIENT FOR ENTIRE POPULATION (GINIC) ACROSS 56 REGIONS

Quartiles According to AVCE			Quartiles According to POVT			
			Q_1	Q_2	Q_3	Q_4
Q_1		Region-code	342,515,131, 133	411,341,512, 422,214	514,132,522	221,331
	a		1.78	17.58	3.18	3.20
	b		0.94	15.08	3.50	4.22
Q_2		Region-code	162,533	412,531,534, 211,215	312,421,423,	511,222,523, 322
	a		2.27	7.51	10.17	4.34
	b		1.25	7.10	11.37	6.16
Q_3		Region-code	161,532,121, 111,112	212,213	313,431,321	311,521,323, 332
	a		6.95	9.05	7.49	7.70
	b		3.57	7.85	7.56	11.14
Q_4		Region-code	513,225,122	413,224	432,223,524, 114,333	525,526,113, 334
	a		2.81	3.20	8.03	4.78
	b		1.66	2.81	8.85	6.91

Note: Same as for Table 4.

TABLE 6: QUARTILE-WISE CROSS-TABULATION BETWEEN THE GINI COEFFICIENT FOR ENTIRE POPULATION (GINIC) AND AVERAGE PER CAPITA CONSUMER EXPENDITURE (AVCE) ACROSS 56 REGIONS

Quartiles According to AVCE			Quartiles According to GINIC			
			Q_1	Q_2	Q_3	Q_4
Q_1		Region-code	132,221,422	412,511,222, 421,423,322	311,323,332	113,334
	a		4.60	10.95	6.67	2.70
	b		5.28	12.71	9.82	4.07
Q_2		Region-code	411,341,342, 331	312,534,523, 211	431,521,321	525,526,333
	a		8.61	9.68	4.82	4.35
	b		7.18	10.69	5.57	5.54
Q_3		Region-code	514,131,522, 214	531,215	313,532,212, 213	413,432,224, 114
	a		10.25	1.39	13.43	6.42
	b		9.51	1.23	11.46	6.11
Q_4		Region-code	512,515,133	162,533	161,121,111, 112	513,223,225, 524,122
	a		2.73	2.27	6.27	5.35
	b		1.77	1.25	3.07	4.51

Note: Same as for Table 4.

which happens to be in a left-of-diagonal cell for a given quartile of AVCE is so located because ranking along the GINIC-scale places it in the same or lower-quartile compared to its location according to POVT-quartile. To illustrate, consider a region located in (1,3) cell in the AVCE-POVT cross-tab. Our foregoing argument would imply that it is so located because its ranking along the GINIC-scale places it in the 3rd or lower quartile. An exactly parallel argument would apply to the right-of-diagonal elements. In this case, a region located in (4,2) cell in the AVCE-POVT cross-tab would, on the above argument, be so located because its ranking along the GINIC-scale places it in the 2nd or higher quartile. This reasoning with the help of Table 6 helps sort out 11 out of 12 left-of-diagonal regions and 8 out of 13 right-of-diagonal regions in the AVCE-POVT cross tab in Table 4.

We are now left with the following off-diagonal regions:

A) Left-of-diagonal regions: 532: Karnataka: Inland Eastern.

B) Right-of-diagonal: 512: Gujarat: Plains; 514: Gujarat: Dry Areas; 522: Maharashtra: Western; 523: Maharashtra: Northern; 331: West Bengal: Himalayan.

These may be termed as pure outliers in the AVCE-POVT cross-tab. In characterising these regions as pure outliers we are highlighting the fact that they do better (category A) or worse (category B) in terms of their quartile-wise POVT ranking than indicated by their quartile-wise rank in terms of AVCE despite being adversely (category A) or favourably (category B) placed in terms of their quartile-wise ranking along the GINIC-scale.

The existence of these outliers leads us to a closer examination of the analytical links between POVT and GINIC. Given the poverty line and AVCE, head-count ratio (POVT) is determined by the shape of the Lorenz curve in the neighbourhood of and below the poverty line. Notice that GINIC summarises the Lorenz curve over the entire range of per capita household consumer expenditure including those above the poverty line. This gives rise to the possibility that the same GINIC, depending on the shape of the Lorenz Curve may yet yield different values of POVT for the same value of AVCE and the poverty line. In fact, it is possible to construct Lorenz Curve such that for given values of AVCE and poverty line a lower level of POVT is associated with a higher level of GINIC and vice versa. These two possibilities are illustrated in Diagrams 1 and 2.

The above discussion offers one possible interpretation of the cases of 'pure outliers' identified earlier by reference to their quartile-wise ranking in terms of POVT *relative* to their ranking in terms of AVCE *and* GINIC. This would be that in these

TABLE 7: QUARTILE-WISE CROSS-TABULATION BETWEEN THE SEN-INDEX (SI) AND THE HAED-COUNT RATIO (POVT) ACROSS 56 REGIONS

Quartiles According to PGR			Quartiles According to SI			
			Q_1	Q_2	Q_3	Q_4
Q_1		Region-code	342,515,513, 161,162,131, 133,533,121, 122,111,112	532,225	—	—
		a	12.03	1.78	—	—
		b	6.10	1.32	—	—
Q_2		Region-code	341,512	411,413,531, 224,422,211, 212,213,214, 215	412,534	—
		a	4.74	27.24	5.3	—
		b	3.95	23.69	5.20	—
Q_3		Region-code	—	514,132	312,313,431, 432,223,522, 321,114,421, 423	524,333
		a	—	0.87	24.50	3.50
		b	—	0.89	26.18	4.21
Q_4		Region-code	—	—	523,331	311,511,221,222, 521,525,526, 323,322,113, 332,334
		a	—	—	1.92	18.10
		b	—	—	2.40	26.03

Note: Same as for Table 4.

TABLE 8: QUARTILE-WISE CROSS-TABULATION BETWEEN THE SEN-INDEX (SI) AND POVERTY GAP RATIO (PGR) ACROSS 56 REGIONS

Quartiles According to POVT			Quartiles According to SI			
			Q_1	Q_2	Q_3	Q_4
Q_1		Region-code	341,342,512, 515,161,162, 131,133,533, 121,122,111	422,214	—	—
		a	13.85	9.10	—	—
		b	8.15	8.03	—	—
Q_2		Region-code	513,112	411,514,132, 531,532,225, 211,212,213,215	412,331	—
		a	2.92	17.59	3.75	—
		b	1.90	15.06	3.90	—
Q_3		Region-code	—	413,224	312,534,432, 223,522,523, 321,114,421,423	221,526
		a	—	3.20	22.74	3.05
		b	—	2.81	24.71	4.10
Q_4		Region-code	—	—	313,431	311,511,222, 521,524,525, 322,323,113, 332,333,334
		a	—	—	5.29	18.55
		b	—	—	5.17	26.14

Note: Same as for Table 4.

cases the precise shape of the Lorenz curve around and below the poverty line is not effectively captured by the value of GINIC.

The immediately preceding discussion enables us to understand the absence of any systematic pattern in the POVT-GINIC cross-tab given in Table 6. Further, if we view the Gini coefficient among the poor (GP) as a closer proxy to the characterisation of the shape of the Lorenz Curve around and below the poverty line, then one would expect a much stronger association between POVT and GP than between POVT and GINIC. This is confirmed by the fact that the product-moment correlation between POVT and GP is 0.7914 as against 0.1776 between POVT and GINIC.

Next we propose to assess the extent of association between the Sen-Index (SI) on the one hand and its component elements, namely, the head-count ratio (POVT), the poverty-gap ratio (PGR) and the Gini-coefficient summarising the size distribution of AVCE among the subset of the poor (GP). The informational requirements can be seen to increase progressively as we move from POVT to PGR to GP to SI. The cross-tabs between POVT-SI, PGR-SI and GP-SI are presented in Tables 7, 8 and 9.

Our correlation analysis has shown that the product-moment correlation is the highest at 0.9719 between POVT and SI, followed by 0.9527 between PGR and SI and the least at 0.8717 between and GP and SI. This pattern of association gets broadly reflected in our two-way tabulations in terms of the predominance of the diagonal elements with the declining importance of the number of regions as well as the share in total rural and total rural poor population of the diagonal elements when we move from POVT-SI cross-tab to PGR-SI cross-tab and further to GP-SI cross-tab. This should be obvious from the following Table 10 (see lines 1, 2 (a) and 2(b) across columns (3) to 5).

Secondly, it would be useful to note the number of regions which are in the same diagonal quartile when ranked by SI and *all* of its component elements, POVT, PGR and GP. From the foregoing summary table, it should be clear that POVT-SI cross-tab provides us with the most comprehensive list of the diagonal elements. We find that 26 regions in all comprising 8 out of 12 regions in (1,1) combination, 6 out 10 in (2,2), 5 out of 10 in (3,3) and 7 out of 12 in (4,4) combination are common in all the three cross-tabs POVT-SI, PGR-SI and GP-SI.

Thirdly, the foregoing summary Table 10 indicates that the percentage share of the regions along the upper half of the diagonal is higher in respect of the rural poor population. This is much more so in (4,4) combination than (3,3) combination (compare lines 4(a) and 4(b) in *all* the cross-tabs POVT-SI, PGR-SI and GP-SI. This would clearly result as a direct consequence of the ranking criterion with respect to POVT but that it repeats itself in the other cross-tabs in varying degrees basically reflects the corresponding association between POVT on the other hand and the other measures, namely, PGR, GP and SI on the other. In other words, those regions with higher than median-level head-count ratio (POVT) also *tend* to have higher than median level of each of the three indicators namely income-gap-ratio (PGR), Gini-coefficient among the poor (GP) and the Sen-Index (SI) which incorporates the intensity dimension of poverty.

A conclusion of significant empirical importance emerges from the foregoing discussion, namely, a very close association (in terms of ranking) between the informationally least demanding and hence possibly most-robust but crude head-count measure (POVT) and the informationally most demanding and conceptually most sophisticated Sen-Index (SI).

It can be argued that our conclusion strictly applies to the broad quartile-wise ranking that we have adopted. However, a logical extension of the quartile-wise ranking consists of ranking *each* region according to POVT and SI and working out a summary measure of the Spearman's rank-correlation coefficient. The detailed rank order of each region according to POVT and SI appear in Appendix Table II columns (8) and (9). The rank correlation coefficient between POVT and SI based on these rank orders works out to 0.9749, which incidentally, is not very different from the product-moment correlation coefficient of 0.9719 between POVT and SI noted earlier. We can thus safely conclude that if we are interested

TABLE 9: QUARTILE-WISE CROSS-TABULATION BETWEEN THE SEN-INDEX (SI) AND GINI COEFFICIENT AMONG THE POOR (GP) ACROSS 56 REGIONS

Quartiles According to GP			Quartiles According to SI			
			Q_1	Q_2	Q_3	Q_4
Q_1		Region-code	341,342,512, 515,161,131, 133,121,122,111	514,132,422, 215	—	—
		a	11.58	3.69	—	—
		b	6.90	3.54	—	—
Q_2		Region-code	513,162,533, 112	411,531,225, 211,212,213 214	223,522	526
		a	5.19	22.32	3.62	0.67
		b	3.15	19.05	3.95	0.92
Q_3		Region-code	—	532,224	412,312,431, 432,114,421, 423,331	511,221,222, 113
		a	—	2.32	18.73	5.50
		b	—	2.00	20.43	7.71
Q_4		Region-code	—	413	313,534,523, 321	311,521,524, 525,322,323, 332,333,334
		a	—	1.56	9.43	15.43
		b	—	1.31	9.40	21.61

Note: Same as for Table 4.

TABLE 10: SUMMARY TABLE REGARDING SI AND ITS CONSTITUENT ELEMENTS

SI No	Particulars of Item	Cross-Tabulation between POVT-SI	PGR-SI	GP-SI
(1)	(2)	(3)	(4)	(5)
(1)	No of regions along the diagonal	44	42	35
(2)	Percentage share of regions along the diagonal in			
	(a) Total rural population	81.97	72.73	68.06
	(b) Total rural poor population	82.00	74.06	67.99
(3)	No of regions along (3,3) diagonal	10	10	8
(4)	Percentage share of regions along (3,3) diagonal in			
	(a) Total rural population	24.50	22.74	18.73
	(b) Total rural poor population	26.18	24.71	20.43
(5)	No of regions along (4,4) diagonal	12	12	9
(6)	Percentage share of regions along (4,4) diagonal in			
	(a) Total rural population	18.10	18.55	15.43
	(b) Total rural poor population	26.03	26.14	21.61

Source: Tables 7, 8 and 9.

in the *ranking* of regions according to the intensity of poverty as measured by SI, we can approximate it fairly closely by ranking the regions according to the head-count ratio (POVT).

VII

Conclusions

The major findings of this paper may now be recapitulated.

(1) Among the dimensions of poverty considered in this study, the (unweighted) coefficient of variation across 56 regions was the highest for the Sen-Index (SI) and the lowest for the Gini coefficient (GINIC) summarising the size distribution of per capita consumer expenditure.

(2) Even though *within a region*, the relative inequality in the size distribution of per capita consumer expenditure among those below the poverty line (GP) is much lower than that relating to the size distribution among the entire rural population (GINIC), the relative variability across 56 regions is much higher for GP than for GINIC.

(3) For all the dimensions of poverty (with the exception of the Sen-Index), the regions are densely concentrated over a relatively narrow range of the variable in the second and the third quartiles.

(4) Quartile-specific average head-count ratio progressively declines across quartiles when the regions are ranked according to the size of the average consumer expenditure per capita (AVCE) and rises progressively when the regions are ranked according to the Sen-Index (SI) and its constituents. GINIC is the only ranking variable for which the head-count ratio does not exhibit the monotonic relationship across quartiles.

(5) A mapping of regions in extreme poverty judged by reference to the lowest quartile of AVCE reveals a long belt extending from the eastern plains of West Bengal to Kanyakumari in Tamil Nadu with only one region of Andhra Pradesh breaking the contiguity in this east-south belt. However, when judged by reference to the highest quartile of the head-count ratio (POVT), we observe an east-west belt spread all the way from West Bengal to Rajasthan and taking in regions of Orissa, Bihar, Madhya Pradesh, Maharashtra and Gujarat.

(6) The head-count ratio (POVT) has been found to be much more closely associated with the level of region specific average consumer expenditure per capita (AVCE) than with the relative inequality in the region-specific size distribution of AVCE as measured by GINIC.

(7) We located two types of 'outlier' regions. In the first type, we have one region (viz, Karnataka inland eastern) which does better in terms of its quartile-wise POVT ranking than is indicated by its quartile-wise rank in terms of AVCE despite being adversely placed in terms of GINIC. In the second type, we have five regions (viz, Gujarat plains, Gujarat dry areas, Maharashtra western, Maharashtra northern and West Bengal Himalayan) which do worse in terms of their quartile-wise POVT ranking than is indicated by their quartile-wise rank in terms of AVCE despite being favourably placed along the GINIC dimension.

(8) We also find a much stronger association between POVT and GP than between POVT and GINIC. This may be interpreted in terms of GP being a closer proxy to the characterisation of the Lorenz curve around and below the poverty line.

(9) We observe a very close association in the ranking of regions according to POVT and according to SI so that if we are interested in the ranking of regions according to the intensity of poverty we can approximate it fairly closely by a ranking in terms of POVT. This finding holds not only in terms of the broad quartile-wise ranking, but also in terms of a detailed ranking leading to a very high Spearman's rank correlation coefficient.

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Appendix Table 1: Agricultural Regions within Each State

Sl No	Region Code	Description of the Region	Composition (Districts/Tehsils) of the Region
(0)	(1)	(2)	(3)
			Andhra Pradesh (State Code 41)
1	411	Coastal	Srikakulam, Visakhapatnam, East Godavari, West Godavari, Krishna, Ongole, Guntur and Nellore.
2	412	Inland, Northern	Adilabad, Karimnagar, Nizamabad, Nedak, Warangal, Khammam, Nalgonda, Hyderabad and Mahbubnagar.
3	413	Inland, Southern	Kurnool, Anantapur, Cuddapah and Chittoor.
			Assam (State Code 34)
4	341	Plains	Lakhimpur, Sibsagar, Darrang, Nowgong, Kamrup, Goalpara and Cachar,
5	342	Hills	Mikir Hills, North Cachar Hills and Mizo Hills.
			Bihar (State Code 31)
6	311	Southern	Santal Parganas, Dhanbad, Hazaribagh, Palamau, Ranchi and Singhbhum.
7	312	Northern	Purnea, Saharsa, Darbhanga, Muzzaffarpur, Champaran and Saran.
8	313	Central	Bhagalpur, Monghyr, Patna, Gaya and Shahabad.
9	511	Eastern	*Gujarat (State Code 51)* Banas Kantha (tehsil Danta), Sabar Kantha (tehsil Khed Brahma, Vijayanagar, Bhiloda and Meghraj), Panch Mahals (tehsils Limkheda, Dohad, Jhalod and Santrampur), Vadodara (tehsils Naswadi, Tilakwada, Chhota Udaipur and Jambugam), Bharuch (tehsils Ankleshwar, Valia, Jhagadhia, Dodipadar, Sagbara and Nandej), Surat (tehsils Mahuva, Vyara, Valod, Songadh, Mandvi, Uchhal, Nizar, Mangrol, Palsana and Bardoli), Dangs (tehsil Dangs) and Valsad (tehsils Dharampur, Chikhli, Bansada, Umbergaon, Valsad and Pardi).
10	512	Plains, Northern	Sabar Kantha (tehsils Prantij, Modasa, Nimatnagar, Malpur, Bayad and Idar), Mahesana (tehsils Sidhpur, Patan, Mahesana, Kheralu, Visnagar, Vijapur, Kadi and Kalol), Ahmedabad (all tehsils), Gandhinagar (all tehsils) and Kheda (all tehsils).

(Contd)

COMM-7011
(7)

Poverty and Planning

Amitabh Kundu

The proposal to dispense with the use of the poverty index in funds disbursal, on the ground of difficulties in its computation, amounts in a way to delinking poverty from planning. Simplification and standardisation of the methodology of measuring poverty should therefore receive the urgent attention of experts if ad hoc *political pressures and vested interests are not to take over under cover of the New Economic Policy.*

ELIMINATION or reduction of poverty has been an avowed objective in Indian planning, at least since the early 60s. The plan documents have often noted the poverty trends in the country and tried to assess the performance in certain programmes and schemes through the decline in the percentage of people below the poverty line. Concern for poor has figured explicitly in the manifesto of various political parties as also in the policy discussions. Despite all these, measurement of poverty has remained the prerogative of a few experts, the issues becoming more and more complex over time among them.

Issues in Measurement of Poverty

The EPW Research Foundation (1993) needs to be complimented for documenting the studies relating to measurement and (partly) explanation of poverty in a chronological and comprehensive manner. It has also highlighted the major issues deliberated upon by the Expert Group (EG) on poverty, set up by the Planning Commission (1993). Discussion on some of these and related issues in the context of the studies on measurement of calorie deficiency based on certain nutritional norms would be helpful for a better understanding of the poverty debate in the country.

The hiatus between understanding the concept of poverty at the theoretical level and at the level of implementing the anti-poverty programmes has resulted in myths and misconceptions regarding the methodology of measurement. The most common myth is that poverty is linked directly with malnutrition in such a manner that the poor can be identified as people whose calorie intake falls short of certain normatively determined level. It can easily be demonstrated that it is not so and can be argued that it should not be so. Scholars have pointed out that the actual consumption basket and, therefore, the calorie intake is a matter of choice of the individual or the household which is outside the domain of public policy [Minhas, Kansal and Jain 1992 and Dandekar 1981]. The individuals settling for a lower level of calories by choice, despite their having the adequate purchasing power, should not be considered as poor. The people, who for the sake of having a larger amount of non-food items or expensive calories through milk, meat, etc, voluntarily consume less calories than the normative level, should not be subjects of concern for the government. Poverty, thus, gets delinked from actual deficit of calories or malnutrition as it is supposed to reflect *the lack of capacity* to buy the minimum amount of calories.

The second popular misconception is that poverty relates to certain exogenously determined level of income or consumption expenditure and has no connection whatsoever with normative calorie intake or the concepts of malnourishment, undernourishment and hunger. This position is also erroneous since it is not possible to determine poverty without referring to a consumption basket and expenditure level, worked out using certain dietary requirements. Any other method of working out the normative level of consumption expenditure is likely to be fraught with greater subjectivity and risk.

The methodology for estimating poverty in India adopted by the Planning Commission, as also by individual researchers, strikes a balance between the two approaches noted above. The first step in this exercise is to identify certain normative level of calorie requirement for an average individual, based on age/sex composition, nature of work, environment, etc, of the concerned population. The Central Government Employee's Second Pay Commission (1957-59), for example, had taken the norm of 2,700 calories and 55 grams of protein as an adequate diet per day for an average adult engaged in moderate activity. Dandekar and Rath (1971) had assumed the calorie input of 2,250 units per person per day as adequate both for rural and urban areas, although they did not use it formally to work out the poverty line expenditure. Based on the norms recommended by the Nutrition Expert Group of ICMR (1968) and the age, sex and workforce structure, estimated for the year 1972-73 (by using the data from the National Sample Survey (NSS) and the Expert committee on Population), the Task Force set up by the Planning Commission worked out the nutritional requirements as 2,435 (or 2,400) calories per capita per day in rural areas and 2,095 (2,100) calories per capita per day in urban areas [see Planning Commission 1979]. It may be mentioned here that the Joint Expert Committee set up by FAO, WHO and UNU had placed the standard requirement at 2,700 calories [World Health Organisation 1985].

The second step in the measurement of poverty is identification of a consumption basket including both food and non-food items that would ensure the required amount of calories. The value of this basket would then give the minimum consumption expenditure below which people would be classified as poor. The conversion of the stipulated norm of calories into an expenditure level, using a medically prescribed consumption basket, has been considered inappropriate. It is argued that the consumption habits of the population should be taken as data, beyond the scope of alteration, at least in the short run. The Planning Commission, therefore, converted the calories into consumption expenditure by taking the actual consumption pattern of the population from the NSS. The poverty line expenditure is, thus, partly normative and partly behavioural.

In a well researched paper, Minhas (1991) has proposed a new behaviour-based approach in place of the traditional methodology using calorie norms determined by "nutrition experts". He shows that self-perceived level of adequacy of food, at which households start giving free meals to others (net of receiving such meals), would provide a better cut-off point for identifying the malnourished people in India. The limitations of collective behaviour in fulfilling given normative requirements are, however, too well known to merit an elaborate discussion here. One may only argue that leaving the provision of basic necessities of life totally to individuals's choice would imply tremendous confidence in the optimality of human behaviour in a market place. This would erode the basic logic of any public intervention. The dominant view among the professionals in the field is that the minimum level of calorie requirement should be determined by nutritional experts based on biological and medical considerations. The actual consumption pattern must, however, be left to people's choice.

It is important to note that the poverty level expenditure is adequate to purchase not only the minimum calorie requirements but also the associated non-food items for a person with average consumption pattern (of his/her

group) in 1973-74. On the basis of the poverty line determined by the methodology discussed above, the poor would then be identified as the people who, using the average consumption preferences, are not in a position to buy the minimum level of calories and the associated level of non-food items. This implies that an individual, incurring more than the poverty line expenditure but having a consumption pattern different from the average of his/her group would not be treated as poor, even if his/her calorie intake is less than the normative requirement.

The linkage between poverty and nutrition gets blurred further when poverty is estimated for other years by updating the base year poverty line by a price index. The non-poor in any other year would be able to buy the minimum calories only if they hold the average consumption preference (of the corresponding population group) in the base year. It is, therefore, possible that some persons above the poverty line, with the average consumption pattern of their group in the year, say 1987-88, would have calorie intake less than the normative requirement. In this context it is interesting to note that the percentage of people below the poverty line has declined from 57.6 to 32.4 in rural areas and from 49.9 to 20.7 during 1977-87, as per the official estimates of the Planning Commission. Paradoxically, however, the percentage of people consuming calories less than the norm has increased from 57.8 to 65.8 and from 49.3 to 56.8 in rural and urban areas respectively.

There is no reason why the consumption pattern or the expenditure level in the base year should be considered sacrosanct for all future years for measuring poverty. In that case, the consumption basket determined using medical or nutritional norms can also be taken for computing the base year figure for consumption expenditure, viz, the poverty line. The above method of updating the poverty line for estimating the number of the poor is, therefore, questionable as it does not take into consideration the changes in consumption habit of the population in determining the normative food basket, making the poverty-nutrition linkage a bit more hazy. This point has been discussed below in greater detail, using the recent empirical data.

Methodological Controversies

There has been interesting and useful debate on (a) the question of alternate price indices used for updating the poverty line [Minhas, Jain and Tendulkar 1991a and 1991b] and (b) on adjusting the NSS consumption data for different fractiles to bring the aggregative figure at par with that of Central Statistical Organisation [Minhas and Kansal 1989 and Kundu 1993]. An excellent overview of the debate is available in the paper by *EPW* Research Foundation (1993) and consequently, this is avoided here. One is happy to note that the expert group (EG) set up by the Planning Commission has tried to resolve some of the controversies by accepting the norm of 2,400 calories for rural and 2,100 calories for urban areas with reference to the consumption pattern in 1973-74. This implies that the standardised commodity basket corresponding to the group of people around the poverty line, ensuring the stipulated amount of calories in the year 1973-74 at the national level, is to be updated by using the price indices for other years. The EG argues that in view of easy availability and transparency, the consumer price index for agricultural labourers should be used for updating the rural poverty line. For urban areas, a simple average of the consumer price index for industrial workers and that of urban non-manual workers is the recommended index. The EG also overrules the necessity to adjust the NSS data to bring the aggregative figure at par with the CSO estimate at the national level. It, thus, accepts the criticism [Minhas and Kansal 1989] that the *pro rata* adjustment of the NSS data, as done by the Planning Commission, results in gross underestimation of poverty, since the items figuring importantly in the consumption basket of the poor are not underenumerated in NSS.

Another important issue in the current poverty discussion is the use of state specific poverty lines for obtaining state level estimates of poverty. Planning Commission has been estimating the number of persons below the poverty line in different states by using the same poverty line—one for the rural and another for urban areas. Given the differences in consumption pattern and price levels, the estimates could be erroneous. Minhas, Jain and Tendulkar (1991) improved upon the figures by building up state specific poverty lines taking the all-India figure as hundred. They, thus, made suitable adjustments for the differences in the cost of living (of middle category households) but did not take the differences in the consumption basket of the relevant households across the states into consideration. The EG also has recommended construction of state specific poverty lines, using the commodity basket of the middle level consumers at the national level, to reflect the differences in the cost of living in different states.

It may be mentioned that the all-India figure of the number of people below the poverty line, obtained by aggregating the state level figures, is higher than the direct estimate by using the uniform poverty line [Minhas, Jain and Tendulkar 1991]. This implies that the increase in the number of poor in states with a higher cost of living is larger than the decrease in the number in states with a lower cost of living.

Scholars have argued that besides making the necessary adjustments for the differences in price levels, it would be important to take the variation in consumption preferences into consideration in determining the state specific poverty lines. Serious differences exist on this issue even among the members of the EG. It is easy to see that the states where people use cheaper sources of calorie (like bajra or jowar) or spend a larger percentage of expenditure on foodgrains, the stipulated nutritional norm would be obtained at a lower level of consumption expenditure. Use of an identical consumption basket may, therefore, be taken as a factor, overestimating poverty in these states. It is, however, well known that most of these states are in the lower rungs of economic development. Consequently, recommending a lower poverty line for them would imply a reverse discrimination in the methodology for estimating poverty. This might result in lower plan allocation and lower benefits to them under the anti-poverty programmes, which would not be desirable. This would be viewed as penalising a state for having certain kind of consumption preferences. Also, a recommendation that the minimum calorie requirement (and, therefore, the poverty line) must vary from state to state and over time due to the differences in environmental conditions and changes in the nature of economic activities, would make the computation of poverty far more difficult. To keep the methodology simple and acceptable to the body of planners and administrators in the country, it would be necessary to maintain the calorie norm uniform across the states and over the years. The EG has supported this viewpoint. It argues that the observed all-India consumption pattern of the 20 to 30 per cent population around the poverty line in 1973-74 "should constitute the state specific weighting diagram... The implicit reasoning underlying the procedure is that any consumer with (real) income equal to the poverty line will be able to buy a normatively fixed bundle which is common to all consumers and invariant over time".

Questioning the Calorie Base

Despite these bold attempts to resolve the controversies pertaining to the measurement of poverty and make it an analytical tool for planned intervention and resource allocation, the EG has failed to resolve the issue of poverty-nutrition linkage in any satisfactory manner. The thrust of criticism on poverty measurement in recent years has been on the calorie base for determining the poverty line, viz, the critical minimum consumption expenditure. The arguments may be

summarised as follows: One, the calorie norm considered in the poverty studies does not reflect the minimum but the average requirement of a healthy active person [Sukhatme 1977]. Two, if the poverty line is taken only as an average of a probability distribution and a certain deviation from the average is considered allowable, the poverty population would come down significantly, since a large concentration of population occurs around the poverty line. Sukhatme (1989) argues that the average of the basal metabolic requirement (BMR) minus two standard deviations should constitute the lower limit to which all individuals can adjust. Three, no single estimation of minimum requirement is possible for it depends on socio-cultural norms and personal habits that can be adjusted if necessary. Sukhatme [Planning Commission 1993] has suggested that by controlling the relationship between body and mind, it is possible to create better human machines capable of producing larger amount of energy with less calories. He, further, argues that the absorption of calories in the body of a poor person happens to be low in India due to the various ailments he/she suffers from. Minhas too has demonstrated empirically, that "the prevailing genetic pool of the Indian population seems to be interacting differently with different environments of culture and food histories of different regions. For instance, the abstemious people of Gujarat seem to maintain their energy balance with ease at a much lower threshold level of energy intakes than the people of Punjab where copious food consumption is considered as the primary component of 'good' living". Four, many poor take a few meals outside (net of the meals offered by them to others) which would push their actual consumption level, at least for some households, above the poverty line. This would not be captured in the NSS expenditure data. Five, the data for the recent years reveal that many persons are opting for a calorie level less than the norm by changing their consumption basket in favour of non-food goods and for more expensive calorie items. It can be shown that an average person is not above the (updated) poverty line in 1987-88 consumed less calories than the norm, although he/she had the purchasing power to be above the norm. Furthermore, an average person with the same purchasing power (in real terms) in 1973-74, indeed, would have been above the calorie norm. Since people are deliberately choosing a lower level of calories, the normative basis of the 'norm' needs to be questioned empirically. Minhas (1991) argues that behaviour based "calorie threshold criterion", viz, the calorie level at which the households cease to be net gainers (of calories) through free meals, can be taken as the cut-off point for identifying the nutritionally deficient persons. This, he suggests, is much more relevant exercise than measuring poverty, using fixed norms. Six, the direct question on hunger asked by NSS gives a figure of underfed population much less than that estimated through poverty calculations.

The above criticisms clearly indicate that the exercise of working out the minimum calorie requirement, undertaken in the early 60s or 70s, has not been conclusive. In view of the unresolved controversy, the EG has recommended that the poverty figures should not be used for the purpose of allocation of planned funds and other important policy decisions. This is an extremely unfortunate proposition. The most important objective for measuring poverty will be lost if it ceases to be an important instrument of planned intervention or resource allocation.

It is important that the per capita consumption of cereals has gone down from 15.4 kgs to 14.0 kgs per month during 1970-89 in rural areas, as per the NSS data. The corresponding figures for urban areas are 11.4 and 11.0 respectively. The average calorie intake per consumer unit in rural areas has also declined from 2,858 to 2,784 during 1973-83. The corresponding figures for urban areas are 2,634 and 2,574. The information from National Nutrition Monitoring Bureau also confirm this declining trend. Barring "green leafy vegetables" and "sugar and jaggery", the average per capita consumption has declined for all commodities during 1975-89. A similar trend is noted for nutrients, except in case of vitamin A [Radhakrishna and Ravi 1992]. This decline during a period recording modest increases in total as well as food expenditure must be viewed with concern, specially because the average consumption figures for the food items as also nutrients are significantly less than the 'Recommended Dietary Intake'. Radhakrishna and Ravi (1992) show that there has been only a marginal increase in the intake of cereals and nutrients for the bottom 30 per cent population between 1972-73 and 1987-88, although their real expenditure has gone up substantially. The authors explain that "the slower increase in nutrient intake despite an increase in per capita income was, however, not due to low income and price elasticities of food. In fact, it was found that both the elasticities were quite high. In analysing the changes in food consumption levels, they found that while the changes in consumer preferences went against the consumption of cereals, economic growth and relative prices contributed to increases in their consumption. Since the adverse impact of taste change on cereal intake was more pronounced than the favourable impact of economic growth and relative prices, the increase in per capita income did not result in increase of cereal intake. Income distribution was found to have no significant role in explaining the changes in per capita consumption of cereals".

The analysis of the changing consumption pattern in recent years, thus, indicates that measuring poverty by taking a fixed level of consumption expenditure in real terms, without considering its changing nutrition content would grossly underestimate poverty. Just because people having adequate purchasing power have voluntarily chosen lesser calories than the normative requirement does not imply that they should be considered as non-poor. Demonstration effects, particularly in rural, backward and tribal areas, have created demand for a number of non-food items [Misra and Kundu 1980]. This is not a case of an aberration of an individual but of group behaviour, reflecting the dynamics of social change. Our concern for the nutritional norm and respect for the changing social behaviour must prompt us to recalculate the poverty line at regular intervals so that it ensures the minimum level of calories. In other words, there is a case for strengthening the poverty-nutrition linkage to be able to capture all the people (having the average consumption pattern of their group) with absolute physical deprivation within the category of poor.

However, in case there is a general consensus among nutrition experts that the calorie norm and the corresponding consumption expenditure need to be lowered down, it would be important to build up a poverty trend using a revised poverty line for all the earlier years. This may not be very difficult using the data available with the NSS. Politically, however, it may be a questionable proposition, as this may be seen as an attempt to underplay the magnitude of poverty. Nonetheless, if that is the only way by which there can be a greater acceptability of poverty figures—allowing these to be used as inputs in the planning process—this must be done. People shifting from food to non-food items or opting for more expensive calories (eggs, milk and high quality cereals) should not necessarily be taken as an indication of reduction of poverty. Distortions in the consumption habits brought about through marketing propaganda, forcing people to buy more of non-food items and expensive calories should be viewed with concern, if thereby they come down to a nutritional level, detrimental to their health. The case of an individual behaving differently from the general pattern must be distinguished from the changes in the general consumption pattern over time. It would, therefore, seem reasonable to calculate the poverty line afresh periodically from the latest consumer expenditure data available from the NSS, using the methodology suggested by the Taskforce of the Planning Commission in 1979. In other words, the poverty line should be placed at a level so as to ensure the minimum calorie intake to the average population by taking into consideration his/

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her changing consumption habits.

Associating poverty with a distribution and not with an expenditure level would make the concept extremely complex and subjective. The possibility of producing better human machines, as suggested by Sukhatme, can certainly be explored but the Planning Commission would find it difficult to adopt it as a national policy. The need for water supply, sanitation and health facilities cannot be over-emphasised but that would have to be complementary to the provision of minimum nutrition.

Many would have reservation in treating the people as being above the poverty line owing to the meals received from others, due to their degrading effect on human dignity. As per the NSS data, the number of free meals received (net of the meals offered) is high in households belonging to the lowest fractile in consumption distribution, as may be expected. However, for those around the line, the number of meals received and offered tend to cancel out. This factor, therefore, would not alter the poverty calculations.

It is interesting that the 'calorie threshold' for the country as a whole, as worked out by Minhas (1991), is 2,446 per day per person, which is higher than what has been taken by the Planning Commission as the minimum requirement, in working out the poverty line for 1973-74. His suggestion regarding treating the thresholds of Gujarat, Karnataka and Himachal Pradesh—the states reporting the lowest figures—as the norm, "to which people from other states could (hypothetically) adjust", would be interpreted as an attempt to understate nutritional deficiency. Finally, the dismissal of the poverty figure due to a much lower estimate of persons reporting not having "two square meals a day" would be erroneous. This is because many would not respond to such a direct question correctly, due to their socio-cultural inhibitions. The enumerator's hesitation in asking such a question and that of the respondent in announcing inadequacy of food intake for his/her family members would greatly undermine the usability of the data.

Challenge of Measuring Poverty

Presently, the professional input in the planning process, particularly in important matters such as resource allocation, etc, is extremely limited. The proposal of not using the poverty index in fund disbursal, on the ground of difficulties in its measurement, should throw a challenge to the academics and practitioners in the field. This, in a way, would amount to delinking poverty from planning, possibly under the impact of the New Economic Policy. For minimising the influence of *ad hoc* political pressures and vested interests, it would be important for the professionals to resolve their controversies. Requiring the poverty index to reflect the complexity of calorie-energy linkage through a set of distributional parameters or making it a multi-variate concept by bringing in a large number of indicators relating to quality of life, etc, would amount to doing a disservice to the concept. This will simply weaken the case for using poverty as an index for state intervention. Simplification and standardisation of the methodology for measuring poverty would be the call of the day, unless we want to throw the baby with the bath water.

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Economic Reforms, Employment and Poverty

Trends and Options

Abhijit Sen

If poverty reduction is to be a serious part of the agenda of economic reforms, the reforms will have to have an explicitly redistributive content. This will require cuts in subsidies to the rich and also higher taxes to maintain and increase the expenditure relevant for the poor. In addition, the old issues of land distribution and provision of universal primary education and health must be put back on the agenda.

But, more than anything else, it must be recognised that a reforms strategy which aims to withdraw the state from investment, liberalise finance and thus divert finances from the state to the private sector, liberalise agricultural trade and thus enrich the rich at the direct cost of the poor and seeks to control inflation and balance of payments problems through deflation and devaluation is at its root a fundamentally inequitous adventure.

THIS paper is concerned with the possible impact of the economic reforms undertaken by the government of India in the 1990s on the nature and incidence of poverty in India. The point of departure is the observation from NSS data that poverty, which had not showed any time trend at all till the mid-1970s, declined significantly between the mid-1970s and the end-1980 but appears to have increased again in the 1990s. In other words, poverty appears to have declined only in the decade and a half beginning the mid-1970s during which there was an explosion in public expenditure leading up to the fiscal crisis which, among other things, precipitated the economic reforms in 1991. This suggests that there might be a much stronger link between public expenditure and poverty reduction than is usually appreciated, and this in turn has the implication that the reforms process may actually impinge adversely on the poor if its focus continues to be on the reduction of public expenditure.

For this reason it is important to identify the direct and indirect effects of public expenditure, and of other aspects of the economic reform policies, on poverty alleviation. This paper is a very preliminary effort in this direction. In the first section, a brief outline of the trends in and structure of poverty in India is presented, with a view to identifying the important characteristics of the poor population. This allows for an estimation of the likely effects of such policies on the material condition of the poor and those close to the poverty line. Since poverty is found to be closely related to employment and occupational characteristics, a discussion on past employment trends and poverty trends is included in the next section. In the following section, there is a more detailed consideration of the recent trends in poverty; and this is followed by a section which deals specifically with the statistical determinants of poverty as well as the relationship between this and economic growth. Finally, the last section sets out some brief conclusions in terms of different policy options for economic reform which make poverty reduction an explicit objective.

I
Long-term Trends and Profile of Poverty

The *Economic Survey 1995-96* has claimed that "the percentage of India's population below the poverty line has declined from 25.94 per cent in 1987-88 to 18.96 per cent in 1993-94". This claim is based on estimates made by the Planning Commission using a methodology whereby the consumption distribution obtained from the National Sample Survey (NSS) are applied to total estimates of consumption expenditure as obtained from the Central Statistical Organisation's (CSO) compilation of National Accounts. On this basis, the rural poverty ratio declined from 28.37 per cent in 1987-88 to 21.68 per cent in 1993-94 while the urban poverty ratio fell from 16.82 per cent to 11.55 per cent. These figures, which have been used to claim that there has been no increase in poverty following the economic reforms initiated in 1991, have in turn been challenged by independent analysts.[1] The criticism takes two forms. First, that even using the Planning Commission method, poverty in 1993-94 was higher than in 1990-91 just before reforms began and so the comparison with 1987-88, a drought year, gives a misleading trend. Second, and much more importantly, that the Planning Commission method is itself flawed as was pointed out in 1993 by the high-level Expert Group on Estimation of Proportion and Number of Poor. Using the methodology suggested by this expert group, not only are the poverty figures much higher, these show that there is no real trend decline in poverty since around 1986, that poverty increased massively between 1989-90 and 1992, and that although poverty fell in 1993-94 this was still higher than in the immediate pre-reform years 1989-90 or 1990-91.

Some of the issues which arise from these different estimates are discussed in a later section. Here, we need to outline the long-term trends in poverty, and for this we present in Table 1, estimates from a third source altogether – that compiled by the Poverty and Human Resources Division of the World Bank,[2] also using NSS data. This source gives a long series from 1951 onwards, and the main message which emerges is important. This is that there was no long-term time trend in poverty from 1950-51 to 1973-74 but that there was thereafter a sharp decline in poverty till 1986-87. After 1986-87, the decline continued at a slower pace till 1989-90 when it was reversed, with a particularly sharp increase in poverty in 1992. Poverty declined again in 1993-94 so that rural poverty in 1993-94 although higher than in 1989-90 or 1990-91 just before the reforms, was at about the same level as in 1986-87. Urban poverty, which had not increased particularly in 1992, was, however, lower in 1993-94 than in any pre-reform year.

These trends are important for a number of reasons. First, the trend in rural poverty shows a very close similarity with trends in agricultural wages. Estimates of real agricultural wages from a number of sources also show stagnation till the mid-1970s with sharp increases thereafter till the end-1980s when there is a slow-down again. Second, the period of declining poverty (mid-1970 to end-1980) was relatively short, and one which was marked by increasing government expenditure leading to severe fiscal imbalances by 1990. Third, that this period of declining poverty was infact one when rural poverty declined faster than urban poverty. Fourth, that rural poverty stopped falling, and indeed increased, as soon as fiscal stabilisation was attempted after 1991, and during this latest period the gap between

rural and urban poverty has again tended to increase. These trends require explanation and analysis, and this is the main focus of this paper. In the remaining part of this section, we provide a brief outline of the profile of Indian poverty.[3]

The most comprehensive data on the structure of poverty remains the information that can be gleaned from the NSS large sample survey of 1987-88, since details of the more recent large sample survey conducted in 1993-94 are not yet available. It seems reasonable to assume that in broad contours the picture that emerges for 1987-88 remains valid for the early 1990s.

Some of the evidence on the structure of poverty in India in 1987-88 is provided in Table 2. The first and most obvious point to be made relates to the dominantly rural nature of the poor population. The poor in rural areas constituted around three-fourths of the total poor population. This has to be juxtaposed with the fact that subsequently urban poverty has declined at a faster rate, so that poverty has become even more rural in nature. Within the rural areas, there is also evidence of greater regional concentration of poverty, with some backward regions displaying a very high incidence of poverty as discussed below.

In the rural areas at an all-India level, the worst off economic group is that of rural labour, both agricultural and non-agricultural. This is true both in terms of depth of poverty and its severity in terms of distance of average incomes from the actual poverty line. Within this broad category of rural labour, casual labour on non-permanent contracts is the most susceptible to absolute poverty. There is no discernible difference in poverty ratios between agricultural and non-agricultural casual labourers, which is not surprising, since the casual labour populations tends to move between agricultural and non-agricultural occupations as they become available. The self-employed rural households, whether agricultural or non-agricultural, tend to experience much lower levels of economic deprivation than other rural groups.

Female-headed rural households recorded a higher than average incidence of poverty, both in terms of prevalence and severity. Those rural households classified as poor tended to have higher than average representation of adult females and lower than average representation of adult males. Also, poor households in general tended to have higher dependency ratios, so that children dominated in the number of poor persons, and were over-represented in the poor population relative to the total population. Also, there are definite social dimensions to material deprivation, with the category of scheduled castes and scheduled tribes recording higher extent and severity of poverty than the general rural population. In fact, scheduled tribe groups are even worse off than scheduled castes on average, and tend to be the most economically destitute of all the rural population.

The urban areas present a slightly different picture. Firstly, the poor are more economically and socially heterogenous. Thus, the most important occupational groups among the poor urban population are those employed in casual labour, as well as a section of the self-employed. The self-employed category is highly heterogenous in urban areas, comprising both highly paid professional occupations as well as informal sector low paying activities. The latter constitutes among the poorest of the urban population, along with workers employed in insecure casual contracts. Clearly, the irregular and insecure nature of such incomes, which are also typically low, is the major source of poverty in urban households. Scheduled castes and tribes were less significant among the poor in urban areas than in rural ones, and there was no real evidence of regional disparities in urban poverty. However, the problem of poverty among female-headed households was far more serious in the urban areas. Despite this, the dependency ratio among poor urban households was slightly lower than among their urban counterparts.

In terms of regional concentration of poverty, only two states – Bihar and Uttar Pradesh – together accounted for 34 per cent of the total poor population in 1987-88. In Bihar in particular, there was a large over-representation of poor people, and there is no reason to believe that this has altered dramatically. Another six states – Andhra Pradesh, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu and West Bengal – accounted for a further 43 per cent of the poor. For rural poverty in particular, there was over-representation of the poor in Madhya Pradesh, Maharashtra, Orissa and Tamil Nadu. In the states of Gujarat, Rajasthan and Orissa, scheduled castes and tribes accounted for more than half of the poor – well above their share in total population. Scheduled tribes, especially in these states,

Table 1: Poverty Estimates 1951-94

NSS Round	Period	Rural			Urban		
		H	PG	SPG	H	PG	SPG
3	Aug 51-Nov 51	47.37	16.05	7.53	35.46	11.14	4.82
4	Apr 52-Sep 52	43.87	14.64	6.71	36.71	10.91	4.41
5	Dec 52-Mar 53	48.21	16.29	7.56	40.14	13.25	5.96
6	May 53-Sep 53	54.13	19.03	9.12	42.77	13.83	6.29
7	Oct 53-Mar 54	61.29	21.95	10.26	49.92	17.24	7.74
8	Jul 54-Mar 55	64.24	25.04	12.50	46.19	15.76	7.02
9	May 55-Nov 55	51.83	18.44	8.80	43.92	14.65	6.40
10	Dec 55-May 56	48.34	15.65	6.71	43.15	13.34	5.41
11	Aug 56-Feb 57	58.86	19.45	8.50	51.45	18.16	8.51
12	Mar 57-Aug 57	62.11	21.69	10.01	48.88	16.31	7.25
13	Sep 57-May 58	55.16	19.01	8.78	47.75	15.95	7.00
14	Jul 58-Jun 59	53.26	17.74	7.88	44.76	13.75	5.87
15	Jul 59-Jun 60	50.89	15.29	6.13	49.17	15.83	6.75
16	Jul 60-Aug 61	45.40	13.60	5.53	44.65	13.84	5.83
17	Sep 61-Jul 62	47.20	13.60	5.31	43.55	13.79	6.05
18	Feb 63-Jan 64	48.53	13.88	5.49	44.83	13.29	5.17
19	Jul 64-Jun 65	53.66	16.08	6.60	48.78	15.24	6.38
20	Jul 65-Jun 66	57.60	17.97	7.60	52.90	16.82	6.98
21	Jul 66-Jun 67	64.30	22.01	10.01	52.24	16.81	7.19
22	Jul 67-Jun 68	63.67	21.80	9.85	52.91	16.93	7.22
23	Jul 68-Jun 69	59.00	18.96	8.17	49.29	15.54	6.54
24	Jul 69-Jun 70	57.61	18.24	7.73	47.16	14.32	5.86
25	Jul 70-Jun 71	54.84	16.55	6.80	44.98	13.35	5.35
27	Oct 72-Sep 73	55.36	17.35	7.33	45.67	13.46	5.26
28	Oct 73-Jun 74	55.72	17.18	7.13	47.96	13.60	5.22
32	Jul 77-Jun 78	50.60	15.03	6.06	40.50	11.69	4.53
38	Jan 83-Dec 83	45.31	12.65	4.84	35.65	9.52	3.56
42	Jul 86-Jun 87	38.81	10.01	3.70	34.29	9.10	3.40
43	Jul 87-Jun 88	39.60	9.70	3.40	35.65	9.31	3.25
44	Jul 88-Jun 89	39.06	9.50	3.29	36.60	9.54	3.29
45	Jul 89-Jun 90	34.30	7.80	2.58	33.40	8.51	3.04
46	Jul 90-Jun 91	36.43	8.64	2.93	32.76	8.51	3.12
47	Jul 91-Dec 91	37.42	8.29	2.68	33.23	8.24	2.90
48	Jan 92-Dec 92	43.47	10.88	3.81	33.73	8.82	3.19
50	Jul 93-Jun 94	38.74	9.41	3.27	30.03	7.62	2.76

Notes: H: head count ratio of poverty; PG: poverty gap ratio; SPG: squared poverty gap.
Source: B Ozler, G Dutt and M Ravallion, 'A Database on Poverty and Growth in India', The World Bank, January 1996, for estimates up to the 48th round; For 50th round, NSS data has been used to calculate the estimates using exactly the same methodology as in the rest of the series.

were found to be among the most absolutely deprived and destitute of all Indians.

There is a close relationship between the extent of poverty and patterns of employment and real wages. In the rural areas in particular – as argued in the section below – two factors are critical (in addition to food prices) in explaining the incidence of poverty both over time and across states and regions : the behaviour of employment including the degree of diversification away from purely agricultural employment, and movements in real wages. For this reason, trends in the growth and pattern of employment are very important indicators of the extent and severity of poverty.

II
Trends after Mid-1970s

The essential point which emerges from the previous section is that a sustained decline in poverty is observable only after 1973-74, and that this process was over by 1990-91. In fact, the decline was almost certainly a phenomenon which began after 1975-76. The years 1972-75 were difficult years with high inflation was low growth, and the drop in poverty in 1977-78 as compared to 1973-74 is to a large extent attributable to the comparison of an excellent agricultural year with a year when output was below trend. For this reason it is more reasonable to date the beginning of the poverty decline to around 1977-78.

As is well known by now, during the period 1977-91 (and particularly during the 1980s) the Indian economy underwent a consumption-led boom, spurred on by increasing revenue deficits of the government, and financed in large part by high deficits on the external current account. This is the boom which went bust in 1991, laying the basis for 'reforms'. But since this boom and bust cycle is paralleled fairly closely by what happened to rural poverty, it is worth recounting some of its more important features. First, the boom was possible at all because, with increased access to external debt and with agricultural growth higher than the long-term average, the Indian economy was much better placed on the supply side, with both of her two traditional supply constraints greatly eased.

Second, during this boom it was the organised sectors of the economy which grew fastest in terms of incomes and output, but this growth did not lead to much increase in organised sector employment. The rate of growth of organised sector employment decelerated significantly, and the 1980s growth of such employment was, at 1.5 per cent per annum, much less than the rate of population growth. Within this, employment in the private organised sector was the most sluggish, averaging a growth rate of only 0.2 per cent per annum, and there was slow growth also of employment provided by the Central government and its industrial undertakings. In fact, whatever employment growth occurred in the organised sector was provided mainly by state governments and certain quasi-government organisations, for example the nationalised banks. Moreover, during this period there was also a sharp drop in labour absorption by the agricultural sector, and agricultural employment also grew at a rate substantially below the rate of population growth, and below rates of growth achieved in the past at times of lower output growth. Thus, the rapid growth of output in agriculture and in the organised private sector failed to translate itself into higher direct employment in these important sectors.

Nonetheless, and this is the third important point, this decade was characterised by rising real wages and a fairly sharp drop in both the incidence and the severity of poverty, particularly in rural India. According to calculations made for this paper, using data from the National Sample Survey and following the methodology recommended by the Expert Group on Estimation of Propotion and Number of Poor, there was a steady decline in the head count measure of poverty for the rural population from 56.4 in 1973-74 to 53.1 per cent in 1977-78 to 45.6 in 1983, 38.3 in 1986-87 and to 37.9 per cent in 1989-90.[4] The urban poverty ratio similarly fell steadily from 49.2 per cent to 32.4 per cent during the same period. This meant that the incidence of poverty which had fluctuated, positively with inflation and negatively with agricultural output, with if anything a positive underlying trend up to the mid-1970s began to decline thereafter. The most important reason for this was the fact that real wages of unskilled labour increased significantly in both urban and rural areas. Several alternative sources of data are available for agricultural wages, and all of these suggest that real agricultural wages increased by around 50 per cent during the decade – an increase almost double the increase in labour productivity in agriculture during this period.

These observations indicate that there were important changes in the nature of inter-sectoral and other linkages in the economy. One important point is that, although agriculture continues to be the largest employer of the workforce and productivity increases here are of major weight in the economy, the rest of the Indian economy appears to have become progressively less dependent on the behaviour of agricultural output during the 1980s. This is evident from the fact that the period of relative stagnation in agricultural output 1983-87 was nevertheless marked by high growth rates in non-agriculture, and, more generally, econometric evidence suggests that the earlier dependence of aggregate economic growth on the behaviour of the monsoon seems to have diminished. There are three major reasons for this. First, the sharp decline in the employment elasticity of output of the organised sectors of the economy meant that increased output in industry and services today involves a much lower concomitant increase in the demand for wage goods.

TABLE 2: PROFILE OF POVERTY IN INDIA 1987-88

Groups	Rural			Urban		
	Population Share	Per Cent Poor	Per Cent of Total Poor	Population Share	Per Cent Poor	Per Cent of Total Poor
Self-emp agriculture	44.3	38.3	37.9			
Self-employed non-agriculture	12.5	39.0	10.8			
All self-employed	56.7	38.5	48.7	38.8	41.5	43.0
Agricultural labour	27.1	62.7	41.8	12.1	68.1	25.9
Other labour	8.1	48.7	9.2	43.7	25.9	27.3
Others	7.9	26.4	4.5	5.5	32.6	4.7
Scheduled castes	18.4	56.1	22.9	11.7	53.3	17.0
Scheduled tribes	10.5	62.7	14.7	3.8	48.3	5.0
Female-headed HH		47.0			43.4	
All households	100.0	44.9	100.0	100.0	36.5	100.0

TABLE 3: COMPOSITION OF RURAL EMPLOYMENT (NSS USUAL STATUS DATA)

	Males			Females		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
1977-78 (July-June)	80.6	8.8	10.5	88.1	6.7	5.1
1983 (Jan-Dec)	77.5	10.0	12.2	87.5	7.4	4.8
1987-88 (July-June)	74.5	12.1	13.4	84.7	10.0	5.3
1989-90 (July-June)	71.7	12.1	16.2	81.4	12.4	6.1
1990-91 (July-June)	71.0	12.1	16.9	84.9	8.1	7.0
1991 (July-Dec)	74.9	11.2	13.9	86.3	7.9	5.8
1992 (Jan-Dec)	75.7	10.4	13.9	86.2	7.8	6.0

Secondly, the share of the traditional agro-based industries fell sharply so that agricultural raw materials played a less significant role as industrial inputs than earlier. The boom sectors of the 1980s – chemicals, consumer durables and high-tech services – had very little linkage to agriculture. Thirdly, the combination of an easier import situation and an enhancement of government operations meant that government policy instruments were more effective in insulating the non-agricultural sector from the effects of monsoon fluctuations.

This last, i e, government policy, operated on both the supply and demand sides. Given its higher foodgrain stocks and easier access to foreign debt, the government could better ensure agricultural supplies to non-agriculture during periods of low agricultural output by running down its stocks and by resorting to higher imports of other agricultural commodities. And, the demand consequences on non-agriculture of lower agricultural incomes during such periods were also better mitigated because, at such times, the government stepped up its revenue expenditure in rural areas, by expanding employment programmes and by generating more self-employment opportunities either directly through its own rural development schemes and/or by instructing banks to extend more credit. Thus, although there were features in the nature of organised sector growth which tended to weaken agriculture-nonagriculture linkages, the extent of this weakening depended considerably on a particular type of government involvement. Because of this, the continuing importance of agriculture cannot be wished away easily, since a fall in agricultural output can still have severe negative implications for the economy, both in terms of output and inflation.

Indeed, what is striking about the experience of the 1980s is that despite the declining dependence of non-agricultural sectors on the performance of agriculture, the prices of agricultural goods rose faster than the general price level. This meant a reversal of the earlier terms of trade movement against agriculture, and this also went against the international trend of a worldwide movement of terms of trade against agriculture. That this increase in agricultural prices did not have unbearable inflationary implication was partly because of the tendency described above of weakened inter-sectoral linkages, and partly because of the way the food procurement and public distribution systems functioned. Government procurement of foodgrains was more than adequate and government stocks generally sufficient, the procurement prices were typically close to the market prices and domestic food prices were also not too far from world prices so that there were fewer speculative pressures, and the PDS, along with the government's free market operations, worked to some extent to keep the prices of essential foodgrains under control.

In fact, from the point of view of poverty, an important trend during this period was that while agricultural prices as a whole increased faster than the general price level, cereals prices increased slower, so that it was possible for real wages to rise without increasing product wages correspondingly. This was an important contributory factor behind the decline in poverty which occurred during the period. As will be discussed later, these equations appear to have changed in the post-reform period.

Moreover, there was another important development concerning linkages in the economy. This was the rapid growth of non-agricultural employment in rural areas. After a long period during which agriculture's share in the labour force had remained constant, there seems to have been a change somewhere in the mid-1970s when this share began to decline. Since the urban population has grown faster than total population, this is of course related to some extent with urbanisation. But it is important to note that during the 1980s, the pace of urbanisation was in fact less than in any decade since independence. For this reason it may be said that the really important development was the growth of the rural non-agricultural sector.

According to NSS surveys, the share of agricultural workers among all male rural workers declined steadily from 80.6 per cent in 1977-78 to 77.5 per cent in 1983 to 74.5 per cent in 1987-88 to 71.7 per cent in 1989-90. For rural females this share dropped from 88.1 per cent in 1977-78 to 87.5 per cent in 1983 to 84.7 per cent in 1987-88 to 81.4 per cent in 1989-90. The true significance of this shift is probably better understood in incremental terms: these figures imply that non-agriculture absorbed about 70 per cent of the total increase in the rural work-force between 1977-78 and 1989-90. And this rapid growth of rural non-agricultural employment provides the main explanation for what would otherwise be a puzzle: how did agricultural wages rise and rural poverty fall during a period when employment in both agriculture and the organised sector was growing slower than population? That this development, rather than the somewhat faster growth of agricultural output during the 1980s, was the major driving force behind rising wages and declining poverty becomes clearer when it is noted that while agricultural growth was regionally diverse (with agricultural output per capita decreasing in many states), the rapid growth of rural non-agricultural employment was a phenomenon which occurred in almost every state in the country, and almost every state recorded rising rural real wages and falling rural poverty between 1977-78 and 1989-90. In other words, there is need to modify the conventional view among Indian economists that the main factors determining rural poverty are agricultural productivity and the rate of inflation. Although both these continue to be very important, the growth of rural non-agriculture has emerged as an additional crucial link from the mid-1970s onwards.

What then explained this growth of rural non-agricultural employment? The Indian literature on the subject has been dominated by two debates. First, whether the growth of rural non-agricultural employment is a positive development at all, or is it simply a reflection of the fact that agricultural employment has been sluggish and certain non-agricultural activities have emerged as 'residual sectors'. Second, to the extent that the growth of rural non-agricultural employment is not a 'residual', is it driven by developments in agriculture or are the growth impulses external ? The idea that non-agricultural employment is 'residual' is now somewhat discredited because not only are average wages seen to be higher in such employment than in agriculture, but, more importantly, because agricultural wages have increased as non-agricultural employment has grown suggesting that what is involved is a pull factor which tightens the agricultural labour market. Nonetheless, NSS data show that the actual picture is more complicated and suggests that 'distress' movement into non-agriculture has continued to be important for a significant section of rural workers, as well as that the main dynamic source of rural

TABLE 4: COMPOSITION OF URBAN EMPLOYMENT (NSS USUAL STATUS DATA)

	Males			Females		
	Self-Employment	Regular	Casual	Self-Employment	Regular	Casual
1977-78 (July-June)	40.4	46.4	13.2	49.5	24.9	25.6
1983 (Jan-Dec)	40.9	43.7	15.4	45.8	25.8	28.4
1987-88 (July-June)	41.7	43.7	14.6	47.1	27.5	25.4
1989-90 (July-June)	42.3	41.3	16.4	48.6	29.2	22.2
1990-91 (July-June)	40.7	44.2	15.1	49.0	25.9	25.1
1991 (July-Dec)	42.9	39.9	17.2	47.0	28.0	25.0
1992 (Jan-Dec)	41.2	39.4	19.4	42.5	28.8	28.7

employment generation over this period has been the external agency of the state rather than forces internal to the rural economy.[5]

There are several planks to this argument. Within agriculture, all the available evidence points to the decreasing ability of agriculture to absorb more labour, as the overall crude elasticities of employment to output are seen to be low in other major states and on an all-India basis. However, there are substantial variations across states, with the agriculturally less advanced regions showing much higher elasticities than the developed states like Punjab and Haryana. Since some of the less advanced states (such as West Bengal and Bihar) actually showed the highest rates of output growth over the period, there was less of a dampening effect on the overall elasticity as well as a pointer to the importance of regional spread of agricultural growth for employment generation. Moreover, an interesting observation relates to the flow of person-day employment in agriculture, which, after 1977-78, was seen to be increasing more than stock measures of usual or weekly status workers. In a very rough and approximate sense, this suggests that the supply of agricultural labour (as measured by the stock of agricultural workers) was actually increasing slower than the demand for agricultural labour measured in person-days. Simultaneously there appear to have been contractual changes under way in agriculture, with a greater emphasis on casual contracts.

The natural question consequent upon such a finding is what caused the slow growth in the stock measures of workers in agriculture. Here it was found that pull factors out of agriculture were significant. The relationship between agricultural prosperity and the growth of non-agricultural opportunities was found to be weak and non-linear, being significant only in states such as Punjab and Haryana where not only have agricultural incomes crossed a threshold but where further increases in agricultural output are accompanied by labour displacement rather than absorption. Outside this limited region, the pull is provided mainly by external stimuli. In certain regions, for example along the Bombay-New Delhi and the Bombay-Bangalore highways, there is clear evidence that industrial development, and the growth of services linked to this,have made deep inroads into rural society creating opportunities not only in the tertiary sector but also in small-scale industry. In addition, in the hinterland of industrially or commercially developed regions, there is growing incidence of workers who live in rural areas but commute to urban areas – a tendency which has been enhanced by the fact that the organised sector has tended to prefer casual workers to regular employees, and because rising urban rents and falling transport costs have influenced workers' choice of residence. However, given the limited geographical spread of such direct links to modern industry and commerce, in most areas the pivotal role in the expansion of rural non-agricultural employment appears to have been played by the expansion of government expenditure.

As noted earlier, the 1980s were a period when, along with a rapid increase in all sorts of subsidies and transfers to households from government, there was a very large increase in revenue (as opposed to capital) expenditure on agriculture by state and central governments, and this was also a period when the expenditure on Rural Development expanded manifold. More generally, throughout the period political developments tended to give rural interests greater power and they were able to command an improvement in the historically low share of government expenditure benefiting rural areas. Although this improvement in share should not be exaggerated, an indication may be had from the fact that nearly 60 per cent of all new government jobs created accrued to rural areas during the decade. Moreover, NSS data suggest that, despite a low average contribution of only around 5 per cent of total rural employment, the government's contribution was around a fifth when it comes to either total rural non-agricultural employment in 1987-88 or the increments in total rural employment between 1977-78 and 1987-88. Moreover, in 1987-88, about 60 per cent of the regular non-agricultural employees in rural areas were employed by the government which created almost 80 per cent of the increments in such regular jobs during the decade covered.

Thus, given the magnitude of what is now commonly accepted to have been a profligate growth of government expenditure, the total quantum of increased flow of public resources into rural areas must have been significant. Besides the large growth in agricultural subsidies already mentioned, this flow of resources took two predominant forms. There was, first, a fairly large expansion of 'rural development' schemes with an explicit redistributive concern.[6] This included not only the various rural employment and IRDP programmes but also a plethora of special schemes for a variety of identifiable 'target' groups. Motivated by the realisation that income growth by itself would not 'trickle down' in adequate amounts, these programmes were however less than entirely successful. They spawned a large bureaucracy and they became a focal point for the politics of 'distributive coalitions'. Yet, though the intended beneficiaries often got short-changed because of such leakages, these programmes represented a fairly massive net transfer to rural areas. The second avenue by which resources flowed from government to rural areas was through the greater accessibility of the rural elites to the government's normal gravy train. In part this was a result of greater mobility due to better infrastructure, but to a large extent it was also the outcome of the fact that with governments changing frequently (particularly at the state level) more new favours, not just jobs, but also various types of agencies and contracts, had to be distributed more often and the rural areas got a greater share in such electorally motivated largesse than they get at other times. The resulting flow of resources and the resulting generation of rural demand led to growing opportunities for diversification of the self-employed from agriculture to non-agriculture.

To a very large extent, the direct access to government permanent employment and also to many of the other resources was confined to the better-off and more powerful groups in rural society, to whom such incomes were more lucrative than agriculture. Associated with this was a large and significant increase in the proportion of the 15 to 29 age cohort which continued in education rather than join the work force. In part this must have been a result of the expansion of educational facilities as part of the general expansion of government in rural and semi-urban areas, but to a sub-

TABLE 5: CHANGES IN EMPLOYMENT 1989-90 TO 1992 (NSS USUAL STATUS UNADJUSTED)
(*Million persons*)

	Rural		Urban		Total	
	1989-90	1992	1989-90	1992	1989-90	1992
Self-emp agriculture	122.2	132.3	4.6	5.3	126.8	137.6
Regular-emp agriculture	5.6	3.8	0.3	0.3	5.9	4.1
Casual-emp agriculture	70.5	74.9	2.8	3.3	73.3	78.2
Self-emp secondary	17.7	11.3	6.8	7.0	24.5	18.3
Regular emp secondary	3.3	4.1	7.3	8.8	10.6	12.9
Casual-emp secondary	11.2	9.9	4.6	6.9	15.8	16.8
Self-emp tertiary	18.9	16.9	14.5	15.6	33.4	32.5
Regular-emp tertiary	10.6	9.1	15.4	16.0	26.0	25.1
Casual-emp tertiary	4.1	3.6	3.1	4.2	7.2	7.8
Unemployed	2.8	2.9	2.3	3.3	5.1	6.2
Total workforce	266.9	268.8	61.7	70.7	328.6	339.5
Total population	602.7	608.9	176.3	200.9	779.0	809.8

stantial extent this must represent also a motivational change (to acquire necessary qualifications for a regular non-agricultural job) among the youth in the relatively well-off sections of rural society. There was thus a movement out of agricultural work at the margin by workers and potential workers from such better-off rural groups, which meant that sections of the relatively rich vacated agriculture either to obtain regular employment, mainly in the service sector, or to take up non-agricultural self-employment.

This increased the ability of members of the less well-off rural households to find agricultural work, and also created a demand for certain types of rural services and industry. The relative tightening in the agricultural labour market which resulted, helps to account for the increase in real wages observed from the late 1970s. However, although such increases in employment and wages did improve the condition of the poorest rural workers, their employment diversification into non-agriculture continued to have many characteristics of a 'distress' process, given the overall tendency of labour use in agriculture. Dictated by the need to ensure economic survival, they increasingly entered into casual work not only in agriculture but also in non-agriculture. The main sectors providing this type of non-agricultural employment were secondary sectors like construction, mining, and small-scale manufacturing, and there is evidence that over time the incidence of poverty among those employed in some of these sectors became larger than in agriculture. Moreover, the agency of the state was important in terms of the diversification of opportunities for the rural poor. Thus, 22.3 per cent of all casual labour days spent on non-agricultural activity in 1987-88 were on public works programmes of the government, this percentage having increased from 17.7 in 1977-78 and 14.9 in 1983. And, although there is little evidence of any increase in non-agricultural self-employment among the bottom 40 per cent of the rural population (such increase was largely among relatively richer households), income generation scheme such as the IRDP, must also have had some effect.

This is of course an extremely schematic presentation of what is a much more multifarious and regionally diverse scenario, and there were variations in the pattern across states and over time. However, the fact that the developments described above occurred in every state, irrespective of the rate of growth in agriculture or organised industry, does imply the increased importance of external stimuli to rural employment and, in particular, the crucial role of the state. More importantly, these trends mean that the rural labour demand is no longer determined only by what is happening within the agricultural sector, but is determined crucially also by macro-economic processes and policies which do not at first appear to have any direct link with rural well-being.

Moreover, because much of the government spending involved is project funded, because most of the private enterprises involved are small and lack staying power, and because most of the wage employment thus created are casual, the vulnerability of the rural non-agricultural sector to overall public expenditure cuts and to restrictive monetary policy is almost certainly greater than for its urban counterpart. This has very important ramifications in the current macro-economic context, in which the reform measures have particular implications for patterns of government expenditure as well as on internal and external trade.

It is important to note in this context that the pattern of structural adjustment and government economic strategy since 1991 has been one which has involved a continued stagnation in employment generation in the organised sector, both public and private. Moreover, this strategy involved:

(1) actual declines in Central government revenue expenditure on rural development (including agricultural programmes and rural employment and anti-poverty schemes), as well as on the fertiliser subsidy, in the budgets of 1991-92 and 1992-93. Some of these cuts were however reversed subsequently in 1993-94.
(2) declines in public infrastructural and energy investments which affect the rural areas.
(3) reduced transfers to state governments which have been facing a major financial crunch and have therefore been forced to cut back their own spending, particularly on social expenditure such as on education and on health and sanitation.
(4) reduced spread and rising prices of the public distribution system for food.
(5) financial liberalisation measures which have effectively reduced the availability of credit, especially to small borrowers particularly agriculturists.

Thus, in the early 1990s, there was a reversal of several of the public policies which contributed to more employment and less poverty in the rural areas in the earlier decade. It should, therefore, not be entirely surprising that rural non-agricultural employment appears to have declined fairly sharply as soon as the stabilisation and structural adjustment policies were put into place in 1991. According to NSS survey data, the non-agricultural proportion among rural male workers was 28.3 per cent in 1989-90 and 29 per cent in 1990-91, before the reforms, and this fell to 25.1 per cent in July-December 1991 and 24.3 per cent in 1992. For rural female workers, the corresponding figures were 18.6, 15.1, 13.7 and 13.8 per cent. This represents a decline of somewhere between 9 and 11 million in the number of workers in rural non-agriculture, or a drop of 13-15 percent in the first 18 months of the initiation of the reform process.[7]

This fall occurred almost all over India, with only Karnataka and Madhya Pradesh being significant exceptions. In terms of sectors, this decline in employment was divided roughly equally between manufacturing, construction and community and other services, along with a smaller drop in transport; while mining, electricity, trade and financial services were immune among the self-employed and casual workers that the decline was greatest, with regular employment being largely maintained, except for some drop among regular male employees in the tertiary sector. Thus, the pattern of the decline in rural non-agricultural work suggests that it occurred not because of any large-scale retrenchment of regular employees by the government or the organised private sector, but because of a cut back in activity in the unorganised sector and, possibly, some retrenchment of casual workers by the organised sector. In this context, it is significant that, according to the NSS, this drop in rural non-agricultural employment was not accompanied by a corresponding drop of such employment

TABLE 6: TENDULKAR-JAIN ESTIMATES OF POVERTY

	Urban			Rural		
	H	PG	SPG	H	PG	SPG
1970-71	45.89	13.39	5.32	57.33	17.57	7.31
1972-73	47.00	13.57	5.32	57.21	17.93	7.54
1973-74	49.20	13.88	5.31	56.17	16.75	6.72
1977-78	42.98	12.16	4.81	54.47	16.59	6.88
1983	38.33	9.95	3.66	49.02	13.86	5.45
1986-87*	35.39	9.48	3.54	45.21	12.21	4.60
1987-88	36.52	9.34	3.38	44.88	11.26	4.04
1988-89*	36.98	9.61	3.49	42.23	10.20	3.54
1989-90*	32.41	8.03	2.84	37.94	8.80	2.95
1990-91*	32.43	8.03	2.88	36.55	8.81	3.03
1991 (July-Dec)*	32.02	7.90	2.84	42.06	10.02	3.39
1992*	33.87	8.43	2.97	48.07	12.59	4.58

Notes: * Denotes small sample; Poverty measures are same as in Table 1

among urban workers. Even among rural workers this did not lead to any large increase in open unemployment or to any large fall in the work participation rate. Rather, the self-employed and the casual workers displaced from non-agriculture appear to have reverted back to agriculture, leading to disguised (rather than open) unemployment. However, as a result, real agricultural value-added per agricultural worker dropped significantly, by over 8 per cent, even if comparison is restricted to the years 1989-90 and 1992-93 when monsoon conditions were very similar. Unfortunately, later data (particularly from the 1993-94 NSS large sample) is not yet available to verify whether this reversal of trend has continued, but clearly the early post-reform impact was adverse.

In the urban areas, regular employment has continued to stagnate, especially in the organised sector. During 1991-95, the growth rate of employment in the organised sector halved from its already low growth rate during the 1980s to only 0.8 per cent per annum, mainly because of a massive slowing down of employment growth in the public sector. The increases in employment that are discernible are essentially in casual employment, and this is evident for the secondary and tertiary sectors according to both usual and weekly status definitions. However, these increases in employment are still below the estimated increases in urban population over this period. The continued process of casualisation of work in urban areas has to be seen in relation to two other recent tendencies which are highlighted by several micro-level studies. First, there is the growth of subcontracting in manufacturing, which increasingly integrates formal and informal sector productive activities, and allows for a substantial part of the production to be undertaken by very small informal and unorganised units at the bottom of the production chain. These imply that a growing part of manufacturing production is undertaken by units in which there is no formal protection of any sort to labour. Second, and related to the first tendency, there is evidence of some 'feminisation' of employment, that is the growing share of female employment to the total, particularly in export-oriented activities, and with wages and working conditions that are typically inferior to those of male counterpart workers.

It is evident that these processes will have direct and indirect links to the spread of poverty, throughout India but especially in rural areas. These links, and the more general relation between economic growth and poverty, are considered below.

III
Post-reform Trend in Poverty

In earlier sections it has been observed that there was a declining trend in poverty after the mid-1970s but that this trend was reversed in the 1990s. However, while the earlier declining trend is officially accepted, the reversal during the 1990s is not. As discussed earlier, the main difference between the official view and those of independent observers arises because till now the official estimate is based not on the NSS data directly but on adjusted figures obtained by blowing up the NSS consumption estimates for every decile group by a common adjustment factor equal to the ratio between the CSO estimate of private consumption and the corresponding NSS estimate. Because this adjustment factor has increased sharply in recent years, the official estimate has diverged increasingly from any estimate based directly on NSS data. The Expert Group which recently went into this matter concluded quite categorically that the practice of 'adjusting' NSS data was arbitrary and was likely to give wrong results because as against the implicit assumption in the official method that any underestimation of consumption is distributed uniformly over the entire population, it is better to assume that the underestimation is only for those who are non-poor.

In fact, several alternative series which use the unadjusted NSS figures are available. In addition to the World Bank series given earlier, a series calculated by Tendulkar and Jain is available for the period 1970-92.[8] This uses the same reference poverty lines at 1973-74 prices as the official and World Bank series, but using a different deflator they obtain an even larger increase in poverty between 1990-91 and 1992 (Table 6). In addition, it has been possible to obtain measures of rural poverty for All India and the major states, based on the Expert Group Method using NSS data covering the years from 1972-73 to 1993-94[9] (Table 7). Unlike the other series this is not obtained from the national-level NSS data but is obtained by applying state-specific poverty lines to state-level NSS data. It must be noted that the figures given here for 1993-94 are preliminary, being based only on partial data (not yet officially released) from the 50th round of the NSS. Moreover, the data for 1986-87 and for 1989-90 to 1992 are based on the so-called 'thin' surveys by the NSS involving a much lower sample size than the other survey points. With only three survey points available for the post-reform period, and given the above qualifications for whatever data is available, any conclusion about post-reform trends must necessarily be rather tentative.

Nonetheless, using the mutually comparable thin samples alone, it is evident that poverty increased sharply during the first 18 months of the reform period (i e, the second half of 1991 and 1992), particularly in the rural areas. The partial data relating to 1993-94 suggests, however, that this upward trend was reversed thereafter. Taken together, these data suggest that there was a very large increase in rural poverty in the first 18 months of reform but that this trend has been moderated thereafter. Rural poverty in 1993-94 continued to be higher than in

TABLE 7: ESTIMATES OF RURAL HEADCOUNT POVERTY BY THE EXPERT GROUP METHOD

	1973-74	1977-78	1983	1986-87	1987-88	1989-90	1990-91	1992	1993-94
Andhra Pradesh	48.4	38.1	26.5	14.6	20.9	19.5	22.1	27.4	16.0
Assam	52.7	59.8	42.6	39.7	39.4	35.2	33.7	51.7	45.0
Bihar	63.0	63.3	64.4	50.1	52.6	52.4	46.3	61.1	58.0
Gujarat	46.4	41.8	29.8	30.3	28.7	14.8	21.6	33.7	22.2
Haryana	34.2	27.7	20.6	19.5	16.2	13.3	19.5	17.7	28.7
Karnataka	55.1	48.2	36.3	36.6	32.8	45.4	34.9	45.5	28.2
Kerala	59.2	51.5	39.0	33.5	29.1	34.4	30.3	26.0	25.9
Madhya Pradesh	62.7	62.5	48.9	47.8	41.9	39.5	42.4	47.9	40.8
Maharashtra	57.7	64.0	45.2	44.6	40.8	34.8	35.9	53.6	38.6
Orissa	67.3	72.4	67.5	55.2	57.6	52.9	36.5	49.0	49.9
Punjab	28.2	16.4	13.2	13.0	12.6	3.2	9.3	10.2	12.5
Rajasthan	44.8	35.9	33.5	29.2	33.2	26.1	25.9	31.7	27.5
Tamil Nadu	57.4	57.7	54.0	41.2	45.8	38.4	37.5	44.3	32.6
Uttar Pradesh	56.5	47.6	46.5	36.6	41.1	30.5	34.8	47.9	42.6
West Bengal	73.2	68.3	63.1	47.3	48.3	37.2	49.5	44.0	40.3
All India	56.4	53.1	45.6	38.3	39.1	34.4	35.0	44.0	37.5

1989-90 and 1990-91 but was less than in 1987-88. Urban poverty, on the other hand, appears not to have increased much during the first 18 months of the reform period and, indeed, appears to have declined significantly in 1993-94. Nonetheless, there were about 30 million more people in poverty in the latter year than before the reforms began.[10]

Thus, the post-reform trends in poverty do not suggest either an unambiguous improvement or an unambiguous worsening. They do suggest, however, that the initial impact of the stabilisation/structural adjustment package was adverse, that this impinged particularly on the rural sector, with less impact on the urban sector, and that there was some general reversal of the adverse trend subsequently. Nonetheless, it is important to note that the state-wise figures show that, as far as rural poverty is concerned, in most states the poverty ratios in 1993-94 were significantly larger than in the immediate pre-reform period. This is particularly true of the two largest Indian states, Uttar Pradesh and Bihar, and also of the hitherto successful 'green-revolution' states of Haryana and Punjab. The exceptions are the Southern states of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu in all of which the poverty ratio in 1993-94 was lower than in the immediate pre-reform period. However, it must be noted that in these states, and in Maharashtra and Gujarat, the year 1993-94 was exceptional in that the food prices actually fell in absolute terms as against rapid increases in both preceding and following years. For this reason, the calculated poverty ratios for 1993-94 are likely to be somewhat lower than the underlying trend.

More importantly, these trends in poverty need to be viewed in the general context, discussed earlier, that the stabilisation and stuctural adjustment policies carried out so far in India involved a fairly sharp contraction in fiscal and monetary policy in 1991-92 and 1992-93, followed by a return to high fiscal deficits from 1993-94 onwards. The revival of growth after an initial period of stagnation also followed a pattern broadly coincident with that of the government's fiscal stance, so that both the initial worsening of the poverty situation and the subsequent improvement seem to be broadly in line with the overall growth performance of the economy. Yet, there are a few surprises, the most important of which is that although the reform measures did not directly involve much changes in agriculture, it was rural poverty which appears to have been more sensitively affected by the post-reform developments.

This has led some analysts, for example Tendulkar and Jain (along with many other economists who are generally in support of the reform process), to argue that, although poverty did increase during the first 18 months of reform, the reforms were not the principal cause for this increase. This argument rests on the observation that "the rural sector in general and agriculture in particular were not the major focus of structural adjustment and were only indirectly affected by fiscal compression" and on the assumption that the reforms "would have adversely affected primarily the urban organised sector with second-order impact on the urban informal sector and weaker effect on the rural sector". Because, in fact, it was rural poverty which increased sharply, they attribute this increase not to reforms *per se* but to weather and to the higher post-reforms inflation for which, moreover, they hold the reforms only indirectly responsible. However, although the reform process has indeed neglected agriculture, there are two major difficulties with the argument that, therefore, it could not have increased rural poverty.

First, although there was a 2 per cent drop in agricultural production in 1991-92 compared to 1990-91, and although the inflation rate did increase sharply (particularly for foodgrains), these adverse factors were simply not large enough to explain the very large increase in the incidence of rural poverty. As discussed in the next section any econometric model fitted to the data prior to reforms linking the incidence of rural poverty only to some measure of agricultural production or productivity and to the inflation effect, breaks down as soon as the post-reform data is included. And, indeed, all such models are outperformed by models incorporating relative food price, rural non-agricultural employment and some measure of commercialisation, in addition to agricultural production. The latter not only fit the pre-reform data better, but when fitted to pre-reform data accurately track the post-reform increase in poverty, unlike models not including government expenditure and/or rural non-agricultural employment which predict much lower poverty increase than that which took place actually.

The important point to note is that this phenomenon of rural non-agricultural employment, which Tendulkar and Jain ignore, was almost certainly the major factor which drove rural real wages up, and caused poverty to decline, during the 1980s. And, in turn, this was based largely on increasing government expenditure and on the availability of cheap credit to the small-scale sectors. As has been pointed out in a previous section, the onset of stabilisation and structural adjustment appears to have led to a rather quick and large decline in such rural non-agricultural employment, pushing millions of self-employed and casual rural non-agricultural workers back to agriculture, thus reducing per-worker incomes in agriculture. It appears, therefore, that just as the expansion of the 1980s involved a rapid increase in rural non-agricultural employment without any concommitant increase in organised sector employment, the stagnation in the first 18 months of reform saw a cutback in rural non-agricultural employment with not much effect on either organised sector or urban employment. This suggests that, contrary to popular opinion, the employment multipliers associated with the government's fiscal stance are larger for rural non-agriculture than for the urban or organised sectors. If this is accepted, the trend in the magnitude of employment decline and poverty increase are not surprising, particularly because, as noted earlier, the contractionary tendencies generally impinged much more adversely on smaller enterprises than on the corporate sector.[11]

In addition, it is obvious that the effect on poverty of the rather small decline in agricultural output in 1991-92 could have been mitigated if rural employment policies had been used effectively, as they were during 1987-88 a year of much larger decline in agricultural and foodgrains output than

TABLE 8: BASIC REGRESSION RESULTS: ALL-INDIA DATA
(Dependent Variable Is Log of Headcount Poverty Ratio)

Constant	Per Capita Agriculture Income	Per Capita Non-Agri Income	Commerce	Public Dev Expenditure	Relative Price of Cereals	R Bar Squared
Rural						
11.34	–0.72 (1.2)	–0.36 (2.1)				0.73
9.56	–0.68 (1.1)	–0.78 (1.2)	1.11 (1.5)			0.77
8.83	–0.45 (1.9)	–2.38 (4.0)	3.20 (4.8)	–0.76 (9.4)		0.96
1.37	–0.49 (2.2)	–1.62 (3.3)	1.73 (3.1)		1.45 (9.8)	0.96
4.68	–0.45 (2.4)	–2.15 (4.3)	2.65 (4.6)	–0.39 (2.7)	0.80 (3.0)	0.97
Urban						
11.16	–0.75 (2.0)	–0.32 (3.0)				0.86
8.57	–0.69 (2.0)	1.35 (1.8)	–1.63 (2.3)			0.88
8.24	–0.58 (2.4)	–0.07 (0.1)	0.31 (0.4)	–0.34 (4.0)		0.94
4.61	–0.59 (2.7)	0.19 (0.4)	–0.26 (0.5)		0.70 (4.8)	0.95
5.23	–0.58 (2.8)			–0.08 (1.5)	0.60 (2.7)	0.95

Note: T values in parenthesis.

1991-92. Indeed, a state-wise analysis shows that between 1989-90 and 1992 rural poverty increased in every state except Kerala, i e, it increased even in those states (Haryana, Karnataka, Madhya Pradesh, Orissa, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal) where the 1991-92 foodgrains output was higher than in 1989-90, thus indicating a rather weak link between the fall in output and the increase in poverty. Moreover, it is interesting to note that the largest post-reform increases in poverty were registered in the two states, Gujarat and Maharashtra, which were most enthusiastic about the reforms process. Here, there was a fall in foodgrains output in 1991-92 as in 1987-88, but, unlike in 1987-88, the state governments neglected rural employment and drought relief schemes in 1991-92.

Secondly, although inflation is clearly important, Tendulkar and Jain are not entirely correct when they claim that the large rise in inflation (to over 25 per cent for the Consumer Price Index for Agricultural Labourers) during the first year of reforms was only indirectly related to the reform process. Their argument is that inflation occurred because crop output fell in a year when foodgrain stocks were low and the balance of payments position did not permit large imports; and because the government succumbed to rich farmer demands to increase procurement prices following the (necessary steps of) devaluation and cut in fertiliser subsidy.

In fact, because of a record harvest in 1990-91, public foodgrain stocks were high, over 21 million tonnes, when the government embarked on its reforms at the end of June 1991. And inflation accelerated principally because of the expectations set-off by devaluation and the impression given that all discrimination against exports of agricultural goods would be removed.[12] This led to an immediate speculative increase in private stocks, forcing the government to run down its own stocks faster, and also contemplate food imports. However, the decision on such imports was postponed till after the next harvest. And when this turned out to be somewhat less than expected, the government was faced not only with low stocks but also with low procurement because farmers withheld sales in the expectation that it would be politically and economically difficult for the government to justify imports at prices well above domestic free market prices which in turn were higher than the procurement prices. In the event, the government was forced to increase both its procurement prices massively (linking this with withdrawal of fertiliser subsidies) and also import wheat at prices higher than the increased procurement prices.

The entire problem was thus clearly driven by the fact that devaluation was linked explicitly with the idea of removing trade discrimination against agricultural goods and, therefore, with a central tenet of the liberalisation argument. If this had been followed through fully, food prices would have risen much more than they actually did and farmers would have received more than what they allegedly obtained as a result of their political clout. In fact, prices began stabilising only when the government made it clear that not only would some export restrictions continue on foodgrains but also that it would continue with its earlier policy of importing foodgrain to stabilise domestic prices, even if this meant making a commercial loss. For this reason, it can be surmised that the inflationary problem could have been avoided to a large extent had devaluation been accompanied at the outset by an explicit policy of increasing the wedge between world and domestic prices through higher export duties and a definite announcement that canalised imports would continue. That it was not, and led to an inflationary spurt which was contained only when the government backtracked, is one among a number of instances of how fidelity to the liberalisation world-view was extremely costly in the short-run without being sustainable in the longer run.

Thus, the massive increase in rural poverty, by over 60 million people, in the first 18 months of reform was to a very large extent a direct result of the stabilisation-cum-structural adjustment policies. The later data, for 1993-94, which shows a moderation in poverty does not necesarily contradict this conclusion because, after all, public expenditure cuts were to a large extent restored (and so rural non-agricultural employment might have risen somewhat) and stability was returned to foodgrains markets by removing the expectation that Indian agricultural prices were to soon reach international levels. Thus, although nothing firm can be said about employment trends till the full data from the 1993-94 survey is released, the decline in poverty appears only to confirm that changes in public expenditure levels and announcements regarding liberalisation of international trade in agricultural products have a large and quick impact on rural poverty.

IV
Determinants of Poverty

This brief review of trends in poverty bring us to the central issue of this paper: that is how liberalisation and structural adjustment may be expected to affect the incidence of poverty. Given the limited data and the somewhat conflicting empirical trends reviewed above, the remaining discussion will focus on past discussions of the determinants of poverty in India, and how the conventional logic needs to be modified in the light of subsequent developments. Since the Indian literature is mainly on rural poverty, this discussion will also focus largely on the rural sector.

Past literature has tended to focus on two types of variables: some measure of agricultural output or productivity and some price variable. And past writings have debated both the relative significance of these variables, and, more importantly, their proper specification.[13] Thus, although the level and growth of agricultural production per capita of rural population is obviously an important variable determining levels of welfare in a predominantly agricultural rural community, it is also obvious that such a relationship would be affected by whether agricultural growth is accompanied by increasing inequality and whether there are other sources of rural incomes. The link between poverty and prices is even more complex. For example, when Dharm Narain presented regression results showing that poverty was related positively with higher food prices, his specification was challenged because his use of the nominal food price as an explanatory variable ran counter to the prior, common to most economists, that what really matters are relative prices, and, that if absolute prices need to be incorporated, this should be done by considering the rate of inflation rather than the price level.

As far as the importance of agricultural output as a determinant of rural poverty is concerned, it is obvious that, unless the

TABLE 9: ALL INDIA RURAL POVERTY EQUATION

Variables	Ravallion-Dutt Model		Our Model	
	1960 to 1989	1960 to 1992	1960 to 1989	1960 to 1992
Constant	4.6(5.01)	3.3(2.79)	–0.6(0.67)	–0.1(0.10)
Ag Productivity	–0.3(2.69)	–0.1(0.56)	–0.4(4.21)	–0.4(3.36)
Real Wages	–0.5(3.26)	–0.7(3.53)	–0.3(3.29)	–0.4(2.79)
Relative price cereals			0.9(7.69)	0.9(6.25)
Non-ag employment			–0.5(3.97)	–0.4(3.65)
Commercialisation			1.0(6.45)	0.9(4.92)
Time Trend	0.0(3.85)	0.0(1.86)		
Lagged Dependent	0.5(4.74)	0.4(2.75)		
R Bar Squared	0.94	0.89	0.98	0.97
DW	1.63	1.28	2.27	2.37

manner in which higher agricultural output is brought about is sharply inequalising, any increase in agricultural output per capita would tend to benefit most rural people. It is precisely the fear of the possible inequalising impact of the 'green revolution' which had triggered off early work on this area. But, by now, it may safely be conceded that although relative inequalities may have increased, the 'green revolution' certainly reduced the incidence of absolute rural poverty in the regions where it was successful. But, although proponents of the *trickle down* hypothesis may have proved more correct than the detractors in this matter, the really striking feature of the post green revolution period is that, nonetheless, there is a rather weak link across states between the rate of agricultural growth per capita and reductions in rural poverty.

The simple fact is that, with the green revolution limited in geographical coverage, most states in India did not record any significant increase in agricultural value-added per head of rural population during the 1970s and 1980s, although almost all of them recorded significant declines in poverty.

With poverty reduced even where agricultural output did not increase, there has thus been a reversal of the earlier apprehension that agricultural growth could occur without reducing poverty. But this very disassociation between poverty reduction and agricultural growth is a feature which merits more attention than has been given so far. For example, it is significant that, while early work on the subject invariably chose some measure of agricultural output per capita, some recent research finds agricultural output per hectare to be the measure of agricultural performance better correlated with poverty decline.[14] This measure has the advantage, for those persistent in viewing agricultural growth as the main engine for the reduction of rural poverty, that on this basis almost every region in India recorded some agricultural growth during the period when poverty declined, and, in most cases, this growth was also larger than during the earlier period when rural poverty did not decline.

Yet, given the stagnation of agricultural output per head in most parts of rural India, this shift in the measure used surely serves to obfuscate matters rather than to clarify them, especially because in actual fact the underlying shift in Indian agriculture from expansion of cropped area to yield increases has been accompanied by a sharp decline in the output elasticity of agriculture's demand for labour. As a result, poverty has declined in most regions of rural India in a context not only of stagnant agricultural output per head of rural population but also one where agricultural employment has grown much slower than the growth of the rural labour force. This latter feature would normally be expected to depress agricultural wages and thus affect adversely the poorest among India's rural residents. But, in fact, real agricultural wages increased sharply in most parts of India between the mid-1970s and late 1980s, and this was, in fact, one of the main reasons why poverty declined.

Some researchers do note the rise in wages but chose to 'explain' this rise also by reference to the increase in output per acre. This, however, stretches credulity because by almost every measure the rise in real wages was at least twice as much as the increase in real output per worker, and cannot, therefore, be ascribed mainly to technical progress in agriculture. As has been argued already, the real explanation for the rise in agricultural wages lies in the rapid growth of rural non-agricultural employment and the dynamics behind this. The Indian literature on this has in the past toyed with two ideas: that rural non-agriculture is itself driven by agricultural growth through the operation of Engel's law; and the opposite idea that the process of commercialisation of agriculture leads to displacement of agricultural labour which finds distress employment in certain `residual' sectors of non-agriculture. However, both these ideas are now somewhat discredited. The link between agricultural growth and that of rural non-agriculture has been found to be non-linear, and, with the exception of the limited prime `green revolution' area there is little evidence that agricultural growth has provided the impetus to rural non-agriculture. Also, despite considerable evidence that commercialisation is inequalising and leads to casualisation of the rural labour force, the 'residual' sector hypothesis stands discredited because this does not square with rising real wages. The evidence overwhelmingly supports the thesis that the main impetus for the growth of rural non-agriculture has come from outside the rural areas, in considerable part from the expansion of government expenditure. This observation suggests that rural incomes are no longer derived only from agricultural production, and that the process by which rural areas have got integrated into the wider economy are important. One aspect of this has been commercialisation with its inequalising effects but the other is that external stimulii have provided employment opportunities and incomes which are related not so much with agriculture but with developments in the wider macro-economy.

However, many economists continue to view agricultural growth as the main solution to poverty. One reason for this is precisely because such an association fits neatly with the view that in countries like India, which protected industry in the past and therefore require 'structural adjustment' today, got it wrong not only on efficiency but also on equity. Indeed, during the 1970s, when the World Bank pushed its *growth with redistribution* slogan, the argument was that the pro-industry policies followed by countries such as India hampered agricultural growth and thus meant higher poverty than was necessary. Even today, some World Bank analysis tries to show that rural poverty is unaffected (or even worsened) by industrial growth while agricultural growth reduces not only rural but even urban poverty.[15] This view continues to be a central component of the structural adjustment policies, where it is argued that greater liberalisation of trade and industry would shift resources towards agriculture and this would not only be more in line with India's comparative advantage but would also reduce poverty much more than earlier policies. In other words, although no one will dispute that higher agricultural output is very likely to reduce rural poverty, it is no accident that in circles where 'structural adjustment is seen as a good thing there is also an almost single-minded obsession with this causation, to the point of excluding from consideration other possible determinants of the incidence of poverty.

However, given Dharm Narain's critique of earlier work which concentrated only on agricultural output, these more recent analysts of rural poverty in India do not entirely forget the price dimension as a possible determinant of poverty. But, interestingly, the focus in such recent analysis is almost entirely on how inflation is bad for the poor. Thus, either an inflation term is added to agricultural output in statistical models explaining poverty or real wages are added as an explanatory variable to the poverty equation and an inflation term is added to the equation explaining real wages. The argument is the entirely plausible one that

TABLE 10: POOLED TIME SERIES AND CROSS SECTION ACROSS STATES
(Dependent Variable: Head Count Poverty Ratio)

Constant	5.3(9.61)	5.8(16.59)
Ag output per rural person	–0.2(2.87)	–0.2(3.67)
Per capita state domestic product	0.1(0.89)	
State development expenditure	–0.2(5.42)	–0.2(7.61)
Relative food price	0.6(5.16)	0.6(5.45)
Inflation rate	0.1(1.42)	
R Bar Squared	0.87	0.88
DW	2.21	2.22

rural money wages (and possibly certain other components of rural income, such as the proceeds of the previous harvest) are not index-linked and therefore are not immediately protected against inflation, although these are likely to adjust in the longer-run.

But, although very plausible as an explanatory variable of short-run variations in poverty, the choice of inflation as the preferred price variable is again not entirely accidental. For reformers, this leads to the happy coincidence that *while structural adjustment is good for poverty because that is likely to shift resources towards agriculture, stabilisation is also good for poverty because this will reduce inflation.* Most importantly, this way of incorporating prices avoids facing the essential trade-off that Dharm Narain was pointing to: that between the possible beneficial effects of higher agricultural output on poverty and the possible losses involved if the preferred strategy for increasing agricultural output consists of higher agricultural prices.

This is a trade-off particularly relevant for the structural adjustment policy as it relates to agriculture. As has been pointed out by many, this policy seems to have given no serious consideration to agriculture in terms of new programmes or investment, although it purports to be a virtual overhaul of the entire economy. But this is no accident either. In the liberalising worldview, most economic problems can be resolved by a greater recourse to markets and allowing the price mechanism 'free' play. A similar position governs the attitude to agricultural growth, in that it is supposed that relative price movements and profitability ratios will be sufficient to ensure that supply responsiveness in agriculture will lead to higher rates of growth. And the critical variable here is the ratio of agricultural to other prices in the economy, which is sought to be increased by reducing trade protection to industry, through devaluation which makes non-traded goods cheaper relative to traded goods, and through removal of restriction on international trade in agricultural goods which would have the effect of increasing the domestic relative price of most agricultural products, including foodgrains.[16]

In other words, the very mechanism through which agricultural output is expected to increase under structural adjustment involves increasing the price of agricultural goods, notably food, relative to all other prices in the economy. This essential rise in the relative price of agricultural goods is thus not seen as a transient phenomenon like inflation, and it would leave the rural poor unaffected adversely only if the prices of goods and services they sell rises in line with the rise in price of food which makes up most of their consumption basket. The effect would certainly be adverse if money wages are sticky. But, even with flexible wages and full employment, wage workers would invariably lose if they got a substantial part of their income from non-agricultural activities in relation to which agricultural prices would require to rise. Unlike inflation whose control may be benign (if not accompanied by deflation), this essential relative price implication of structural adjustment is permanent by design and so also is its likely adverse effect on poverty. It is, therefore, noteworthy, and hardly accidental, that in the new set of poverty models, such a relative price variable is hardly ever included.

Moreover, deflationary policies designed to control overall inflation during a transition when domestic price relatives adjust to international levels may have a disproportionate adverse effect on the rural poor if the latter obtain sizeable parts of their income from non-agricultural activity. In Indian discussions on the subject, it is sometimes almost assumed that income and employment multipliers associated with fiscal and monetary policy never spill across municipal boundaries into rural areas. Nothing could actually be further from the truth. With agricultural output determined from the supply side, and agricultural prices made inflexible downwards by government support operations, it may indeed be the case that the income multipliers of a deflationary package are borne entirely by non-agriculture. But given that most organised sector workers still have secure employment at pre-determined wage rates, the entire burden of the employment multiplier falls on the unorganised non-agricultural sector. This sector does not respect rural-urban boundaries and cut-backs in employment demand here are likely to have knock-on effects on the incomes of the rural poor: through a combination of lower non-agricultural employment, falling real wages, and an increase in the extent of disguised unemployment in the agricultural sector.

That this latter effect might be important has already been indicated by the data so far presented on rural poverty and non-agricultural employment. Its plausibility is enhanced because much of the government spending which is important for rural areas is project or programme funded and thus more susceptible to expenditure cuts, because most rural non-agricultural enterprises are small and lack staying power, and because most of the wage employment thus created is casual. As a result, it would be no exaggeration to claim that the vulnerability of the rural non-agricultural sector to overall public expenditure cuts and to restrictive monetary policy is almost certainly greater than for its urban counterpart. This has very important ramifications in the current macro-economic context.

Thus, there are two possible stories which can be told about the impact of structural adjustment and stabilisation on rural poverty. The first is the benign one: that by increasing agricultural output and controlling inflation, these act to reduce poverty. Alternatively, there is the less optimistic but no less possible outcome that structural adjustment acts adversely on the poor because 'getting prices right' leads invariably to a rise in the relative price of food, because greater reliance on market forces spurs inequalities inherent in the commercialisation process, and because these adverse effects are compounded by contracting non-agricultural employment and falling wages in the unorganised sector if the government wishes to contain, through contractionary stabilisation policies, the inflationary fall-out of adjustment.

Which of these actually transpires is an empirical matter, and one would expect economists to have tested for which of these effects are more likely. But oddly, the benign agricultural output/ inflation story of rural poverty seems to hold the fort without being tested seriously against the alternative hypothesis involving relative price changes, commercialisation, rural non-agricultural employment and the government's fiscal and monetary stance.

On the other hand, the discussion of actual developments earlier in this paper suggests that the simple agricultural output/ inflation story about the determinants of rural poverty can be quite misleading. Thus, any explanation of falling rural poverty during the mid-1970s and 1980s would appear to be incomplete if it did not incorporate the fact of increasing rural non-agricultural

TABLE 11: DUTT-RAVALLION CROSS-SECTION AND TIME SERIES POOLED
(Dependent Variable: Head Count Poverty Ratio)

Time Varying Variables		
Mean consumption		–1.1(15.62)
Ag productivity	–0.1(2.58)	–0.0(0.79)
Rate of inflation	0.6(6.57)	0.2(2.35)
State dev expenditure	–0.3(5.12)	–0.1(3.33)
Initial Conditions		
Irrigation	–0.6(3.08)	–0.4(3.32)
Female literacy	–0.4(2.59)	–0.1(1.09)
Infant mortality	0.9(4.69)	0.4(3.18)
R Bar Squared	0.86	0.94

employment and the role of government policy behind this. Similarly, our critique of the Tendulkar-Jain explanation of the increase in poverty post-reforms is also essentially that they fail to go beyond the agricultural output/ inflation story. In the remaining part of this section we attempt a statistical investigation.

To begin with, we regress head count measures of poverty for the period 1960-61 to 1993-94 at the all-India level in both urban and rural areas against per capita agricultural and non-agricultural incomes (with agricultural incomes defined per head of rural population and non-agricultural incomes defined per capita of total population). As the accompanying table 8 shows, both income variables are significantly negative in both rural and urban areas, and in both cases the agricultural income variable appears more important. Next, the per capita non-agricultural income variable is split into per capita income from trade and transport (an indicator of commercialisation) and other non-agricultural incomes. The rationale for this is many commentators (e g, Vaidyanathan 1986) have argued commercialisation this tends to increase rural inequalities. In these respecified equations, agricultural incomes continue to be negatively related to poverty, but now there is a difference between the urban and rural equations. In urban areas, the commercialisation variable appears to reduce poverty while the remaining non-agricultural incomes have a positive effect. But exactly the opposite pattern appears in rural areas. Next, we include a public expenditure variable (development expenditure per capita, i e, government expenditure less interest payments and expenditure on defence and administration). This variable is strongly significant, reducing poverty in both rural and urban areas, with, interestingly, its coefficient almost double in rural as compared to urban areas. Moreover, on inclusion of this variable, the non-agricultural income variables become insignificant in urban areas, while in rural areas the earlier pattern is maintained.

These observations suggest a much more complex relationship between growth of non-agricultural incomes and poverty than usually appreciated. As expected, commercialisation does indeed seem to be associated with increased rural inequalities, but it seems also to be associated with some increased opportunities for the urban poor. On the other hand, the expansion of other non-agricultural incomes appears to have reduced rural poverty while doing nothing to reduce urban poverty. This suggests that to the extent that the benefits of such income growth do percolate down to the poor, this spills over disproportionately to the rural sector, either because of rural-urban migration or because, as suggested earlier, employment multipliers are higher for rural non-agricultural employment. This latter suggestion finds some confirmation from the coefficients on the government expenditure variable, whose significance suggests also that such expenditure has a much larger impact on poverty than a general increase in non-agricultural output.

Surprisingly, on including an inflation term in these equations, this is found to have an insignificant effect on poverty in both rural and urban areas. Replacing the inflation term with a relative price variable (the relative price of cereals to all commodities in the wholesale price index) does however make a difference. This variable turns out to be highly significant in both areas, and also serves to reduce the significance of the public expenditure variable, which however continues to be significant.

These results need to be interpreted with caution because the mutual correlation between these explanatory variables is often high. But three points emerge quite strongly. First, that agricultural incomes are important not only for rural but also urban poverty. Second, that non-agricultural impulses, particularly public expenditure, are not only important but that they are especially so in the determination of rural poverty. Third; that, as far as the price variable is concerned, the relative price effect is if anything much more important than the effect of inflation *per se*.

Taken together, these results suggest that we need to modify the view that the principal determinants of poverty are agricultural output and inflation, and that, therefore, both structural adjustment and stabilisation are good. To consider this matter further, we replicated the version of this story as it emerges from the World Bank publication *Growth and Poverty in India*.[17] This is more sophisticated than most other versions of the story in that it is a two-equation model whereby the incidence of rural poverty is 'explained' by the agricultural real wage and the lagged and current agricultural output per net sown acre. In addition the model includes the lagged dependent variable and a time trend. In turn, the level of the agricultural real wage is 'explained' in another equation by the inflation rate and the earlier agricultural output variable, in addition to a lagged wage term. In this model, therefore, higher agricultural output reduces the incidence of poverty both directly and through its positive effect on the wage rate; and inflation works on poverty only indirectly through the wage rate.

Table 9 gives the coefficients of the Ravallion-Dutt poverty equation obtained when fitted it to the periods 1960/61-1989/90 and 1960/61-1992 with all-India data. The first fit, which does not include the post-reform period, is almost the same as that reported in their original paper and appears to be a fairly good fit. However, the second fit, that of the same model fitted to data extended to the post-reform period shows that the model breaks down almost completely since the most important variable, agricultural output per acre, turns totally insignificant. Furthermore, the breakdown of the model occurs essentially because the magnitude of the actual increase in poverty is well beyond anything that this model can predict. In fact, when the model estimated with data up to 1987-88 is extrapolated, it is able to explain only a small part of the large actual increase in 1992, and also predicts an increase in poverty in 1993-94 as against an actual decline.[18]

This table also gives the details of an alternative model fitted to the same data incorporating our observations in the preceding discussion. Here in addition to the agricultural output and real wage variables we included the relative price of cereals, the proportion of non-agricultural workers in rural population and the commercialisation variable (the per capita GDP from trade and transport). An interesting observation is that on inclusion of these variables, the time trend and the lagged dependent variable used by Ravallion-Duttt turn insignificant, suggesting that in fact the adjustment of poverty to real factors is much faster than that suggested by the Ravallion-Dutt model. This alternative model not only fits past data much better than the Ravallion-Dutt version, but also, unlike theirs, remains robust when extended to the post-reform period. In parti-cular, the massive increase in rural poverty in 1992 is predicted with complete accuracy by the model fitted up to 1987-88.[19]

These results not only emphasise the importance of the relative price variable and of non-agricultural factors, they cast strong doubts on the simple agricultural output/ inflation paradigm. This paradigm is further compromised because it is seen that the wage equation in the Ravallion-Dutt model also collapses in the sense that inclusion of alternative variables, e g, real government expenditure per capita, renders the agricultural output variable insignificant. Indeed, the significance of the government expenditure variable here confirms the possible importance of government expenditure for non-agricultural employment, the rural real wage and, therefore, rural poverty. And, indeed, including a government expenditure variable along with lagging the employment variable yields our preferred equation. Interestingly, this equation fitted to data up to 1987-88 accurately tracks the subsequent movement in rural poverty, including both the sharp upward movement in 1991 and 1992 and the reversal in 1993-94.[20]

Nonetheless, these observations on the basis of All-India data, though indicative, cannot be conclusive given that the degrees of freedom are few and because a number of possible explanatory variables are mutually correlated. For this reason, the excercise was repeated using state level data, in the form of a pooled time-seris and cross-section analysis with data up to 1992. In this exercise, poverty was regressed against agricultural output per rural person, state per capita SDP, a relative food price index calculated by dividing the index of the food price in the CPIAL by the SDP deflator, an inflation index based on the SDP deflator, and per capita real state development expenditure. All variables except the per capita SDP were significant, but, in addition, the inflation term was small and just crossed the significance level. The relative food price variable was easily the most statistically significant variable and it also was the most important in terms of its impact. The next important variable was state development expenditure, followed by agricultural output.

These results with pooled cross-section and time series data at the state level are in many ways similar to results obtained recently by Dutt and Ravallion (1995) with more or less the same data set, but restricted to the period up to 1989-90.[21] In their model they regress poverty measures against agricultural output per hectare, state development expenditure and an inflation term, along with certain indicators of initial conditions (e g, irrigation, infant mortality and female literacy). All the variables had the expected sign, and, interestingly, they find that state development expenditure was the most significant variable and that, unlike agricultural output which reduced poverty only by increasing mean consumption, state expenditure reduced poverty by increasing both mean income and improving income distribution. They did not include any relative price variable but our experiments with the same data suggest that this would have swamped the inflation term had they done so. Hence, the importance of state expenditure and of the relative food price appears to be fairly robust as factors explaining poverty both across time and space.

However, perhaps the most important result of this Dutt-Ravallion exercise is that it shows that, quite apart from the contemporaneous effect of prices, output and government spending, the extent to which a particular state could reduce poverty over time depended also on the *initial conditions* with respect to physical and human infrastructure, in terms of irrigation, female literacy and infant mortality, with which that state began. Thus, of the difference of 1.8 per cent per annum between the rates of poverty reduction in Kerala and Madhya Pradesh, fully 1.6 per cent per annum could be attributed to the fact that Kerala began with higher female literacy (1 per cent) and lower infant mortality (0.6 per cent). Our own preliminary experiments with such *initial conditions* confirm the long-run importance for poverty reduction of health and education status, though much less so of irrigation, and suggest furthermore the importance of initial land distribution.

Clearly, this analysis suggests that both the benign agricultural output/inflation model and the relative price/state expenditure/rural non-agricultural employment models mentioned earlier are relevant for the determination of rural poverty. But the really important conclusion is that, of the two, the second is by far more important: agricultural output and inflation do matter, but as determinants of the incidence of poverty, the relative price of food and the level of government expenditure are even more important. In addition, the analysis points to an important and hitherto ignored long-run synergy between efforts at improving the health and education status of a society and its ability to bring down poverty over time.

V
Policy Conclusions

The results above do not lead to any very optimistic prognosis about the effect of structural adjustment or of further 'marketist reform' on poverty. It is true that *ceteris paribus* an increase in agricultural output would reduce poverty and that, therefore, there is a case for diverting more resources to this sector. It is also true that any expansion of employment in the unorganised sectors, say through the rapid growth of labour-intensive exports, would also reduce poverty. And it remains extremely plausible that any policy which can moderate inflation without leading to a cut-back in employment opportunities would in general benefit the poor. Nonetheless, there are trade-offs involved in achieving each of this goals in the structural adjustment package, and it is precisely these trade-offs which are cause for pessimism.

The basic thrust of the structural adjustment strategy is to allow greater play to market forces and to ensure that domestic relative prices reflect the opportunities available in international trade. In theory, domestic liberalisation would cause a greater degree of commercialisation, and liberalisation of international trade would cause shifts in relative prices in favour of agriculture and exportables. Taken together, these are expected to bring about the desirable shift of resources towards agriculture and labour-intensive exports. However, the problem with this is that not only do these very mechanisms, commercialisation and a rise in the relative price of agricultural products, act directly to increase poverty, but also that the magnitudes of the elasticity of poverty to these make it extremely unlikely that the direct loss on this account can be made up by the indirect benefits accruing from the better resource allocation that is expected to result thereby. For example, in almost every poverty equation reported above, the positive coefficient on the relative price variable is twice the absolute size of the negative coefficient on the agricultural output variable – implying that the elasticity of food production to the relative price of food would have to be greater than two if such a change in relative price is to reduce poverty through higher food production.

This cautions against any sudden opening up of the foodgrains sector to international trade; and, indeed, the caution here should be greater than simply one of managing a careful transition to world prices. The fact that the relative price specification is more important than the inflation specification suggests that the underlying problem is caused by more than a stickiness of money wages in the face of price increases. If such stickiness existed without any long-run impact of relative prices on poverty, the problem would have only been a transitional one which could be managed by keeping inflationary pressures in check either by a graduated movement to world prices or through a more effective stabilisation policy. However, since poverty is extremely sensitive to relative prices there is more than a transitory problem with opening up agriculture to international trade. Also, with government expenditure important for poverty, there is the further important trade off between this direct effect and the indirect effect, through inflationary pressures, of the fiscal policy stance. Given the relative importance of the government expenditure and inflation variables in the poverty equations, attempts to use contractionary expenditure policies to deal with inflation pressures, say as a result of a greater opening up to international trade, could prove to be a case of the medicine being worse than the desease.

In any case, there appears to be considerable evidence that the increased government spending during 1976-90 was among the principal reasons why India could record rather impressive declines in poverty during this period. However, it is also true that the sustainability of such expenditure increases in the future is more doubtful than ever before. During 1976-90, real per capita government development expenditure increased at an annual rate of 6 per cent per annum as against only a 3 per cent growth in per capita real GDP. Real government expenditure per capita fell 15 per cent during 1990-93, but increased again by 6 per cent

in 1993-94. The earlier expansion of government expenditure had led to large fiscal imbalances despite the fact that tax-GDP ratios had then grown quite significantly. On the other hand, both GDP growth rates have been lower and tax-GDP ratios have been falling in the post-reform period. It is therefore unlikely that the pace of growth of government expenditure can be sustained unless GDP grows at least 8 per cent per annum or there is a definite policy of increasing the tax-GDP ratio significantly.

Given this fiscal reality, and the fact that non-agricultural GDP does not appear to have much impact on poverty except through its effect on the sustainability of government expenditure, it is obvious that there will be problems with maintaining the pace of poverty reduction. Even if GDP growth increased, the current fiscal priorities make it unlikely that this would be reflected fully in public expenditure. One possibility discussed in this context is to alter the composition of government expenditure so that it is more directly focused on poverty alleviation. But, although this is possible and desirable, a note of caution must be sounded on this at the outset. In our regression excercises, we played around with different components of government expenditure, and the results suggested, somewhat surprisingly, that it was the broader measures of such expenditure which had a greater poverty alleviation effect, at least when poverty is measured by the head count ratio, than narrower and more focused measures such as that on agriculture and rural development.[22]

There are two possible reasons for this. First, it may well be the case that the existing poverty alleviation programmes are not particularly effective and that their impact on poverty is no greater than other government expenditure. If so, there is room for improvement in the design of expenditure focused towards poverty alleviation. And, indeed, a case can also be made out that it may be possible to transfer funds from such programmes to rural capital formation without endangering the poverty alleviation impact. But, secondly, it also appears that what is really at issue are much broader multiplier effects of overall government expenditure. Clearly much more work is required in this area to identify ways in which the impact of a given amount of expenditure can lead to more poverty alleviation, but, although there are certainly likely to be ways of achieving this, it should not be expected that it will be possible to cut-back overall government expenditure without any adverse effect on poverty. The real significance of government expenditure appears to be that it is this which imparts any 'trickle-down' characteristic to the growth process, something which appears quite weak if only GDP growth is considered.

Nonetheless, since this effect is likely to be greater if government expenditure is properly targeted, it is necessary to attempt a brief evaluation of the contribution of government anti-poverty schemes in the reduction of poverty. There have been numerous evaluations of these made by the government and by independent researchers, and no attempt will be made here to review this literature which attempts to measure the effectiveness with which particular schemes have been able to target the poor. Suffice it is to note that such evaluations have by and large found that asset-creation schemes, such as the Integrated Rural Development Scheme, have had less success in alleviating immediate poverty than rural employment programmes, although even the latter have leakages and are often criticised for being a palliative whose effectiveness at permanent poverty reduction are rather low. However, comparing the official figures on employment schemes with independent data from the NSS, four points are worth making. First, with the NSS reporting a quantum of employment in public works which matches official data well, fears about large leakages may be rather exaggerated. Secondly, the schemes appear to be reasonably well-targeted in that they are availed of most by casual labour households which have both the highest poverty and the highest person-day unemployment, but the regional distribution of employment through such programmes appears to be concentrated in a few western Indian states, and also public works appear to have been much more effective in 1987-88, a drought year, than in more normal years. Thirdly, it seems unlikely that the effective transfer through such schemes was much lower than the wage cost as a result of incomes foregone by the workers to take up such employment.[23]. Fourthly, possibly because they are well targeted, public works appear to have been more effective in moderating the severity of poverty rather than its head count incidence.[24]

Conceptually, if viewed primarily as an anti-poverty measure, a well targeted public works programmes should not provide incentives for the non-poor to participate and nor should there be impediments to participation by anyone who is poor. At least till 1987-88, Indian schemes seem broadly to have passed the first test but, except possibly in Maharashtra, failed the second both because of a paucity of funds and a lack of official commitment, except at times of natural disasters. Since then, confusion about the intention behind such schemes seem to have increased. First, wages offered have been increased to the statutory minimum wage rate which is often higher than locally prevailing wages, thus making participation more attractive. Second, despite this, funds available for such schemes have been cut in real terms, causing job availability to be even more rationed. Finally, as a result of a misplaced importance given to the head count poverty incidence measure there is a feeling that these schemes have failed to reduce poverty, and this, combined with a general presumption that investment rather than doles are what is really necessary, have led many to argue for an increase in the materials and expertise content of these schemes, at the cost of their unskilled labour content, so as to make them more viable instruments of rural investment.

These reactions are confused because the primary goal of an anti-poverty measure is not the creation of assets and nor is its purpose a general redistribution of income, say by increasing the general wage level. This is not to argue that these are not laudable objectives but simply to point out that attempts to chase too many objectives without substantially increasing the budget available risks diluting the primary goal of poverty alleviation. Both higher wage rates and a lower component for unskilled labour in these schemes reduce their transfer content. And, these objectives, by attracting richer workers and/or by directing employment to regions where viable investment projects, rather than the poor, exist are also likely to make for much less effective targeting. Possibly, the correct approach would be to make employment guarantee the primary concern of such programmes, setting the wages paid to levels where the demand for such employment would broadly match the funds available. Clearly, if more funds can be directed into such programmes the wage rate paid can be increased, and with sufficient expenditure even the general wage rate influenced within the employment guarantee framework. The employment guarantee aspect should, however, be the primary concern and higher wages the secondary concern because only this priority would keep out the relatively rich while allowing the poor unimpeded access.

Secondly, the best way to dovetail productive investment into such a programme would possibly be to give a wage subsidy equal to the employment guarantee wage rate for each unskilled worker working on a class of well-defined approved investment projects, delinking project choice from the agency implementing the guarantee scheme and treating the rest of the project cost and benefit on par with any other. With the employment guarantee scheme in place, this need not cost the exchequer any more and yet the linkage between poverty alleviation and productive investment through labour-intensive schemes could be decentralised. Needless to say, this means that other project costs would have to be met from outside the

employment guarantee budget. But this is the proper way of proceeding because while there is a case for subsidising employment if there is paid-underemployment at the normatively chosen employment guarantee wage rate, there is no case to subsidise any particular investment more simply because it is selected by the agency implementing the employment guarantee scheme.

However, the main lesson from earlier sections is that the basic thrust towards permanent reduction of poverty must take the form either of increasing employment in agriculture, mainly through better irrigation and multiple cropping, or of increasing the stock of viable self-employment opportunities or regular jobs in non-agriculture. It is towards these objectives that rural investment should be encouraged while employment guarantee provides the framework within which this can be done without sacrificing the need to combat poverty immediately. Yet, because the reforms themselves have aspects which tend to increase poverty, and because fiscal considerations mean that it might be difficult to increase both agricultural investment and the expenditure on anti-poverty schemes, there will be difficulties in the future.

Under these circumstances, it is clear that if poverty reduction is to be a serious part of the agenda in the reform period, the reforms themselves should have an explicitly redistributive content. This would require cuts in subsidies to the rich and also higher taxes to maintain and increase the expenditure relevant for the poor. In addition, the old issues of land distribution and the provision of universal primary health and education must again be put back on the agenda. But, more than anything else, it must be recognised that a 'reform' strategy which aims to withdraw the state from investment, liberalise finance and thus divert finances from the state to the private sector, liberalise agricultural trade and thus enrich the rich at the direct cost of the poor, and seeks to control inflation and BOP problems through deflation and devaluation is at its root a fundamentally inequitous adventure.

Notes

[This is a slightly revised version of a paper delivered at the Workshop on Economic Reforms and Poverty Reduction organised jointly by the Institute of Development Studies, Sussex and the Lal Bahadur Shastri National Academy of Administration, Mussoorie, and held in Mussoorie in February 1996.]

1 See e g, C P Chandrasekhar and Abhijit Sen: 'Has Poverty Declined with Reforms?', Macroscan, *Businessline*, January 23, 1996. See also Jaya Mehta, 'Poverty Figures and the People of India' in *Alternative Economic Survey 1995-96*, published by the Delhi Science Forum for the Alternative Survey Group.

2 Ozler, B, G Dutt and M Ravallion, 'A Database on Poverty and Growth in India', Poverty and Human Resources Division, Policy Research Development, The World Bank, January 1996. This data base which is available in diskette form contains data up to the 48th Round (January-December 1992) of the NSS. It also has compilations of the poverty line for the 50th Round (July 1993-June 1994), but does not contain poverty estimates for this round because the NSS data was not available. The poverty estimates for 1993-94 are ours, using the World Bank poverty lines (which use the Planning Commission benchmarks of Rs 49 and Rs 57 at 1973-74 prices for rural and urban India but use somewhat different deflators) and the World Bank computer programme POVCAL for poverty estimate calculations with the 50th Round NSS estimates.

3 This relies heavily on Tendulkar, S, D K Sundaram and L R Jain, 'Poverty in India 1970-71 to 1988-89', ILO-ARTEP, 1993.

4 See the next section, and particularly Table 7.

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Politics, Institutions, Poverty
The Case of Karachi

S Akbar Zaidi

Poverty alleviation is the trendy and fashionable slogan for the end of the 1990s. Projects will be defined with a specific focus on the poor, often with the help of donor money channelled through non-governmental organisations (NGOs). This attempt, while well meaning, will invariably be at a micro level with a narrow focus, often ignoring the causes for the existence of poverty in the first place. Band-Aid social work of this variety will certainly improve the living conditions of a number of beneficiaries in the project area. However, poverty is primarily a political issue, caused and maintained by factors of a macro nature and by institutions which function in a specific, political, environment. This paper argues that politics comes prior to poverty, as do institutions. The failure of institutions to address issues of poverty and development are seen here as essentially political failures. Looking back over the last decade, it would be difficult to find a more politicised, *violent, ethnically divided, alienated city than Karachi. The paper concludes with the assertion that far-reaching and substantial political and institutional reform, must come first in any attempt to alleviate poverty, particularly in Karachi.*

Introduction[1]

IN order to understand the nature and extent of poverty, especially in the setting of a large metropolitan city with a population of 11 million, such as Karachi, it is necessary to understand the institutional and political relationships which exist in that city. The causes and reasons for persistent and recurring poverty may lie in the failure of political and institutional responses in dealing with poverty, both at a local and at a national level. In fact, even the creation of poverty, in the first place, may be the outcome of specific policies followed by different levels of institutions in response to political circumstances and imperatives. Hence the title of this paper, where the city of Karachi provides a case to examine the dialectics of institutions and politics, in order to assess the causes, nature and extent of poverty in the city.

There has been a sea change in the way governments function and in the way institutions act on policy priorities in much of the underdeveloped world. The military dictatorships of yesteryear have been replaced by evolving forms of democracy, ranging from the autocratic to the more liberal. Highly centralised states, where much of policy was formulated, have weakened their hold over lower tiers of government, with states/provinces and district and local level government playing an increasing role in public policy and in the delivery of basic services. The nature of politics too, has changed. With the demise of the Soviet Union and the perceived failure of socialism with it, politics in much of the underdeveloped countries of the world has also undergone a radical transformation [see for example Zaman 1993; Zaidi 1994a, 1994b].

The guerrilla struggles of Latin America and the parties closely aligned to the Communist Party of the Soviet Union (CPSU), subscribing to the non-capitalist path of development, have for the most part, been transformed into social democratic and left leaning parties. Even Marxist parties have changed their colours, from fighting class enemies and imperialism to becoming more expedient, chasing multinational corporations inviting them to invest in their countries. With the change in ideology, politics too, has changed.

The dialectical relationship between politics and institutions has given impetus to the NGO movement. While institutions of the state and of the private sector have existed since time immemorial, institutions which belong to neither, have coalesced in recent years, offering this third alternative. The NGO movement in some countries has replaced the role of the state in the delivery of certain social services and has even acquired the status of a quasi-state in some regions [Zaidi 1994b]. In others, the failure of public institutions has not helped bring forth alternative forms of government, organisation or institutions, giving rise to anarchy, and at times, even carnage.

It is these changing perspectives and relationships in which we focus on the issue of poverty in Karachi. What has been the role of national institutions of the state in creating poverty in the first place, and how have local institutions which deliver social services, responded to the challenges of rigid structures, inadequate revenues and resources, and insufficient powers? Much of Karachi's recent history has been one dominated by volatile and violent politics, with the most popular political party often discriminated against at a national level and sometimes targeted militarily. One cannot ignore such facts in examining the relationship of institutions with politics, when they address issues of poverty. Then, the issue of poverty, itself, is no less complex. How does one identify and measure it? What sort of indicators would be useful in determining the extent of poverty? How relative should our measurements be? Relative to what? and so on. While the location of poverty and what subscribes it can be an endless debate, this paper tries to briefly discuss the difficulty in trying to identify and measure it within our context.

This paper begins with an account of how Karachi has grown in the last 50 years and is now destined to become one of the most populated cities of the 21st century. We look at the city's history and its growth and then turn to an evaluation of how Karachi's institutions function. The process of planning plays a fundamental role in how the city has developed, and this role is examined in detail in the paper. The next section then discusses the issue of poverty in general and then in the specific context of Karachi. Since politics has dominated the life of all citizens in the city, one section of the paper examines how institutions have been affected by the often violent politics and what the impact on poverty has subsequently been. The role of less formalised politics and institutions, in particular the role of some NGOs in alleviating poverty and addressing issues of social and economic deprivation, is also touched upon during the course of this paper. Finally, an attempt is made to tie all loose ends together, and focus on future strategies for poverty alleviation, within the context of political and institutional developments in Karachi.

The Context of Karachi[2]

The population of Karachi in 1729 was 250; today it is estimated to be around 11 million with the Karachi metropolitan area constituting about 4,25,000 acres, or over 3,500 sq kms (Table 1). The growth in the size and population of the city has been uneven and sporadic, often influenced by factors outside the control of either the citizens or the administrators of the city.

Karachi, when it was conquered by the British in 1839, was a small town

with a population of approximately 14,000 with few Sindhis living in this town. The capital of Sindh at that time was Hyderabad where the rulers, the Mirs, lived. Hyderabad was conquered by the British in 1843, four years after the conquest of Karachi, and it was the capture of Hyderabad, rather than that of Karachi, which marked the annexation of Sindh to the British empire. Alexander Baillie, writing in 1890, writes that Karachi had no importance of any sort prior to the occupation of 1839 and in the Sindh campaign of 1843. He says that it was not even mentioned in the political dispatches of the British. Since Hyderabad and Thatta had been the places of residence and of political power prior to the occupation of Sindh, these cities gained importance. Further, they were both integrated with their rural hinterlands where surplus production from agriculture found its way to the towns where the rich had established their homes. While these two cities were relatively thriving, Karachi was an outlier, of little economic or commercial importance, prior to the advent of the British [Baillie 1975].

Karachi's first spurt of prominence, though not reflected in the increase of its population, came about due to factors many thousands of miles away. The American civil war had resulted in the disruption of the cotton trade from the US. To substitute for this shortfall, there was increased demand from British India and in particular, from Sindh, in the period 1861-65. Sindhi cotton replaced American cotton as raw material in the textile and cotton factories in Britain. But this boom in demand, with its impact on Karachi and its port, was a temporary phenomenon, as after the end of the civil war, trade in Karachi had almost been halved.

One reason why Sindh was able to capitalise on the demand for cotton in Britain to replace American cotton, was the development of the Sindh railway in 1861 which made transport to the port much easier and faster. Due to the development of the railways, smaller towns inside of Sindh also began to expand, as market and trade grew, with Hyderabad and Shikarpur benefiting the most. Railways were extended into the Punjab in 1869 linking them with the rest of northern India. The population of Karachi, despite a short spurt of activity between 1861-65, stagnated between 1856-82 and grew by a mere 29 per cent in these 25 years. However, growth in population and activity was far more robust after this period.

Between 1881 and the end of the century, Karachi's population nearly doubled, as Karachi's importance as a port and as a conduit for bringing commodities from the Punjab, northern India and upper Sindh, increased. The opening up of the Suez Canal in 1869 had made Karachi the nearest port in India to Britain. By 1886, Karachi was exporting more wheat than Bombay. As Karachi's population grew towards the end of the last century, some services were developed in the old town in the city, as well as on the outskirts of Karachi, where water supply and drainage systems were developed. The Karachi Port Trust was also established at this time.

For the first four-and-a-half decades of this century, Karachi's population grew at a steady pace affected by agricultural development that was taking place in Sindh and the Punjab, and by the expansion of trade and some industrialisation that took place in the city itself. Much of Karachi's growth was based upon migration from other parts of undivided India, attracting Parsees, Bohras, Gujratis and other trading communities from other towns in India. The port and the railway link with the rest of India provided the impetus for growth [Hasan 1994]. Arif Hasan has shown that at the time of formation of Pakistan in 1947, Karachi had a population of around 4,50,000 with slightly over 51 per cent being Sindhis, followed by the Baluch, Urdu-Hindi speakers, Punjabis and Gujratis. More than half of Karachi's population was Hindu and 42 per cent Muslim; Christians and Parsees made up 3.5 and 1.1 per cent, respectively, of the city's population. Apart from the metropolitan area, Karachi district contained over 1,200 settlements and villages [Hasan 1997].

The nature of Karachi was dramatically altered by the advent of Pakistan. As Hasan argues,

> In 1947 Karachi became the capital of the new state of Pakistan. Bureaucrats, government employees, semi-government organisations all moved to the city and new organisations were established to meet the needs of the new state. In addition, over 6,00,000 refugees from India moved into the city increasing its population by more than 161 per cent in a period of 10 years. The refugees occupied all the open spaces and in the city centre, the military cantonment and public buildings. This migration changed Karachi completely. An imported language and culture dominated the city and this in the long run has given birth to many of Karachi's and Sindh's ethnic and political problems, [Hasan 1994:8].

In 1951 when the first census of Pakistan was held, Karachi's population had risen to 1.137 million of which 8,15,000 (as much as 72 per cent) were migrants from India. Of the 2,30,000 Hindus that lived in Karachi prior to partition, 1,70,000 (74 per cent) had left the city. Now, the main language spoken in Karachi rather than Sindhi or Baluchi, was Urdu, spoken by more than 50 per cent; only 8.6 per cent now spoke Sindhi. The population was also overwhelmingly Muslim, with as much as 96 per cent of Karachi's population (like the rest of west Pakistan) now Muslim, and less than two per cent Hindu in what was predominantly a Hindu city a few years earlier [see Zaidi 1989, 1991, 1992a; and Hasan 1997].

As the economy of Pakistan began to develop in and around the capital of Pakistan, which was then Karachi, so did its economy, size and population. With the need for administrative and service sector staff to serve the capital, educated and skilled individuals moved to Karachi from other parts of Pakistan, as they had done from India. The advantages of being the only port and proximity to government meant that industry preferred Karachi's location and much of the large-scale industry began to develop here, much of it with government

TABLE 1: KARACHI'S POPULATION GROWTH

Year	Population	Increase/Decrease over Last Census Survey	Per Cent Increase/Decrease	Average Annual Growth Rate
1729	250			
1838	14,000			
1850	16,773	2,773	19.80	
1853	22,227	5,454	32.51	
1856	56,879	34,652	155.90	
1872	56,753	126		
1881	73,560	16,681	29.32	
1890	98,000	24,440	33.22	
1901	136,297	38,297	39.07	
1911	186,771	50,474	37.00	
1921	244,162	57,391	30.70	
1931	300,779	56,617	23.20	
1941	435,887	135,108	44.90	3.70
1951	1,137,667	701,780	161.00	11.50
1961	2,044,044	906,377	79.70	6.05
1972	3,606,746	1,562,702	76.50	5.00
1981	5,437,984	1,831,238	50.80	4.96
1986	7,443,663	2,005,679	36.80	4.07
1991	10,250,000*	2,806,337	37.70	
2001	13,500,000*	3,250,000	31.70	

Notes: Average per cent from 1838 to 1941: 3.4 per cent; * Estimated.

Source: Hasan, Arif (1994) *Profile of Three Pakistani Cities: Karachi, Faisalabad and Thatta,* report prepared for the International Institute for Environment and Development, London, p 4.

help and patronage. The trade and export boom of the early 1950s which consequently resulted in the emergence of an industrial sector, was also beneficial to Karachi and its growth, as many of the traders who later became industrialists, all lived in this city [Zaidi 1989, 1991, 1992a; Sayeed 1995].

In the 1960s, with a change in the way agriculture was managed following the green revolution, and with industrial and economic growth of as much as 17 per cent on average per annum between 1959-65, and again, 9.9 per cent between 1965-70, Karachi prospered and grew as it had a disproportionate share of industry and the productive sector located here. For Hasan, the development of industrial production and the introduction of the green revolution meant that Karachi also benefited from increased international and domestic trade:

> Due to this, port activities in Karachi more than doubled during these two decades. The rural areas of the Punjab alone produced an average surplus of 3,600 million rupees per year from agriculture during this period and most of this was invested in Karachi's economy [Hasan 1994:9].

For all these reasons, ranging from the huge influx of migrants from India and later from within Pakistan, and since it was the only port and subsequently the main beneficiary of the type of industrial policy pursued in the years between 1947-72, "Karachi was perhaps the fastest growing city in the world" [Hasan 1995:4]. From 1972 when the population of Karachi was 3.6 million, the population grew by an average of 5 per cent till the next census in 1981, when the population had reached 5.4 million. Since no census has been held since, estimates today place population of Karachi at between 11 to 12 million. About half of Karachi's growth in the 1970s was attributed to migration from the rural and urban areas of the country. However, Hasan writes, that since 1981, while Karachi's annual growth has declined considerably in percentage terms, it has increased in numbers; now most of this growth in Karachi is due to natural increase and not due to migration [Hasan 1995:4]. In the 1980s, an estimated one million inhabitants (or one-tenth of Karachi's population), were thought to be migrants from Bangladesh, Afghanistan, Iran and even from as far away as Burma.

Karachi is the largest metropolitan city of Pakistan. It is the industrial, commercial and trade centre of the country and has a well developed economy which continues to show growth rates in excess of 6 per cent per annum. Today, Karachi houses around 8.8 per cent of Pakistan's total population and 24 per cent of the urban population. The population growth rate is estimated to be around 5.6 per cent per annum of which 3 per cent is Karachi's natural growth and between 2-3 per cent due to migration. Karachi provides one quarter of the country's federal revenues and 23.2 per cent of GDP. Not surprisingly, since it is the industrial and financial capital of the country, more than half of the country's bank deposits lie in banks in Karachi and almost three-quarters of all issued capital is raised in the city [Hasan 1992; Zaidi 1991, 1992; AERC 1993]. In addition, "32.9 per cent of the national value added in manufacturing, 26.4 per cent in trade, 61.6 per cent in banking and insurance and 37.7 per cent in services, is generated by the city" [AERC 1993, vol 4, p 271].

Karachi has a high per capita income – $ 900 in May 1993 – almost two-and-a-half time's Pakistans GDP per capita. Estimates show that more than 30 per cent of income accrues to the relatively affluent households in the city – those who earn as much as 10 times the country's GDP per capita [AERC 1993, vol 4, p 3]. Other indicators also clearly show Karachi's dominance in the economic and social sphere: the male literacy rate for Karachi is 20 per cent higher than for Pakistan's overall male urban literacy rate, while the female literacy rate is almost twice as high as for the rest of the urbanised country. Although only 8 per cent of Pakistan's population lives in Karachi, it owns about 35 per cent of all television sets in the country and almost half of the cars registered in Pakistan, are registered in Karachi [Zaidi 1989, 1992].

Almost all economic and social indicators show that Karachi is still way ahead in terms of development compared to the rest of the country, despite the fact that other areas, notably central Punjab, have benefited due to changes in Pakistan's economic, social and political fabric [Zaidi 1989, 1992]. Nevertheless, the richest and largest settlement in the country, which supplies a large amount of revenue to the exchequer, has been confronted with serious problems which have hampered further development and progress. While the collapse and failure of government institutions has been all-pervasive, Karachi's fate and problems may have been compounded by the uniqueness of the city's political developments. Violence and carnage dominated Karachi's landscape for much of the 1990s and exacerbated the normal and typical problems associated with that of a large and fast growing metropolis. It is to these issues to which we now turn.

Institutions and plans: For most of the last 50 years, much of the development that has taken place in Karachi, has been that undertaken by government departments and institutions themselves, or then as a response to government action. Government institutions have, for the most part, not surprisingly, dominated in the development process, providing housing and basic urban infrastructure. However, as we argue in this section, much of government interaction and planning has been inadequate and at times, an outright failure. In response to such failure, the informal sector has blossomed in almost every location of the city and in almost every type of activity. The rise of NGOs has also been a response to the failure of the state to offer viable options and solutions.

Municipal government and its institutions: Karachi division consists of five urban and one rural district with more than 96 per cent of Karachi's population classified as urban. The Karachi metropolitan area consists of the five urban districts and each district is an administrative unit. The Karachi Metropolitan Corporation (KMC) established in 1853, was the oldest municipal committee in British India. The KMC is supposed to be an elected body for the entire metropolitan area and consists of 232 councillors, one for each ward. The councillors in turn, elect the mayor. The five urban districts in the Karachi metropolitan area act as somewhat autonomous district municipal corporations (DMCs).

The KMC is an institution of local government in Pakistan and before we examine how this specific institution functions, it is important to put the KMC in the broader perspective of local government in Pakistan. This brief digression is made necessary precisely because local government has had a strange and difficult relationship with the other tiers of government. For example, despite the introduction of elected local bodies vide the Local Government Ordinance of 1979 and 1980, for the last four years, since 1993, all local bodies (except those in sparsely populated Baluchistan) have been dismissed by their various provincial governments. Hence, with no elected representatives at, perhaps, potentially the most important level of government, local government in Pakistan is manned by government bureaucrats. Clearly, in assessing the role and prospect

TABLE 2: PLANNED AND UNPLANNED AREAS IN KARACHI: A COMPARISON

(Per cent)

	Planned	Unplanned
Permanent housing structure	80.0	20.0
Semi-permanent	20.0	80.0
Number of persons per room	0.5	3.3
Water connections	83.0	50.0
Electricity connections	98.4	75.8
Gas connections	75.3	35.1
Access to sewage facilities	85.0	12.0
Solid waste management	60.0	10.0
Literacy levels	75.9	48.6

Source: Hasan, Arif and Asiya Sadiq (1994), *Mapping City Inequality: A Case of Karachi*, report prepared for the International Institute for Environment and Development, London.

of local government at a city level in addressing issues of poverty and the provision of basic services, this important fact cannot be overlooked [see Zaidi 1996, for an extensive evaluation of the nature of urban local government in Pakistan].

The first significant fact about the existence of local government in Pakistan is that it has no constitutional provision as it is not a formally embedded part of the constitution. Local governments exist under the supervision, control and even benevolence of the various provincial governments, where provincial governments have merely delegated some of their functions and responsibilities to local governments by the promulgation of ordinances which specify the allocation of residuary functions of local government.

Although local governments have existed in the Indian subcontinent for many centuries, the areas which constituted Pakistan in 1947 had few developed systems of local government, and they too were confined mainly to the Punjab. However, the little local government that did exist was not based on adult franchise and the agenda and budget were under severe bureaucratic control, in which the deputy commissioner played a critical role in determining policy. The martial law government of Ayub Khan (1958-69) instituted an extensive system of elected local government, known as the basic democracies system, all across the country. With the fall of the Ayub regime, the basic democracies system was also brought into disrepute and disgrace. The election of the first democratically elected government of Zulfiqar Ali Bhutto, following the separation of the then East Pakistan, resulted in the formation of an altogether new system of government in the country. However, the proposed elections under the Peoples Local Government Ordinance of 1975 were never held and local government was in abeyance for much of the time Pakistan had a democratic government.

It was the return to martial law under General Zia ul Haq (1977-88) when local governments were revived under the Local Government Ordinances of 1979 and 1980. Elections for local councillors were held on a non-party basis in 1979, 1983 and 1987. However, once again, with the return of parliamentary democracy in 1985, just as was the case in 1971, the position of local councillors and local government began to be undermined. Essentially, what the history of local government tells us that in Pakistan, military dictators seem to favour local government, while democratically elected governments at the national level, for different reasons, have in the past, felt threatened and have preferred to do away with this tier altogether.

The KMC, like all other municipal governments, performs a large number of functions of a compulsory and optional nature. The KMC is supposed to be responsible for a host of services, including the planning, development and maintenance of roads, for bridges, street lighting, storm water drains, public health including sanitation and solid waste management, medical services, a fire fighting service, land control, removal of encroachments, taking care of libraries, museums and art galleries and for social welfare. The establishment and maintenance of educational institutions is also meant to be a compulsory feature of municipal government, and the KMC runs a large number of schools and colleges in the city. The establishment of hospitals and dispensaries is an optional function; however, the KMC runs a number of such institutions throughout Karachi. The provision of clean drinking water and sanitation and sewerage facilities are one of the more important responsibilities of municipal government and in Karachi, as in other large metropolitan cities, a separate institution known as the Water and Sanitation Authority (WASA) has been established (see below).

The Local Government Ordinance of 1979 for Sindh, was similar to that of the other provinces but had specific mention of the KMC. The KMC is specifically defined as a corporation in the Ordinance, with its common seal and is a full legal entity. In an amendment to the Local Government Ordinance in 1987, four zonal municipal committees (ZMCs) were created as a subdivision of KMC, where the ZMCs were responsible for a number of basic services at the zonal level. In 1996, through another amendment in the Ordinance, the KMC was split up into five district municipal corporations (DMCs), where most of the functions attributed to local municipal government, were distributed between the KMC and the DMCs. These DMCs along with the KMC, are 'local bodies' in common with local authorities throughout Pakistan [Nauman 1996].

The family of public service agencies providing services to the public in Karachi, which have some element of representation and democracy, such as the KMC and DMC, is completed by the inclusion of the Karachi Water and Sewerage Board (KWSB). The Local Government Ordinance of 1979, specifically defines the KWSB as a Board *within* KMC and the Ordinance ensures that KMC has powers over its actions. Hence, the KWSB is a subsidiary agency of the representative KMC to the extent that the "KWSB *must* be provided by KMC with any funds required to meet its operations in the event of short-falls in internally-generated cash" [AREC 1993, vol 4, p 3].

Just as large municipal governments have separate water and sanitation agencies, many have a development authority working in the city. The Karachi Development Authority (KDA) is such an authority for the city of Karachi which is primarily responsible for the provision of shelter opportunities by developing and selling land for residential and commercial use. KDA also undertakes major infrastructure projects in Karachi and has, in the past, been the agency primarily responsible for city planning [AERC 1993, vol 4, p 1]. "KDA is essentially a civic agency responsible for developing 'affordable' land and shelter, planning for the city and undertaking other peripheral activities and 'deposit works' on behalf of the governments" [AERC 1993, vol 4, p 97].

A critical distinction between KMC and KDA is that the latter is not answerable to the people of Karachi and is not a representative, elected body. KDA is controlled by a small governing body and reports, and is answerable, to the ministry of housing and town planning, government of Sindh. The KDA "differs from other civic agencies in both its mandate and its policy as a provincial government agency, with its own legislation, rather than as a local government one" [AERC 1993, vol 4, p 97]. This distinction has important ramifications discussed elsewhere in this paper, on how development takes place in Karachi.

By legislation, KDA is the local body in Karachi responsible for overall planning. To execute this function it has formed the master plan and environmental control department. Apart from town planning, KDA is also active in the development of land and allocation of development land for residential, commercial, industrial and other uses. It also oversees and enforces building controls in the city [Hasan 1991].

Eighty per cent of KMC's revenue accrues from octroi, a feature common to all municipal government. However, unlike most municipal governments, a 1993 report on KMC concluded that it has "maintained a consistently strong financial position and has made modest surpluses of revenue since the mid-1980s. These have not been planned to the level achieved, but have largely resulted from underspend due to slippage in development projects" [AERC 1993, vol IA, p 9]. The majority of consolidated revenues of the KMC, KWSB and KDA (between 1985-91 for which analysis has been conducted) was, surprisingly, from own resources or from bifurcated taxes, such as the property tax, principally intended for their use. These taxes and other sources of revenue accounted for 93 per cent of own funds in 1985 and only 2 per cent from donors, which in 1991 had changed to 69 per cent from own resources with the donor share increased to 21 per cent [AERC 1993, vol 4 p 10].

External assistance, whether from donors or from higher levels of government, has

almost exclusively been used to fund capital projects. However, because this amount is not very large and forms a minority portion of total funding of these agencies, substantial own funding is used for development projects. Between 1985-91, more than half of the development funding of these agencies came from own resources. However, this trend has changed somewhat in more recent years, where donor funding forms a greater share of development projects than in the past. The high level of self-reliance in funding capital works in the recent past, may have undergone some change of late, and the World Bank and the Asian Development Bank have now become the main sources of donor funds [AERC 1993, vol 4].

The KMC in the past has spent a large portion of its funds on development works, such as new roads, hospitals and flyovers. Current expenditure is confined, principally, to the maintenance of roads, running hospitals and the fire brigade. Although DMCs do not generate revenue, they provide the first contact of local government with the people and are dependent for revenue from the KMC, and much of their funds are spent on rehabilitation, particularly of drains and roads. While KWSB has been dependent on the KMC in the past, it has been able to raise revenue from the water rate to cover about half of its expenditure. KWSB has made the greatest use of external funding, but has continued to require funds from the KMC. An important difference between the KDA and the KMC is that, KMC raises revenue and then spends money accordingly, while KDA is supposed to be a no-profit no-loss agency which just breaks even. Since the KDA is supposed to be in the business of providing shelter, it develops land and then is supposed to cross-subsidise the poor by preparing land and plots for the lower income groups. However, the way planning has taken place in Karachi and the manner in which the poor have actually suffered, is a theme described at length in the following section.

Institutionalising Failure: The Planning Process in Karachi[3]

A look at the planning process in Karachi over the last 50 years, shows that, for the most part, the formal institutions which are meant to plan and deliver services to the people of Karachi, particularly to the lower income groups, have failed for a number of reasons which seem to be repeated with each attempt at planning. There are very basic and fundamental mistakes which are made and repeated in the planning process, and unless these issues are identified and addressed, the past trends of failure will continue to persist well into the future.

In the section above, where we looked at the growth and development of Karachi, we have shown that the population of the city increased two-and-a-half fold in a mere four years between 1947-51. The first challenge the administration of the city faced was to deal with that of providing immediate shelter to the 6,00,000 refugees who had migrated to Karachi following partition. The migrants had to be housed, there was a need to develop infrastructure for water and sewerage, and there was a need to think beyond the immediate problems, and plan and create space for the future development of Karachi, which also happened to be the capital of the new country.

The Karachi Improvement Trust was formed in 1950 for this purpose. The first planning attempt by the government of Pakistan was made in 1950, when the Swedish firm Merz Rondall Vattan (MRV) was commissioned to develop the Greater Karachi Plan. The plan was supposed to establish growth corridors of the city, establish a new capital territory towards the north of the city and to provide housing in the form of multi-storeyed flats in different parts of the old and new city. However, as Hasan has argued, the housing development of the MRV Greater Karachi Plan, "was on so small a scale that it did not in any way affect the housing situation in Karachi" [Hasan 1992:3]. For the first decade after independence, from 1947-59, the government's response to the housing crisis and its attempt at planning "failed completely to tackle the housing crisis that the city was faced with and in these 12 years the supply of houses lagged far behind the demand" [Hasan 1992:3].

Although the MRV plan failed due to some generic reasons which have been repeated in all planning attempts and are discussed towards the end of this section, some very specific reasons regarding the Greater Karachi Plan's failure are worth noting. For one thing, anti-government student movements in the capital and considerable political instability throughout the 1950s, resulted in the MRV plan not being implemented in the first place. The administration questioned the philosophy of the plan which had suggested that the administrative nucleus of Karachi should remain in the centre of the city where the poor also lived and where the university, full of agitating students, was located. More critically though, there was an acute lack of data in the early years and an adequate data base was not established for the implementation of the plan as the research necessary for such an enterprise was not carried out. Due to this seemingly simple fact, that there was no research nor a data base, the MRV plan was designed on the assumption that Karachi's population would grow to three million in the year 2000, when it actually reached this figure in 1969. The population expected to reside in Karachi in the year 2000 is almost five times that projected in the MRV plan made in 1951 [Hasan 1992].

The next formal attempt at planning for the city of Karachi was made in 1958 when the Greater Karachi Resettlement Plan was launched by the Doxiadis Associates of Athens who had been commissioned by the government of Pakistan to plan for development in Karachi. The Doxiadis Plan established a data base, conducted some research about the city where it was expected to work, and on this basis, made some far more realistic projections than its predecessor.

The Plan objectives were to house 1,20,000 homeless families living in the centre of Karachi and it undertook to actually build 3,00,000 units for the poor over a 15-20 year period. For this period, the plan projected the need for half a million housing units. For the remaining 2,00,000 families needing housing, the government undertook to develop plots with services, subsidising this development by 30 per cent with recovery in easy installments. Due to the political disturbances in the city in the 1950s, the government had decided to move the squatters out of the city centre and resettle them in two new townships which were to be created 20-30 kms away from the centre. The housing units were to be built around industrial estates which were to be established near the new residences of the workers and the poor. The clearance of the inner city slums and resettlement in other areas was an integral part of the Greater Karachi Resettlement Plan [Hasan 1997, 1992].

Only 10,000 units were built by 1964 when the plan, like its predecessor, was shelved as it failed to achieve its objectives. The reasons for this were: (i) jobs were not generated as industrialisation did not take place as perceived in the new areas created for this purpose; the result was that "50 per cent of the people who were moved to Korangi and New Karachi [the two new settlements] moved back to squat in the city centre, on the fringes of the city, so as to be nearer their places of work" [Hasan 1992:6]; (ii) the low income and poor households for whom the new housing units were meant, sold their properties to speculators who sold them to middle income households, a phenomenon universally typical of any low income housing project; and (iii) the scheme faced financial problems as only 35 per cent of dues were recovered even after 25 years of building the units.

The abandoning of the Doxiadis Plan halfway, had serious ramifications on the way Karachi and its people were to develop, and laid the foundations for developments which continue even till today. Although large areas of Karachi were cleared of squatters and it became very difficult for the poor to acquire land for building in the city centre, the poor were forced to shift to the

fringes of the city and acquire land by illegal subdivision. Moreover, the city was formally divided physically, into rich and poor areas. The Doxiadis Plan, in essence, gave birth to the informal sector which now dominates the shelter, and the social and economic sectors in Karachi.

After the second attempt to plan for Karachi also failed, and now that the capital of Pakistan had been shifted to Islamabad, the government decided to take a back-seat for a while and actually decided not to construct houses for the poor in the future. In 1967, the government asked the United Nations for assistance in dealing with the problems that had emerged in Karachi (see next section) and eventually, a Karachi Master Plan Department was established in the KDA and work on the design and development of the Karachi Master Plan (KMP) (1974-85), Karachi's third plan, began.

The KMP estimated that in 1972 there were more than 1.5 million low income people in Karachi (42 per cent of Karachi's population), out of which 8,00,000 lived in squatter colonies. The projections showed that by 1985 there would be an additional 5,90,000 new households in Karachi, out of which 2,50,000 households would be from the low income group. Now that the emergence of *katchi abadis* had become an integral part of the landscape of Karachi, the KMP also had a component called the *Katchi Abadi* Improvement and Regularisation Programme, which was meant to upgrade *katchi abadis* by providing urban services to them and by regularising such settlements. However, as Hasan shows, the *katchi abadi* programme failed miserably and managed to regularise about 18,000 out of an approximate 2,23,000 houses after having spent many hundred million rupees [Hasan 1992:16-17].

For the most part, the housing programme under the KMP developed some plots and the required infrastructure, but credit, technical assistance and other social sector facilities did not materialise. Moreover, the cost of development and development charges were inaffordable to the low income households despite the subsidies that existed. Yet again, housing meant for the poor was taken over by the middle class. Less than halfway into its term, the Karachi Master Plan 1974-85 was abandoned. The fourth large-scale planning attempt for Karachi by the government of Pakistan is the Karachi Development Plan (KDP) 2000. The objectives of KDP 2000 are ambitious and similar to those in the past, where the government hopes to 'improve the overall conditions of human settlements in the country, including the living conditions of the poorest'. More specifically, the UNDP-funded plan is meant to 'improve the efficiency of the delivery of urban services and shelter to the inhabitants of Karachi' and planning should be of a much more 'realistic' nature. The fate of KDP 2000 has been similar to that of the plans in the past, except that this last one has not even gotten off the ground. Hasan has argued that

> the plan did not take into consideration the informal development lobbies that had become important providers of services in Karachi during the 1980s. These lobbies, who had by then become important interest groups were neither consulted nor did they participate in the plan formulation. Furthermore, it was assumed that the state planning and development institutions had the necessary organisational culture and skills to implement the KDP 2000. In addition, the steering committee of the plan, of which the chairman was the chief minister of Sindh, was unable to even convene to approve the plan. As such, the plan has no legal standing and many of its recommendations are being violated. The non-approval of the plan and the non-convening of the steering committee, simply indicates that Karachi's planning has not been a priority with the four governments that have been in power since the plan document was completed in 1990 [Hasan 1997:11].

Today, Karachi has no plan document which the city's organisations follow. The story of the master plans in the past has been one of unmitigated disaster and failure. In fact, the severe problems caused as a consequence of the failed plans have plagued Karachi, adding to even greater problems. While these issues are discussed later in this paper, we now try to identify the reasons why the planning process in Karachi has been one of such grave failure.

Causes of Failure of Planning in Karachi

The way different government agencies function in Karachi, with respect to planning for the city in general, and for low income groups in particular, represents the first reason for the continuous failure of the planning process in Karachi.

There is a 'lack of integrated planning and poor levels of co-ordination between the agencies involved in the provision of civic services' [AERC 1993, vol 4, p 6] and one of 'the chief factors impinging on the success of co-ordination between agencies was the continuing inter-agency disputes on inter-agency financial dealings' [AERC 1993, vol 4, p 7]. The extent of the involvement of different agencies and their roles can best be understood by the following description:

> The Karachi Master Plan is prepared by the Master Plan and Environmental Control Department of the KDA. However, the KDA only deals with the physical aspects of housing, land development and its physical implementation. The maintenance of KDA development is carried out by the KMC which is also in charge of running markets, certain aspects of public health and education, recreation and parks. The water and sewage development and management is done by the KWSB; energy is generated and distributed by the Karachi Electricity Supply Corporation (KESC) and the Sui Southern Gas Company. In addition, the Cantonment Boards in Karachi perform the functions of the KDA and KMC in their own areas and the Karachi Port Trust (KPT) is in charge of the development, management, operation and maintenance of the port area and its related activities. Similarly, there are a number of actors in the transport drama. They include the police, the Karachi Transport Corporation (KTC), the Bus Owners Association and the Pakistan Railways. There is no co-ordination between all these agencies except on paper, although their mandates are inter-dependent. Hence master plans do not work [Hasan n/d-a].

Despite the fact that there have been four master plans perceived and partially implemented in Karachi, no studies for the causes of the little success or failure of the previous plans have been undertaken; there is little understanding of how development takes place in the city in the first place, and nor of the actors and lobbies involved in the planning process. The planning agencies are incapable of executing the plan in the first place, as Noman Ahmed argues, that 'all the plans of Karachi have been made under the auspices of KDA which does not possess any legal or administrative control on the 19 other land development agencies of the city. Thus the capacity of KDA to execute the plan is grossly constrained' [Ahmed 1996:3].

In a review of the KDP 2000, Hasan and his colleagues argue that many of the planners and consultants who are involved in master plans have been trained as conventional planners and do not realise that in a third world city like Karachi,

> development often takes place before planning and that integrating this development into the city structure calls for unconventional and innovative strategies that, to be effective, should understand local level social and economic conditions; the informal sector is playing an increasingly important economic and political role and no city planning and management can be successful without taking this factor into consideration; urbanisation has caused a major social and economic revolution and the effective institutionalisation of this revolution can take place only through the involvement and accommodation of pressure groups, communities, NGOs and the informal sector; for institutions to be effective there has to be a bond of trust between the various actors (especially between government institutions and low income groups) in the urban development drama [Hasan et al 1991:8-9].

In any large city there are vested interests and powerful lobbies of different types, which include government, transporters and formal and informal sector developers.

Before the planning process begins, it is essential that detailed discussions are held with representatives of various organisations and interest groups including transporters, industrialists, traders, professionals, shopkeepers' associations, and representatives of NGOs. One of the critical reasons for the failure of planning in Karachi, and in Pakistan, has been the fact that groups of vested interests or concerned organisations are not consulted sufficiently enough to have a bearing on the planning process. Hence, due to the exclusion of those whom the plan is supposed to affect, the plan is predestined for failure. The unrealistic assumptions made by plans rest on the exclusion of, and lack of dialogue with, those who are to be affected.

The failure of the KDP 2000 even taking off the ground has been seen to be due to technical shortcomings in the planning process. According to one assessment

> The planning process, which was always organised in the most traditional pattern, was faulty and inadequate. The basis of the assumptions was drawn from sample surveys in the absence of comprehensive views on realities. This led to under/over estimations. Physical data was obsolete and never upgraded. Karachi, even today, does not have a comprehensive mapping base that is otherwise required for all kinds of planning and development exercises. Data gathered by the defence institutions is not in the public access. The property ownership records or the alignment of jurisdictions are simply inappropriate and obsolete [Ahmed 1996:4].

The planning experience from the past has also shown that planning, and the housing issues of the poor, are not just of a physical nature, where technological matters or logistics dominate. Planning and the delivery of basic services in urban areas has not taken account of sociological factors which at times may be of a more significant nature than even technical issues.

Most importantly, however, an analysis of the failure of planning in Karachi reveals that planning is also a political matter and if there is an absence for a political mandate regarding a particular plan, the process is doomed to failure. Due to a lack of political participation and ownership, much of the effort to plan is wasted, a feature which has been observed with all the four plans that have been implemented in Karachi. Karachi's housing issues need to be related 'to the *clear cut relationship between land, development priorities, political power and finance sources*, that exist in Karachi. Without undertaking these relationships no workable solution for the housing needs of the low income groups, except for what exists today, is possible' [Hasan et al 1991:40; emphasis in original]. While 'traditional' and 'conventional' political issues usually form a cornerstone to the planning process, the more recent phenomenon of donor dependence and international assistance is adding a new dimension to political aspects of planning.

As far as the provision of low income housing is concerned, attempts have failed in the past to address the needs of this community, as government policy has been incompatible with the economics and sociology of the poor. The cost of development and/or lease has been inaffordable for this target group and in most cases, low income houses have been bought by members of the middle class. The demand for housing by the poor is immediate and they cannot wait for the long drawn out development process to be completed and possession to be taken; often this process takes years. The poor in Pakistan whether in rural areas or in cities, have no representation in framing policies. Most of the 'technocrats who give physical shape to political thinking have also been from the middle classes and have not only a very poor understanding of the urban poor, but look upon them with suspicion and hostility. Thus, government policies have invariably catered to the needs of the middle and upper classes at the expense of the poor' [Hasan 1992:17].

It is in response to this consistent failure in formal/government attempts to provide for housing and basic urban services, such as land, credit, water, sanitation, transport, employment, health and education, which has given rise to the burgeoning informal sector. In the next section, we examine the issue of poverty, how poverty is created, how it exists and how institutional failure has been responsible for creating an entire parallel economy and system.

So far in this paper, the discussion has been on how institutions in Karachi function, and how the provision of urban services and housing for the low income group and the poor through these institutions, has failed. The concept of poverty and who the urban poor are, has been invoked only indirectly. In this section of the paper, we try to understand the concept of poverty and locate the urban poor in Karachi. Only after identifying them and locating who and where they are, can any attempt to address their specific issues be made.

Rather than enter a long epistemological debate about what poverty is and how it can be measured, this paper side-steps such philosophical issues and tries to focus on a set of relatively simple issues. Nevertheless, some preliminary remarks on how one identifies and measures poverty need to be made. Usually, a composite measure or index is devised, which incorporates an arbitrarily defined and numbered bundle of goods and commodities, which are considered essential to maintain an equally arbitrary, often minimum, standard of life. The money equivalent of the bundle of goods defined by this criterion is then used to construct a "poverty line". Those who are unable to buy or access through other means this minimum bundle of goods, are considered to be below this line, are classified as "the poor", and are then the target of poverty alleviation programmes.

This choice of ingredients which constitute the bundle required to define a minimum quality of life existence, will vary from region to region, and possibly from investigator to investigator, making comparison difficult. Moreover, the poverty line will need to be constantly reassessed, both in terms of the bundle of goods and in terms of its monetary value, given changes that take place increasingly at a faster rate in the economy. Although used most frequently, the poverty line does, often, not incorporate the cost of human capital formation, the lack of which in a household or region, despite higher purchasing power, may indeed classify them as poor. The debate over what really constitutes "quality of life", too, is endless, and despite the existence of a number of indicators which incorporate social sector statistics, there is little agreement over "the best" set of indicators. Nevertheless, despite these (and many other) reservations which are made about making comparisons, we continue to do so. In the next two sections, we try and assess the extent of poverty in Karachi, and try to identify the urban poor. As the discussion shows, this is not a particularly easy task.

Poverty at the Macro Level[4]

The World Bank's Poverty Assessment Report on Pakistan published in 1995 has renewed interest in examining the level and extent of the incidence of poverty in the country. Much of the literature about the extent of poverty in Pakistan has shown that poverty had declined appreciably over the 1970s and the 1980s. The World Bank study shows that there has been a consistent decline in consumption-based poverty from the middle of the 1980s right up to the beginning of 1990-91. However, the lack of data availability does not allow us to look at the same sort of indicators after the 1990-91 period. Nevertheless, a vice president of the World Bank, Shahid Javed Burki, who was also the advisor on finance to the prime minister in the three month caretaker government between November 1996 and February 1997, has suggested on many occasions that since 1990-91, the falling trend in poverty in Pakistan may have been reversed, with poverty making a formidable return on the Pakistani scene. In a paper by Asad Sayeed and Aisha Ghaus (1996) some attempt is made to test Burki's assertion.

Much of the research done on poverty prior to the 1990-91 period shows impressive results about the downturn in its incidence in Pakistan. A number of studies show 'that

decline in the incidence of consumption-based poverty in Pakistan has been consistent and substantial throughout the decade of the 1980s' [Sayeed and Ghaus 1996: 1]. The head count ratio of the poor in 1984-85, which was as high as 46 per cent, declined continuously to 37.4 per cent in 1987-88 and further still to 34 per cent in 1990-91. Pakistan's fall in poverty has taken place at a time when it actually increased in Latin America, the Middle East and North Africa. However, the fall in poverty between 1984-91, was far greater in the faster growing more dynamic countries like China, Indonesia, Korea, Malaysia, Philippines and Thailand [Sayeed and Ghaus 1996:2]. And as we will show below, herein lies the key to the poverty question in Pakistan and in Karachi.

Since no data of a comparable level for a pre- and post-1991 period exist, the analysis conducted by Sayeed and Ghaus (1996) uses an indirect approach, where after identifying the causes for the fall in incidence in the first place, they look at these factors in the post-1991 period taking a macro perspective. The reasons which are attributed to the fall in poverty prior to the 1990s are the high overall GDP growth rate and its sectoral distribution, the direct and indirect impacts of remittances of workers in the Middle East, the role of safety nets in protecting individuals and households from falling below a particular minimum level, and the role fiscal policy and government expenditure has made to the economy and to a large number of beneficiaries.

Sayeed and Ghaus (1996) argue that 'growth in per capita income has a poverty reducing effect because for any given distribution of income, consumption of the lower deciles of the population also increases. With little change in the distribution of income over the years and indeed very little effort to alleviate poverty by the state, one crucial determinant of reduction in the profile of poverty in Pakistan has been a respectable rate of growth in income (1996:3). Using their analysis for the post-1990 period, Sayeed and Ghaus show that there has been a considerably slower rate of growth in most employment providing labour-intensive sectors, such as construction, transport and communications, agriculture, wholesale and retail trade and even the highly dynamic, small-scale sector. Moreover, as the overall and sectoral growth rates into the 1990s have fallen compared to the past, there has also been a decline in the growth of real wages in the 1990s. Added to this is the faster increase in prices and the rate of inflation, particularly that of food prices in the 1990s, which has reduced the purchasing power of the low income population.

Remittances from the Middle East in the 1980s were amongst the most distinguishing and positive features of Pakistan's economy. Throughout the 1980s, they contributed an average of 6.5 per cent of GDP and played a very significant role in reducing poverty and fostering economic growth and development. A significant feature of these remittances was that they were spread across wide regions in Pakistan where many poorer regions benefited from this process [Addleton 1992]. Between 1991-95, the share of remittances as a percentage of GDP was down to 3.5 per cent [Sayeed and Ghaus 1996].

Food subsidies have provided a cushion for the poor in the country as these commodities have a high share in the consumption of the poor. In the period 1980-91, the annual compound growth rate of government subsidy on food items grew in real terms by 6.4 per cent. In the period 1991-95, there was a fall in real terms of as much as 22.4 per cent in food subsidies meant for the poor [Sayeed and Ghaus 1996:13]. The poor are often the main users and beneficiaries of public social sector and development initiatives and facilities. It is likely that they make greater use of government facilities than as a proportion of the well-to-do. Hence, any slow down or curtailment in government's expenditure towards the social sector and development projects will more severely impact upon the poor. Development expenditure in terms of the annual development programme of the government of Pakistan has fallen from 9.3 per cent in 1980-81, to around 3.5 per cent in the current fiscal year 1996-97 [Zaidi 1995:120]. Even if government development expenditure is not specifically targeted towards the poor, ample evidence shows, not only from Pakistan, but from other countries as well, that such investment crowds in private sector investment and helps raise the overall growth level. The current trend of cutting the fiscal deficit worldwide has implied that as governments cut their expenditure, overall growth also suffers [Zaidi 1994a, 1995].

The work on poverty in Pakistan suggests that poverty has returned to Pakistan in the 1990s, as the growth rate of the economy has fallen, as have remittances, food subsidies have been cut and as inflation has increased, affecting the poorest the most. Government curtailment of spending on development expenditure only makes things worse. The return of poverty to Pakistan in the 1990s needs to be seen in the context of the imposition of the structural adjustment programmes of the IMF and the World Bank which were initiated in 1989 [Zaidi 1994a, 1995; Zaman 1995]. Research by Khan and Aftab (1995) shows that "structural adjustment conditionalities are proving to be detrimental for the socio-economic well-being of the poor" (1995:18). While the causality of the growing incidence of poverty in Pakistan with the involvement of the IMF and World Bank in Pakistan's economy may be debated, one thing is clear; research suggests that the increase in poverty is closely related to the poor performance of the economy at an overall macro level. This fact has important repercussions on issues about Karachi discussed next, and more importantly, on issues concerning poverty reduction and poverty alleviation all over Pakistan.

Poverty in Karachi

While the problems of identifying and measuring poverty are numerous and varied in a national context, they are compounded in a specific, regional or city context, especially when data is of poor quality, is infrequently collected and seldom desegregated. Hence, by drawing a poverty line and doing a head count at the national level based on household income and expenditure surveys may be possible, the task of incorporating other variables, especially when looking at a particular city, is further complicated. The comparison of a prosperous city, like Karachi with a national level poverty line may suggest that much of Karachi is above that line, and hence, by that singular definition, 'not poor'. On the other hand, in a richer than average city like Karachi, perhaps a more Karachi-specific relative poverty line needs to be constructed to assess the extent of relative differentiation. On the other hand, simply income, in the context of a city, may be a very inappropriate measure for capturing the level and extent of poverty. Hence, the terms 'poor' and 'low income groups' in this paper in the context of Karachi are used somewhat loosely and are more of a descriptive nature. Nevertheless, even the somewhat less rigorous nature of the use of these terms helps in addressing the issue of poverty in Karachi.

One study has calculated Karachi's per capita income to be around two-and-a-half times the national average at around US$ 900 in May 1993 [AERC 1993, vol 1, p 3]. The study then states that only 15 per cent of Karachi's households live below an arbitrary poverty line of Rs 3,000 per month. Nevertheless, despite using this poverty line as an indicator to identify the extent of poverty in Karachi, the study continues that 'there is undoubtedly a significant amount of poverty in the city. This is *visually manifested* in the mushroom growth of unserviced *katchi abadis*, which now account for almost 40 per cent of the city's population' [AREC 1993, vol 1, p 27; emphasis added]. Hence, while only 15 per cent of Karachi's population is below a poverty line, the 50 per cent that live in *katchi abadis* are also classified as poor. Furthermore, the study argues that 'the lack of adequate water and sewerage facilities is the major source of death and disease in the city' [AERC 1993, vol 2, p 29], implying

perhaps that there is yet another dimension to identifying and measuring poverty. While *katchi abadis* are used as a proxy for urban poverty, so is the concept of the informal, or the unregulated, private sector. Often the contrast between planned and unplanned urban settlements is used to 'visually manifest' the extent of poverty in a city.

The unplanned areas in Karachi which consist mainly of *katchi abadis* and squatter settlements, have almost all been developed by informal sector entrepreneurs through the illegal subdivision and sale of state land. Most of these settlements are in the peri-urban areas of Karachi, along natural drainage channels that now carry Karachi's sewerage to the sea, along railway lines, and in areas prone to flooding. Hasan has argued that 'for any realistic planning exercise, it is crucial to understand the role and functioning of the informal sector' [Hasan and Sadiq 1994:5].

Katchi abadis, when they are established, are initially unserviced settlements, but over a period of time, 'through a process of lobbying, assistance from informal entrepreneurs and self-help, the residents manage to build permanent houses and acquire roads, transport, electricity, gas, water and social sector facilities within 15 to 20 years of their creation. Sewerage remains the *abadis*' major problem. As such, old *katchi abadis* are similar to planned low income settlements' [Hasan 1995:4]. Today, with half of Karachi's population living in *katchi abadis* which have a growth rate of 9 per cent per annum compared to the overall growth rate of the city at 4.8 per cent, it is estimated that 'if this trend continues, and it seems it will, then by the year 2005 over 65 per cent of Karachi will be living in unregulated and officially unplanned settlements' [Hasan 1995:4]. Table 2 provides an indication of the extent of the difference in characteristics between planned and unplanned areas in Karachi.

The informal sector plays a key role in housing and related sectors in Karachi. Between 1970-85, it is estimated that the informal sector 'accounted for 33 per cent of all residential land conversion and development in the metropolitan area and produced over 50 per cent of the housing needs of the population' [Hasan et al 1991:43]. Moreover, the informal sector provides as much as 75 per cent of the total jobs in the city, up from 48 per cent in 1974, and today, is responsible for 60 per cent of all housing needs, which range from assistance for credit, construction material, technical assistance and acquiring land in the first place [see Hasan 1992, for how the informal sector exists and functions]. The reasons why the informal sector dominates in the city of Karachi should be clear: Most poorer households have been unable to acquire either land for a house, credit or technical advice from government agencies. They have generally turned to the informal, semi-legal or illegal land market to acquire a plot on which to build [Hasan 1990 b:77].

The observations which emerge based on the above analysis, suggest the following:

(i) The formal sector and the government planning machinery have failed to develop and provide affordable and appropriate land, housing and/or credit for the lower income groups and the poor in Karachi; instead the informal sector fulfills this need.

(ii) Due to poor planning at a city level, poverty in terms of poor housing and social services, has actually been *created* by government institutions.

(iii) The macro-economy impacts heavily on the incidence of poverty across Pakistan, where higher GDP growth and other related factors affect the livelihood and living standards of the people. In Karachi, because of its linkage with the rest of the economy, especially in industry, manufacturing and the exports sector, a poor performance of the overall economy affects a larger number of people, thus contributing to more unemployment and poverty.

(iv) Since the early 1990s, the IMF and World Bank structural adjustment programmes have had a major impact on the country's economy. Because of their austerity drives, privatisation, cut back in subsidy, reduction in development expenditure, and a cut in the fiscal deficit have all helped to maintain, if not create, poverty. Clearly, these policies do not play a policy alleviation role.

(v) Mapping poverty is difficult in a city like Karachi, where different sets of indicators are used to capture the extent of poverty. By saying that half of the city's population lives in *katchi abadis*, need not imply that half the population is poor; *katchi abadis*, particularly in Karachi, maintain a standard of living well ahead of most areas of the country and possibly even better than that many households living in planned areas; the provision of services in unplanned areas and *katchi abadis*, due to the active role of the informal sector, may in fact be far better than that of the planned settlements.

The key point that this section makes is that poverty may in fact be generated by governmental policies, by following specific programmes, and by not following others. At a local level, planning has been an institutionalised failure, which while certainly not reducing the level of poverty, may also have, in fact, created and maintained it. The only response, hence, has been either the informal sector, or the presence of community groups. Both, failure, and the response that it generates, are, however, political issues to which we now turn.

Poverty of Politics

If macro-economic policy is responsible for the creation, maintenance, or reduction in poverty, clearly, it is the nature of politics at the national level which is first responsible for a particular set of economic policies. Research from a number of studies has looked at how economic policies are chosen and what sort of political interests affect economic programmes [Sayeed 1995; Zaidi 1994a, 1994b, 1995, 1988, 1989, Zaman 1993, 1995]. In recent years, with the IMF and World Bank replacing the ministry of finance, as the agency responsible for economic policy, questions of national sovereignty and political control have also arisen [Zaidi 1994a, 1994b; Zaman 1995]. Hence, clearly, the outcome of the interaction between different political entities and social classes affects economic choices. The composition of the elite, its economic interests and the pressure enforced by all contending groups and classes, determines the politics and economics of government. These choices, in turn, have an impact on the extent of poverty in a country. Of course, factors beyond the control of nation-states and their governments, also affect economic policy and hence poverty, but the primary responsibility must lie with national government and its choice of policy.

At the city level, as in the case of Karachi, city level government and its institutions must take the primary responsibility in dealing with issues of poverty. Of course, just as national government is also dependent on the international political and economic climate, in the case of local or city government and institutions, there is an even greater organic link with institutions of the state at the national level. This is particularly pronounced in the case of Pakistan where the role and development of local government has often been sabotaged by provincial and national government [Zaidi 1996]. While local government has suffered due to contradictions with higher tiers of the state all across Pakistan, in Karachi, its specific political circumstances have given politics in the city a much different perspective [Zaidi 1991, 1992b]. It is no exaggeration to suggest that the people of Karachi have been 'completely alienated from the political process in the country and have no access to the corridors of power at any level' [Hasan n/d b]. The most popular political party in the city, the MQM, has been not merely hounded out politically, but has actively been persecuted by all powers of the state. It is to the politics, the nature of institutions in Karachi, and how they impact upon Karachi, to which we now turn [for a recent history of Karachi's politics, see Zaidi 1991; Hasan n/d b].

The political problems of Karachi and how they are manifested at a local level, for

much of the 1990s, can be best summarised as followed:

> First, the people of Karachi are completely alienated from the political process in the country and have no access to the corridors of power at any level. Many of their elected leaders are in prison and the political party they voted for has been, and is still being, actively persecuted by the powers that be. Second, the Karachi administration is corrupt and ineffective, and at best helpless. The civic agencies and their staff are subservient to contractors and the land mafia, whose activities they are supposed to control and regulate. Development agencies serve the interest of corrupt politicians and their cronies, land-grabbers and developers, at the expense of the citizen. A battery of overpaid national and international consultants prepare grandiose plans for the citys development that have no relation to the ground situation. As a result, these plans are either never implemented or are abandoned midway. The law enforcing agencies have been used for decades for political victimisation and as such they are accountable to no one anymore. Apart from extorting money from helpless citizens and holding entire 'mohallas' at ransom, they not only give protection to every conceivable criminal activity, but are actively involved in it. They incite fear and hatred and not respect and protection. All the above mentioned agencies at various levels are often manned by staff that have been appointed through 'sifarish' and are not qualified for the jobs they hold. Since they are 'political' appointees they cannot be disciplined [Hasan n/d b].

One of the problems highlighted in the course of this assessment of institutions that deal with urban and development issues in Karachi, is that the state sector does not have much of a role to play in the planning process and that 'much of the city's problems are related to the absence of this role' [Hasan 1997]. Moreover, it is believed that over the last fifteen or so years, 'the performance of its [Karachi's] development and civic agencies and its formal economy have declined considerably whereas in most Asian mega-cities there have been substantial improvements' [Hasan 1997:14]. Hence, while institutions of the state may have coercive and legislative power over the citizens of Karachi, they do not play a contributory role in their housing and basic needs, and moreover, the little role that they do play has been deteriorating, is insufficient, and of poor quality. Aly Ercelawn and M Nauman, examining the workings of the KWSB argue that the

> Steadily deteriorating performance of the KWSB shares all the familiar odious distinctions of municipal services in much of the developing world. Our metropolis suffers from an increasingly inadequate delivery of both the volume and quality of water. Much of the city literally eats, drinks and breathes poisons spread by deficient sewerage collection and treatment. Sharply discriminatory provision of basic water and sewerage services exacerbates inequities and fuels violent discord. Crippled by years of political and administrative mismanagement, incompetence and corruption in operations and oversight, KWSB cannot but produce negligible investible resources to address gross deficiencies in the delivery of basic services [Ercelawn and Nauman 1996].

The nature of how institutions work and the political disempowerment of the people of Karachi, is best reflected in the lack of planning and co-ordination between different institutions functioning in the city. For example, although the KMC is an elected body and elections are supposed to be held every four years as part of the local bodies elections, the KMC, like all other elected institutions in the province of Sindh, was dismissed by the provincial government in 1992. Even if KMC functions democratically on the basis of adult franchise, the planning and implementation of Karachi's development is done by the Karachi Development Authority. Unlike the KMC, the KDA is a parallel agency run by technocrats and not answerable to the people. Consequently,

> the people of Karachi, especially the urban poor, have no direct or indirect say in the manner in which their city develops. Nor can they, through the process of electing their councilors, express their concerns and problems or through their councilors affect the development process. In addition, the KMC council can be dismissed by the Secretary of Local Bodies, who is a government civil servant, if the provincial government feels that the council has failed to discharge its duties and obligations. The functioning of the corporation is inspected once a year by an officer appointed by the government. If, after such an inquiry, the government feels that the corporation is not capable of running a particular department or programme, then it can take over the management of that department or programme itself. These laws make the councils very vulnerable to government dictates and deprive the people of power and influence over planning and implementation of urban policies [Hasan 1992:22].

Moreover,

> As long as local government fails to be accountable to citizens through transparent and participatory functioning, the city cannot mobilise the required resources and will only squander whatever new human and physical assets it does acquire. Bureaucratic administration by Commissioners can, at best, only serve to contain rather than resolve fundamental inadequacies and inequities in municipal services. By administrative mandate and tradition, officially-appointed bureaucrats can do little but protect and promote authority. Resolving the pervasive problems of the city calls instead for managers downwardly responsive to consumers [Ercelawn and Nauman 1996].

While the failure of institutions to address the problems of housing and the provision of basic services to the low income group and the poor, can be explained by the way planning takes place and the way institutions are structured, the political alienation of the citizens of Karachi and of the poor, specifically, has lead to the failure of institutions to deliver even basic services. While politics is the key to the problem and to the solution of better city level administration and government, individual and community level responses have tried to address immediate concerns for at least a section of the urban poor. Just as the private and informal sector has emerged in a big way as a response to governmental failure, so have a large number of community-based, non-governmental organisations or NGOs, become active and have tried to improve housing and living conditions in Karachi [Hasan 1990b, 1992; Alam 1996; Khan 1994; OPP 1996].

Informal groups have developed at a community level to address some particular problems in the delivery of services or in the provision of infrastructure. These 'informal groups often develop as soon as a new settlement comes into being. Residents are faced with a lack of basic infrastructure and services which individual households cannot address by themselves. Some form of community organisation is necessary either to address the deficiencies or to lobby government for public provision' [Hasan 1990b:80]. From the construction of open drains or the laying of underground sewers, to street paving and collecting garbage, groups have emerged to address specific issues and have then disbanded. Some groups have taken on longer-term projects and have set up schools and health clinics. If the organisation is registered with the social welfare department; they may even receive some funds to continue their work, although, much of their expenses are met through donations. However, finances and a lack of trained personnel are serious constraints which cause such groups to pack-up after showing a lot of enthusiasm but few results.

Apart from community-based groups, which are more focused towards an issue and prefer to work in one particular area as small as a mohalla or neighbourhood, there are larger NGOs which usually work in more than one settlement and have a broader developmental outlook. Some welfare-oriented NGOs have also emerged in recent years and have been successful in providing a wide range of services to the poor.

Development-oriented NGOs are those which have emerged in recent years as a

response to the failure, inability and unwillingness of institutions of the state, to address the issues of citizens, particularly, the poor. Rather than simply carry out capital works as the state does, such NGOs involve and encourage communities to take hold of their own lives by organising and filling the void created by the absence of the state. "'Participation' is no longer seen as simply involving poorer groups in implementation but far more as formulating what should be done, how it should be done and how limited resources should be used" [Hasan 1990b:83]. The Orangi Pilot Project is such an organisation in Karachi which has had a far reaching impact on the lives of the poor in one large area of Karachi.

Despite the huge success of projects like the Orangi Pilot Project and smaller groups which have significantly altered the lives of many thousands of the poor in Karachi, NGOs are not the sole solution to address the problems of the low income groups in Karachi. NGOs cannot replace government at a city level; they can play a useful role either working with government or can then be effective in areas where government has failed to deliver services. Nor can government be replaced by the private sector through an indiscriminate process of privatising state-owned and state-run concerns [Ercelawn and Nauman 1996]. While it is clear that government and its institutions have been a failure in the context of Karachi, the knee-jerk response of privatisation or other options is inappropriate. What is required is reform of government itself, at the national, provincial and local level.

While one can list a number of reforms and changes needed in the structure of local city level government, these well-meaning suggestions will be merely that, unless there is a political demand for such forms of institutions, a political will to carry them through, and a politicised public and their representatives to actually administer, control and oversee such institutions. The desire to overhaul the local bodies system in Karachi will be lost on the ears of those who control politics, unless political forces put pressure on institutions of the state to accede to those suggestions. Reform itself is a seriously political matter dependent upon the dialectics of different political forces. With these political prerequisites, we address some of the concerns in local government that are critical for an improvement in the delivery of urban basic services.

There is little denying the fact that there is a need for a huge overhaul of the local bodies system to make it representative, responsible, viable and functionable. What is required is a powerful, autonomous tier of government in all municipalities, but particularly in the larger metropolitan areas, like Karachi. Unless local government is given the power to function as an effective tier of governance, it is unlikely that it will address any of the issue which have been raised in this paper. A self-contained and independent tier of government, not tied to the strings of the provincial government, is the first pre-requisite for better governance at the local level.

Constitutional amendments which provide safeguards to local bodies are essential if local government is expected to be recognised as a feasible option. If more than mere lip service is paid to the potential of local government, a change in perception must be matched by deeds, and deeds in the form of giving local government a formal role in the Constitution. Constitutional cover to local government must take place along with greater decentralisation so that local government can function autonomously.

Local government, especially city government the size of Karachi, must be remodeled as a new administrative style is required for it to be at all effective. It should have the power to plan and implement development, not merely look after projects planned by a totally independent body in which local elected government plays no role. If finances are a constraint to the development programme of local government, then the KMC should have the power to raise resources; currently this power is dependent on the well-wishes of the provincial government. The current distribution of functions between an unelected technocratic development agency (the KDA), and an implementing agency which is supposed to maintain project and plans developed by KDA, the KMC, would need to be done away with. KDA would need to be subsumed under the KMC (or an elected city government) so that different agencies can work under one umbrella, rather than at cross-purposes as is the state at present. If city government is to be an effective medium of governance, it must also be party to the maintenance of law and order in the city; currently, the numerous agencies of the federal and provincial government at work in a city like Karachi, undermine all semblance of authority and control, and precisely for this reason, power over law and order is held by agencies which are not city-specific.

While the suggestions for local bodies and for reform of local government presented above, are more of a generic nature, the specific situation of Karachi warrants specific additional measures. The political history of Karachi over the last decade has been one of the people of Karachi and their political leaders and parties, against the state and its coercive institutions. Karachi, for numerous reasons, despite its paramount importance in the economy of the country, has been alienated from political power and is a political outcast. The democratically elected party of the city has been persecuted in times when democracy, in some form or the other, reigned supreme over the rest of the country. Hence, all the problems that local bodies and local government faced in general, were compounded in the case of Karachi. Whatever reform may be envisaged for local government in Pakistan in the future, whether of a constitutional, financial or administrative nature, for Karachi, political issues will have to be at the forefront, and must be a pre-requisite for any attempt at improving structure and performance.

Conclusions

Poverty 'alleviation' is the trendy and fashionable slogan for the end of the 1990s. A great deal of money has been, and will continue to be, spent on identifying who the poor are. Attempts will be made at understanding poverty, and projects, many initiated on the insistence of foreign donors offering a lot of money, will commence with the goal to eliminate or reduce poverty. Projects will be defined with a specific focus on either the urban or the rural poor, in some specific location. This attempt, while well meaning, will invariably be at a micro level with a narrow focus, often ignoring the causes for the existence of poverty in the first place. Band-Aid social work of this variety will certainly improve the living conditions of a number of beneficiaries in the project area. However, the limited success of such schemes may suggest, that perhaps, the issue of poverty is somewhat larger in its existence and manifestation, and what is required is a more global, macro, and most importantly, political approach.

Poverty is primarily a political issue, caused and maintained by factors of a macro nature and by institutions which function in a specific, political, environment. This paper has argued that politics comes prior to poverty, as do institutions. The failure of institutions to address issues of poverty and development are seen here as essentially political failures. At a macro-economic, national, level the choice of economic strategy

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based on class alliances and political expediency (as well as international factors) may have a severe bearing on the way people live. Poor economic performance filters down to increasing poverty for a large and growing number of people.

Institutions controlled and run by technocrats and bureaucrats at a national or local (city) level, may come up with suggestions and programmes which are infeasible because they do not incorporate the desires, expectations, or choices of the prospective beneficiaries. Many well conceived plans, while technocratically well planned, fail precisely because they are unpolitical in their outlook and are essentially thrust upon an uninvolved public. While elected government, especially in Pakistan, has numerous faults and weaknesses, with corruption being on top of the list, the process of electioneering and accountability, may at least involve a much larger section of the citizenry. If the manner in which local government is structured and the way it works, is reconstructed in a way which involves participation, consultation, and dialogue, it is possible that a more efficient system of representation at the local level may evolve.

As the role of international donors increases in Pakistan, political decisions must be taken regarding issues of national sovereignty and local control over decisions. With international agencies dictating the economic and political agendas of the government at a national level, political control over policy has waned. This is also manifested at a Karachi level, where the privatisation of local government institutions like the KWSB have provoked commentators to argue that, it is a matter of deep concern that Islamabad and Washington are foisting their privatisation programme upon Karachi, without the clear transparency and wide citizen participation that would ensure consensus on so vital a matter as the provision of water and sewerage services [Ercelawn and Nauman 1996].

Looking back over the last decade, it would be difficult to find a more *politicised*, violent, ethnically divided, alienated, city than Karachi. We conclude with the assertion, that politics must come first in any attempt to alleviate poverty, especially in Karachi. Urban governance and urban institutions are also of a political nature and the power or effectiveness of such institutions may lie in the balance between the different political factors in the field. While politics in Pakistan is itself wrought with numerous contradictions and does at time inspire disgust, a process of representation, consultation, accountability and openness, may at least begin to address some of the problems that exist in Karachi. Experience from many large cities in underdeveloped countries shows that powerful, effective, autonomous and representative government may be a partial answer to the problems of poverty and lack of development. Perhaps it is time to test this model in Karachi.

Notes

[This paper was first presented at a workshop held jointly by the Global Urban Research Initiative of the University of Toronto, and the Centre of Urban Studies, University of Dhaka, in Dhaka, Bangladesh, on May 16, 1997. Since then, I have received extensive comments from Shahrukh Rafi Khan and Haris Gazdar, to both of whom I owe many thanks.]

1 It is not possible to write about Karachi unless an extensive and thorough reading and understanding of the large *oeuvre* of Arif Hasan is made. Arif has documented Karachi's history for many years and is a scholar who has been involved in numerous community initiatives in the city. Much of this paper draws upon his work and extensive use is made of his published and unpublished material. I also acknowledge numerous ideas generated by him during the course of this study.

2 This section makes liberal use of Arif Hasan's published and unpublished work, particularly, Hasan 1997; Hasan 1994; Hasan 1993; Hasan 1992; Hasan 1990; Hasan n/d (a); and Hasan n/d (b).

3 In addition to the references cited above, this section also makes liberal use of Ahmed 1996.

4 Part of this section summaries the arguments in Sayeed and Ghaus 1996.

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Better Resource Management for Poverty Alleviation

B B Vohra

Although there are many reasons for our poverty – over-population, illiteracy, disease and social backwardness, to name only a few – one of the most important is the sub-optimal use that is being made today of our natural resources of land and water, which constitute between them the country's basic production apparatus and life support systems. Situated as we are, there can be no question of our ever being able to overcome poverty unless we can make very quick and substantial progress on this front.

An attempt has been made in this paper to outline the present disarray in the field of resource management, to view it in its historical setting and to suggest how it may be possibly remedied before the point of no return is reached.

I
Current Scenario in Land Management

ACCORDING to the latest Land Use Statistics (LUS), the 304.9 million hectares (mh) of the country's geographical area for which information is available are being used as follows:

		(mh)
1	Area under non-agricultural uses	21.2
2	Barren and uncultivable lands	19.7
3	Net area sown	142.2
4	Forest lands under good tree cover (40 per cent density and above)	38.6[1]
5	Miscellaneous tree crops and groves	3.7
6	Forest lands under poor tree cover	29.3[2]
7	Cultivable wastelands	15.0
8	Current fallows	13.8
9	Old fallows	9.6
10	Permanent pastures and grazing grounds	11.8
Total		304.9

1 As per the latest statistics of the Forest Department.

2 Arrived at by deducting the area under good forests (Sl No 4 above) from the total area under forests, i e, 67.9 mh.

An analysis of the above figures reveals that

(a) If items 1 and 2 are excluded from consideration the total land resources of the country that possess any potential for biotic production are no more than 264.0 mh.

(b) Assuming that items 6 and 10 are more or less bereft of vegetal cover – which would be a fair assumption to make – the maximum area that can be considered as 'wastelands' is the sum of items 6 to 10. This comes to 79.5 mh, which is almost one-third of 264 mh.

(c) This however does not mean that the remaining area of 184.5 mh (264 mh minus 79.5 mh) is in good health. According to the LUS the total extent of lands that suffer from degradation, to a greater or less degree, is 175 mh. Since this figure obviously includes wastelands, it follows that the area of lands that are still productive but are suffering from degradation is 95.5 mh (175 mh minus 79.5 mh).

(d) It also follows that this area of 95.5 mh must necessarily be a part of the 142.2 mh of lands that are under agriculture. This means that nearly two-thirds of our agricultural lands are sick to some extent or another.

(e) The above picture would change somewhat if the figure of 175 mh is found to include item no 2. However the broad picture would still be that nearly two-thirds of our total land resources are suffering from degradation, of which about 50 per cent have undergone such degradation that they have, for all purposes, ceased to be productive.

There has been a great deal of confusion regarding the extent of wastelands in the country. This has been caused by, firstly, the fact that different authorities have adopted different definitions of 'wastelands' and, secondly, by their failure to distinguish between lands that are so badly degraded that they have gone out of production and those that are still in production although they are suffering from degradation to some extent or the other. It would obviously not be appropriate to describe the latter category of lands as 'wastelands' – 'degraded lands' would be a more scientific appellation for them.

Altogether too much fuss has been made in recent years over the determination of the exact extent of wastelands and of their exact location. Since the country's readiness to deal with this problem is still at a rudimentary level, common sense demands that we should not get lost in such essentially peripheral matters but start work on the amelioration of sick lands in right earnest on the basis of the knowledge that is already available in ample measure in every affected village.

It may be noticed that the land suffers basically from only two major ailments – denudation and erosion, which results in the loss of the top-soil through the action of water and wind, and waterlogging which results in the salinisation of the soil. According to available estimates, of the 175 mh of degraded and wastelands that the country possesses, around 150 mh suffer from erosion of the top-soil and its attendant ills (such as floods and gully formation, etc) and around 25 mh from waterlogging and salinisation. Of the lands subject to erosion, around 125 mh suffer from water erosion and around 25 mh from wind erosion.

There is no doubt that lands subject to erosion constitute the biggest single threat to the country's economy. For not only do such lands suffer an increasing loss of productivity because of the progressive loss of the fertile top soil but they also contribute to the loss of a great deal of priceless sweet water by way of excessive run-off along denuded slopes. This run-off, loaded as it is with soil, also causes a great deal of damage – by contributing to the causation of floods and the premature siltation of river beds, tanks and reservoirs – before it reaches the sea. And since a large part of the water could, under better conditions of land management, have been retained either as soil moisture (so vital for rainfed agricultural lands) or as ground water (which is the mainstay of the country's irrigation infrastructure today) its loss is a major reason for droughts. Floods and droughts are indeed two sides of the same coin of poor land management and both can be moderated very substantially by preventing excessive soil erosion.

Our record in tackling problems of denudation and soil erosion has unfortunately been most unsatisfactory and wasteful of money. Although soil conservation schemes for agricultural lands have been on the scene for nearly half a century, they have failed to make any significant dent on the problem on account of their having disregarded the 'complete mini-watershed' principle. As a result, excessive run-off from denuded forest lands that are almost invariably situated in the higher reaches of watersheds has caused great damage to the terraces and bunds on agricultural fields, particularly because such bunds are not correctly aligned along contour

lines but built along field boundaries. This basic flaw is common to all the other schemes – such as the DPAP, DDP, RVP, FRRP, NWPRA, JRY (in part) EAS and EGS (in part) and the IWDP – which aim essentially at soil and water conservation and explains why they too have not succeeded in their objectives.

The financial loss that the country has suffered as a result of this circumstance has never been computed but it must be very considerable, considering that some Rs 2,000 crore have been spent on the DPAP and DDP alone since their inception. This is indeed a matter for great concern.

Our record in tackling problems of waterlogging and salinisation is equally poor. We have just not taken any notice of these problems. As the Eighth Plan document admits, there has so far not been even a systematic survey of the extent and location of lands that are affected by this malady.

II
Current Scenario in Water Management

Since the soil, however well-endowed it may be, is incapable of any biotic production in the absence of moisture, the management of water lies at the very heart of land management.

Although the total precipitation received by the country as a whole is around 350 million hectare metres (mhm) per annum, which is theoretically capable of placing its entire land surface under around 115 cm of water, this resource must be treated as a scarce resource because of, firstly, its highly uneven spread in space as well as in time and, secondly, the steadily increasing demands that are being made on it not only by agriculture but also the industrial and domestic sectors.

As in the case of all scarce resources, the management of water demands that special attention should be paid, firstly, to its conservation to the maximum possible extent and, secondly, in the present context, to its optimal use for agricultural production. A third requirement is that in no circumstances whatever should this annually renewable resource be allowed to damage the non-renewable resource of the soil which it is meant to serve.

An overview of the water management scenario in India reveals that our traditional policies have proved to be seriously deficient on all these three counts and, therefore, need to be reviewed urgently.

As far as conservation is concerned, the traditional policy has been to rely on the creation of surface storages, whether big, medium or small. It is estimated that between 1950 and 1995 we have spent over Rs 50,000 crore on such projects and created a storage capacity of around 20 million hectare metres (mhm). An idea of the scale of investment in this field can be obtained from the fact that during the Eighth Plan we shall be spending around Rs 27,500 crore on this sector, or about Rs 5,500 crore per annum.

However, we have clearly come to a dead end on this route as investments in surface projects have latterly shown unmistakable signs of becoming unproductive. Thus, an investment of Rs 11,107 crore on major and medium (M and M) projects during the Seventh Plan has, according to the ministry of water resources' (MWR) own figures, not only *not* resulted in the creation of any additional potential but has resulted in the loss of 0.6 mh of even the potential that existed at the end of the Sixth Plan. Considering that the Seventh Plan had envisaged the creation of an additional potential of 4.3 mh, the net loss of planned potential that took place between 1985 and 1990 amounted to 4.9 mh, the replacement value of which at current prices would be well in excess of Rs 30,000 crore. This is an extremely serious development indeed, all the more so because no explanation has so far been offered by the MWR as to how it took place.

The track record of small surface projects has, if anything, been even worse. According to the LUS, the net area served by such projects declined from 8.2 mh in 1961 to 6.8 mh in 1989 in spite of the fact that around Rs 6,000 crore were invested in them during the intervening 28 years. However, in this case the reason behind the debacle is known. It lies in the premature siltation of reservoirs which, being much smaller than those of the M and M sector, go out of operation so much more quickly.

In view of these developments, the time has obviously come to reconsider our traditional approach to the problem of conserving water and to turn to the only other option available to us, namely, the storage of water mainly in the form of soil moisture and ground water – within, rather than on the surface of, the country's land mass. Not only is this option incomparably cheaper but it also involves no high technology and has proved to be a great success wherever it has been adopted. It consists basically in reducing the run-off of water to the sea by creating biotic as well as engineering impediments to the free flow of water along slopes so that it may get a better chance to percolate into the soil and sub-soil strata. The restoration of permanent vegetal cover, whether of grasses or trees, on all denuded lands – as far as possible through natural regeneration – the construction of innumerable small weirs, check-dams and small tanks across all drainage lines in all micro-catchments and the treatment of all erosion-prone agricultural lands for the conservation of both soil and water constitute the key elements of this alternative strategy.

Common sense demands that a nationwide programme for soil and water conservation should be given the highest possible priority for a variety of reasons. It would, in the first place, help to reduce run-off losses and increase the availability of water in the form of soil moisture and ground water or water stored in countless small tanks and ponds. The enhancement of soil moisture would be particularly beneficial for our rainfed agricultural lands which account for nearly two-thirds of the total land under cultivation. The storage of water in village tanks and ponds would not only be of great benefit to local communities, but would also help in the replenishment of ground water. It may be noticed here that ground water not only accounts for more than 50 per cent of the total area under irrigation, but is also around 100 per cent more efficient than canal water in terms of productivity per hectare. This is indeed the reason why it is in such great demand on the part of farmers who can develop it quickly and easily with their own resources, assisted by bank loans, wherever necessary.

In the second place, such a programme would help in controlling the premature siltation of reservoirs and tanks – which in most cases are irreplaceable – and in moderating floods by reducing the quantity of water and top-soil that rivers have to carry at peak periods, and by protecting their carrying capacity against siltation. In the third place, the return flow of water that takes place from fully charged ground water aquifers into springs and rivers during the lean season would also help to mitigate droughts.

The wisdom of conserving water mainly within the land mass and in nature's own way rather than in man-made reservoirs becomes apparent when we consider the great difficulties that the MWR has encountered in putting to actual use the irrigation potential created by surface storages. Thus, in the M and M sector, the total potential created between 1950 and 1990 was 20.2 mh of which, according to the ministry's own claim, only 15.8 mh had been utilised by 1990, thus revealing an unutilised gap of 4.4 mh. However, according to the LUS, which command much higher credibility, the unutilised gap in 1990 was as big as 9 mh.

The above analysis shows that our traditional policies have failed significantly from the point of view of both the conservation of water and putting it to good use. The continued failure on both these counts is reflected by the unbelievably high level that the cost of irrigation has reached – as distinguished from the cost of merely creating potential which is of no use to anybody till it has been actually put to use. Thus, according to the LUS, the net additional net area that was brought under irrigation in the M and M sector during the Seventh Plan was only 0.262 mh. If the total outlay of Rs 11,107 crore is divided by this figure,

the cost of actually bringing land under irrigation through the M and M route during 1985-90 works out to an incredible Rs 4.24 lakh per hectare.

The very great scope that exists for conserving water within the Indian land mass is indicated by the fact that around 150 mh (or nearly one-half of the country's land surface) suffer from soil erosion and would, if treated appropriately, be able to reduce run-off losses very substantially. The broad picture today is that, of the 350 mhm of precipitation that we receive annually, around 160 mhm are lost to the sea as river flows, around 20 mhm are stored as surface water, around 125 mhm as soil moisture and around 45 mhm as ground water. Empirical data compiled by the ICAR – on the basis of experiments carried out over 20 years in micro-watersheds in all parts of India – suggests that a nationwide programme of afforestation and soil and water conservation may well be able to reduce present run-off losses by 25 per cent or say 40 mhm and increase the quantity of water held as soil moisture and ground water to that extent. Needless to say, such a development would change the face of the country.

We have also failed badly on the third count and permitted water to damage the land in two ways. In the first place, thanks to our failure to save a large part of the country's total land surface from denudation and erosion, we have allowed large quantities of the top soil to be displaced, year after year, as a result of the action of rain water. Way back in 1972, the quantity of top soil so eroded was estimated to be 6,000 million tonnes per annum – today the loss must be at least double this amount. It must be appreciated that such losses not only result in the progressive degradation of the lands affected by reducing their fertility levels – because the topsoil is the most fertile of all soil strata – but also contribute to considerable damage in downstream areas by way of floods, to which around 40 mh are still vulnerable.

In the second place, we have, through our almost complete neglect of the problems of drainage, waterlogging and salinisation of the soil, allowed large quantities of once fertile lands to be lost to production. According to the latest available estimates, the area affected by these maladies increased from 14 mh in 1981 to 17.6 mh in 1985, thus registering a growth rate of 0.9 mh per annum. Assuming that the same growth rate has prevailed during the last decade, the area affected in 1995 should be around 27 mh, a large part of which is almost certainly situated in canal commands. This is a very serious matter indeed, considering that unlike the control of erosion, which can be achieved at an average cost of around Rs 4,000 per hectare, the amelioration of waterlogged and saline lands requires much larger outlays – of the order of Rs 30,000 to Rs 40,000 per hectare – as drainage, especially underground drainage, is an expensive proposition.

In view of the above analysis, a thorough revamping of existing policies in water management has become unavoidable. Such a review must take particular note of the following considerations:

(a) Further investment in the creation of fresh potential in the surface irrigation sector must be suspended and all available resources should be diverted towards the utilisation of the very substantial potential that has been already created but not used.

(b) The working of existing canal systems must be improved so as to increase their productivity in terms of yields per hectare. Once this is done, irrigation rates, which are at present inordinately low, can be raised so as to prevent the loss of some Rs 3,000 crore per annum on maintenance and operational costs alone.

(c) Special attention must be paid to the problem of waterlogging and salinisation which has received almost no attention so far.

(d) Existing flood protection policies – which aim at dealing with the symptoms of the disease rather than its real cause, viz, poor land management – must be revised in favour of policies aimed at the *prevention* rather than the *control* of floods, through dykes and bunds.

(e) The predominant position attained by ground water in the field of irrigation must be recognised and the management of this resource strengthened. The replenishment of this resource must be assisted through natural means such as better land management as well as through artificial recharge, and it must not be treated as a source of only 'minor irrigation'.

The point to note is that, as in the field of land management, so also in the field of water management, our existing policies are highly unsatisfactory and are the cause of very substantial losses to the government and damage to the economy. It is also clear that the key to better water management lies essentially in improved land management, through the control of denudation and soil erosion across the length and breadth of the country.

III
Nexus between Poverty and Poor Resource Management

No attempt has ever been made – by an establishment that the late Sudhir Sen, eminent economist and author, used to describe as 'resource illiterate' – to quantify in monetary terms the losses that the economy is suffering as a result of poor resource management. However, there can be little doubt that these are of the most serious proportions.

Even if it is assumed, on a most conservative basis, that our 175-odd mh of degraded lands are intrinsically capable, *if restored to health*, of producing additional wealth – whether in the shape of crops or fruits or timber or fuel or even mere grasses – worth on an average around Rs 10,000 per hectare, the loss that is being sustained by the country works out to around Rs 1,75,000 crore per annum. However, even this figure will prove to be an underestimate if we also take into account the tremendous damage that is being caused to irrigation systems by the premature siltation of reservoirs and tanks and by the damage caused by floods and droughts.

It may be mentioned in this connection that while very large numbers of small reservoirs have already gone out of operation on account of premature siltation, many of our bigger ones are also getting silted up at rates that are 4 to 16 times higher than those assumed at the stage of project formulation (it is a different matter that such siltation takes time to show up). As far as floods are concerned, the Eighth Plan document says that 40 mh of our land surface are flood-prone and that the area affected annually is on an average about 7.7 mh. On an average, over 1,400 lives are lost every year and the damage caused to crops, homes, cattle and public utilities between 1953 and 1987 was nearly Rs 27,000 crore. Information regarding expenditure incurred on meeting drinking water requirements during droughts is not readily available but is known to be substantial.

Another way of appreciating the economic consequences of poor resource management would be to put a price tag on both sweet water and the topsoil, and to stop looking at these resources as if they were free and inexhaustible gifts of nature. As far as water is concerned, it is known that it has cost us around Rs 50,000 crore to create a storage capacity of around 20 mhm. What this means is that if a systematic and effective nationwide programme for the conservation of soil – and therefore also water – succeeds in reducing run-off losses by 25 per cent or by 40 mhm, we shall have obtained an advantage, in money terms, of something like Rs 1,00,000 crore per annum.

As far as the fertile topsoil is concerned, there is really no way of pricing it, because it is not merely a collection of chemicals and plant nutrients but an almost living medium that teems with micro-organisms whose variety and complexity continues to baffle scientists. And since it takes nature hundreds of years to build an inch of the topsoil, it is for all purposes a non-renewable resource. However, even if we assume for it a price of only Rs 100 per tonne and also assume – which is very likely – that the current rate of displacement of the topsoil due to erosion is around 10,000 million tonnes (mt) per annum (up from around 6,000 mt in 1972), the annual loss suffered by the economy on this account would be around Rs 1,00,000 crore!

Be that as it may, it is quite clear that the country is paying extremely heavily for its failure to manage its natural resources properly and that this is one of the prime reasons for its poverty. The enormous but entirely avoidable losses that are taking place as a result of deforestation, soil erosion, excessive run-off and the continued neglect of problems of waterlogging and salinisation can indeed be likened to an uncontrolled haemorrhage in a patient who is already severely debilitated.

It may be also mentioned in this connection that, in a predominantly agricultural country like ours, it is not correct to make too fine a distinction between rural poverty and urban poverty. For the latter is merely an offshoot of the former and is to a large extent due to the exodus of the rural poor into urban areas in search of employment. Urban poverty will get automatically reduced once this influx first ceases and then goes into reverse gear as economic conditions begin to improve in rural areas.

The need of the hour is to recognise that if we are at all serious about combating poverty – poverty that has become a national disgrace for a country that can rightfully take pride in its achievements in so many other fields – there is no better strategy than to make a frontal and determined attack on all aspects of poor resource management. The surplus labour available in rural areas must be harnessed and systematically converted into permanent productive assets through extensive soil and water conservation and drainage works, the lining of canals and water channels, desilting operations in small tanks, canals and river beds, the raising of plantations of various kinds (including horticulture) and other allied activities.

Better resource management must indeed form the bedrock of all our plans for rural development and employment and replace the confusing medley of wasteful and uncoordinated schemes that operate in the field today under the aegis of many different departments which work in watertight compartments, so to say. And if infructuous expenditure and disappointments are to be avoided, it must be undertaken in a holistic and not a narrowly sectoral manner. The mini-watershed must be adopted as the unit for planning as well as implementation of all programmes of land improvement and the resources, both financial and human, of all departments concerned, such as forests, horticulture, agriculture, soil conservation, minor irrigation, drainage and rural development, etc, must be brought together at the field level to ensure the best possible time and at the minimum possible cost.

All this is easier said than done, considering that departmental loyalties and mind-sets are still fiercely exclusive. But hope lies in the fact that with the coming in of panchayati raj, all development agencies will necessarily have to yield to co-ordination at the hands of zilla parishads, block samities and even gram panchayats. Hope also lies in the emergence of increasingly active and knowledgeable NGOs in the field of rural development and resource management. Above all, there are the living examples of villages like Ralegaon Shindi and Sukho Majri, which have transformed their economies dramatically by achieving the fullest possible utilisation of all local resources of land and water, to inspire other village communities to adopt similar approaches, and force government organisations, however recalcitrant they may be, to fall in line with the need of the hour.

IV
Wastelands Development: A Flawed Concept

In hindsight it is clear that while the 1985 decision to give special importance to the problem of wastelands was well-intentioned, it was not based on a proper appreciation of the overall situation in the field of resource management. It represented, in fact, an overly simplistic approach to a problem of great complexity and betrayed the preoccupation of its authors with degraded forest lands alone.

While announcing the setting up of the National Wastelands Development Board (NWDB), Rajiv Gandhi mentioned that "continuing deforestation has brought us face to face with a major ecological and socio-economic crisis". This observation was no doubt correct, but only partially so, because it completely ignored the part played by non-forest lands in bringing about the crisis in question. What the then PM failed to appreciate was that although degraded forest lands represented a most serious problem, they accounted, all said and done, for only 30-odd mh out of the total of around 80 mh that are wastelands, and represented an even smaller proportion of the country's total degraded area of 175 mh, which must be held responsible as a whole for the mess that we find ourselves in.

The fact that the notification setting up the NWDB talks of the need for a "massive programme of afforestation and tree planting" – obviously on forest wastelands alone – and makes no mention of the existence of around 25 mh of wastelands that have been created by waterlogging and salinisation also shows what an inexcusably narrow view was taken at that time of the problem of wastelands.

The failure of the NWDB was mainly due to the inability of the forest departments in the states to work in close co-ordination with other agencies concerned with non-forest wastelands in taking up cost-effective programmes in accordance with the 'complete mini-watershed' principle. The Eighth Plan document (1992) is explicit on this point and has observed as follows:

> An important reason why planning and action programmes for wastelands development have tended to remain inadequate is the lack of co-ordination between the Forest Organisation which is the implementing agency in most States and other departments like Agriculture, Horticulture, Soil Conservation, Minor Irrigation and Rural Department (para 4.14.13).
>
> The existing wastelands development schemes generally are not based on integrating the control of run-off rain water for reducing erosion, soil and water conservation and water harvesting (para 4.14.14).

It was no doubt the disappointing performance of the NWDB that led the government in 1992 to move it out of the purview of the ministry of environment and forests (MEF) and place it in the ministry of rural development (MRD), where a special new department of wastelands development (DWD) was created to host it. However this move, which was obviously intended to provide the NWDB with a new image and a new sense of purpose, lost much of its significance when, following the MEF's reluctance to part with its jurisdiction on 'forest wastelands', it was decided to entrust the NWDB, as well as of course the DWD, with responsibility only for 'non-forest wastelands'. Both these organisations thus became misnomers and the former emerged weaker than before as a result of this administrative reform.

The present scenario in wastelands development is depressing in the extreme because while there is just no talk of wastelands that are suffering from waterlogging and salinisation, even the responsibility for attending to denuded wastelands has been split between two ministries and there is as yet no institutional arrangement for bringing them together so that they may follow the 'complete mini-watershed' approach on the ground. It is necessary to remember in this connection that since forest wastelands and non-forest wastelands are inextricably juxtaposed in most situations, neither of these can be tackled alone in a cost-effective manner under the existing administrative arrangements.

However this is by no means the end of the story. For even if we were to correct this anomaly by once again creating a unified agency for dealing with both forest and non-forest wastelands, and even if we were to also place responsibility for the reclamation of waterlogged and saline lands squarely on such an agency, the case for treating 'wastelands development' as a separate subject by itself would still be untenable. For such an approach would necessarily push the problem of the 95-odd mh of degraded agricultural lands further into the background. This would be a great tragedy because contrary to popular belief the department of agriculture's schemes for the conservation of soil and water on eroding

agricultural lands are not at all doing well because they are being implemented in violation of the 'complete mini-watershed' principle.

Considering that prevention is better than cure, and that wastelands are out of production in any case, the protection of degradation-prone agricultural lands against further deterioration merits obviously much higher priority than the amelioration of the former. This means that we should start worrying a little less about wastelands, but a little more about degraded lands which, if they are not saved in time, may also get slowly converted into wastelands.

There is yet another consideration. If we cannot afford, any longer, to ignore the urgent need of wastelands for attention and the even more urgent need of degraded lands for attention, can we continue to be complacent with regard to the dangers of depletion and deterioration faced by lands that do not belong to either of these categories and are believed to be in good health? Such lands are around 89 mh (264 minus 175) in extent and comprise around 39 mh of good forests and around 59 mh of good agricultural lands.

A little thought would show that placed as we are, it would be dangerous to be complacent about our non-sick lands. As far as our remaining good forests are concerned, it is common knowledge that these continue to be exploited illegally. Veerappan in the south and functioning plywood factories in the north-east are proof enough of this fact. It is necessary to mention in this connection that it would not be prudent to rely overmuch on satellite imagery for information regarding areas under good forest cover. For one thing, even if the density of a good forest comes down from 100 per cent to 40 per cent as a result of moneycombing and selective felling, it will continue to be shown as a forest with 'good tree cover'. For another, the rapid natural spread of '*Prosopis juliflora*' on large open tracts in many parts of the country can also create the impression that the area under forests is not diminishing.

As far as our good agricultural lands are concerned, they are almost entirely under irrigation and as such are susceptible to the threat of waterlogging and salinisation. They are also often double, or even triple, cropped and receive large applications of inorganic fertilisers and pesticides which can, over the long run, damage the soil. Good agricultural lands can also suffer depletion by being thoughtlessly diverted to non-agricultural uses such as farm-houses for the rich. It is necessary to remember in this context that the per capita availability of agricultural lands which stood at 0.48 hectare in 1951 is expected to go down to 0.14 hectare in the year 2000. It would therefore be desirable to keep a special eye on the health of such lands and save them from damage or shrinkage.

In view of the above analysis, it is clear that the very concept of giving special attention to wastelands needs to be discarded in favour of a broader approach that will cater to the needs of land management in all its aspects. This means that, instead of a department of wastelands development, we should have a Department of Land Resources and that instead of a so-called NWDB that is concerned with the health of only around 50 mh of non-forest wastelands (but is paying no attention to problems of waterlogging and salinisation) we must have an apex body like the Central Land Use Commission that the government had decided to create in 1974 but has not so far been able to bring into being because of a general lack of interest in this subject. Both these bodies must naturally accept responsibility for all problems relating to the country's land resources in their totality, no matter whether they are classified as forest lands or non-forest lands, as public lands or private lands, as healthy lands or sick lands and in case of the latter, whether they suffer from erosion or waterlogging.

V
A Record of Apathy

Our rather casual approach towards problems of resource management becomes evident when we consider the manner in which we have thrown away some very good opportunities for tackling them effectively. The first opportunity was presented by K M Munshi's clarion call in 1952 for the greening of the country through a massive tree-planting programme aimed at placing one-third of the country's land surface under tree cover. However, instead of getting down seriously to the work of converting this grand vision into a solid reality, a cynical establishment quietly turned it into a meaningless annual ritual for the ceremonial planting of trees by VIPs. As a result, 40 years later not 33 per cent but only around 13 per cent of the country's land surface can claim to be under good tree cover.

The next opportunity came in 1973 when Indira Gandhi approved a bold suggestion that the centre should assume greater responsibility for the care of the country's total land resources and create a nodal authority for this purpose. In a historic minute dated December 29, 1973 she observed, *inter alia*, as follows:

> Based on our experience of soil erosion, droughts and floods and their increasing financial liability, a large part of which had to be borne by the Centre, the paper[*] argues in favour of the creation of a central land commission. I am in broad sympathy with its approach and feel that we can no longer afford to neglect our most important natural resource. *This is not simply an environmental problem but one which is basic to the future of our country. The stark question before us is whether our soil will be productive enough to sustain a population of one billion by the end of this century with higher standards of living than now prevail. We must have long-term plans to meet this contingency* (emphasis added.)

Indira Gandhi considered this matter to be of such urgency that she asked her minister of planning to examine, within a period of two months, how the proposed commission could be set up. However, while all the necessary motions were gone through, the proposal was ultimately allowed to die a slow death, ostensibly on the legalistic ground that land management is a state subject. The centre contented itself with a recommendation to the states that they should take up the work of land management in their own territories through state land use boards. But in the absence of an apex body at the centre to provide the necessary leadership and backing in a new field of activity, such boards as do exist have proved to be singularly ineffective.

It is interesting to note that the National Commission on Agriculture (1976) also gave its full support to the proposal for the setting up of a central land commission in words which deserve to be quoted:

> No specific agency of the government was charged till the end of the Fourth Five-Year Plan with the responsibility for the proper use of the land. It was, however, soon realised that such *a state of affairs where this important basic resource has no known custodian of its interests cannot be allowed to continue*. Fully realising the urgency of the problem, it has recently been decided that the existing vacuum in policies, organisations and programmes relating to land and soil management should be filled on an urgent basis... At the national level, *it is proposed to have a central land commission which will be charged with the overall responsibility for all matters relating to the assessment and optimum management of the country's land resources*. We fully support these measures (emphasis added.)

Four years later, in 1980, the N D Tiwari Committee on the Environment revived the proposal for the setting up of the central land commission but to no avail. This committee recommended that while a full-fledged new department should be set up to look after the environmental problems of the country, the subject of proper land management was so important that it deserved to be looked after by a central land commission which should serve as a "policy-making, co-ordinating and monitoring agency for all issues concerning the health and scientific management of our land resources". However, while the former recommendation was immediately accepted and implemented before the year was out, no action was taken on the latter. Clearly, there was as yet no

[*] 'A Charter for the Land' by B B Vohra, *Economic and Political Weekly*, March 31, 1973.

political will to place the management of our land resources on a sound footing.

The Sixth Plan document (1980) also made a strong plea for better land management in terms which are as valid today as they were 15 years ago:

> The losses which the country is bearing on account of the continued degradation of its land resources are of staggering dimensions and constitute one of the important threats to our economic progress... The country can hope to achieve a continuous improvement in agricultural production only if the problems of land degradation are tackled with the utmost vigour. Such an effort, though gigantic by any standards is, however, inescapable if the country's agricultural future is to be assured. *Considering that even after all possible steps are initiated immediately, it will be years before results begin to show and that further massive damage will inevitably continue during this period, there is absolutely no room for complacency on this front* (emphasis added.)

These fine sentiments were however only in the nature of lip-service to the cause because they were not matched by any significantly larger allocations for better land management during the Sixth Plan period.

Hopes for a better deal for the land were revived once again in early 1985 when Rajiv Gandhi warned the nation of the serious "ecological and socio-economic crisis" it faced and set up, along with the ill-fated NWDB, the National Land Use and Conservation Board (NLUCB) with responsibilities which were more or less in line with what had been earlier envisaged for the proposed central land commission. However, the NLCUB proved to be stillborn, thanks mainly to its curious constitution – this bloated, 32-member body possessed no whole-time members at all. Unbelievable as it may seem, even its part-time member-secretary was located in a ministry different from that of the part-time chairman, and was therefore unaccountable to him in any manner.

With such a track record behind us, it is difficult to be sanguine about the future. However, regardless of what has happened in the past, it is incumbent on the centre at this critical juncture to realise the gravity of the situation and treat land management as the core item of an agenda for national survival. It would also be useful to place this subject above party politics and hold urgent consultations with all important political parties on how it should be approached.

The present arrangements – under which the agriculture department is supposed to be responsible for only eroding agricultural lands, the ministry of water resources for only command area development and for the control of floods and waterlogging, the department of forests for only forest lands and the rural development department for only community and revenue lands and area development programmes – are thoroughly irrational and must be scrapped.

A 10 to 15 year indicative plan for dealing with all aspects of land management must be drawn up by the centre within the shortest possible time. Simultaneously, the states must be asked to draw up their own long-term plans and to implement them in a time-bound manner under the watchful eye of the centre. State Land Use Boards must be revamped and strengthened and a prestigious and adequately empowered Central Land Use Commission should be constituted to act as a custodian and conscience-keeper of the interests of the land, as a think-tank and repository of reliable data, as a clearing house for relevant information and as a catalyst for creating public awareness of what is at stake.

VI
Money Is Not an Important Constraint

A superficial look at the magnitude of the problems that face us with regard to 175 odd mh of degraded lands and wastelands may give the impression that huge investments will be required to implement a time-bound programme for their amelioration, and that lack of financial resources may come in the way of such an undertaking.

Such fears are however largely imaginary. If we look at the matter a little more closely, we find that even if we assume that our 150 odd mh of denuded and eroding lands will, on an average, require an investment of Rs 4,000 per hectare and that 25 odd mh waterlogged and saline lands will require Rs 30,000 per hectare, the total bill will be around Rs 1,65,000 crore. If the programme is spread over 15 years, it will demand an annual outlay of around Rs 11,000 crore.

According to information collected by the DWD, the amounts that are presently available for schemes which have an important component of afforestation and soil and water conservation are as follows:

(Rs crore per annum)

1 Ministry of Rural Areas and Employment (Previously Rural Development)	1250
2 Ministry of Environment and Forests	906
3 Ministry of Agriculture and Co-operation	260
4 Planning Commission	362
5 NABARD	50
6 State Soil Conservation Departments	341
7 State Land Development Banks	1106
Total	4275

This means that the gap in resources will be around Rs 7000 crore per annum. However, it will in fact be much smaller because allocations for rural development are likely to be increased steeply in the Ninth Plan.

Experience has shown that wherever local communities have come forward to take an active part in controlling grazing, and thereby facilitating the natural regeneration of vegetal cover on denuded lands, and in adopting other biotic and engineering means for conserving both soil and water, departmental costs have come down appreciably. Again, it cannot be denied that costs will also come down if existing leakages of funds are effectively plugged and schemes are implemented in a more efficient and cost-effective manner. It is pertinent to recall, in this connection, the well-known observation of Rajiv Gandhi that hardly 15 per cent of the enormous sums spent on rural development programmes succeed in benefiting the intended beneficiaries, the rest of the money either goes waste or into the wrong pockets.

What also needs to be appreciated is that, thanks to our failure to plan and implement all soil and water conservation schemes on a strictly 'complete mini-watershed' basis, a good part of the investments that are now being made in this field prove to be infructuous. Once these deficiencies are removed and all available resources are carefully pooled and utilised meaningfully, the entire position will change dramatically. The real problem therefore lies not in the scarcity of financial resources but in our present inability to utilise them to the best advantage.

VII
Major Tasks Ahead and Some Suggestions for Tackling Them

In the paragraphs that follow an attempt has been made firstly, to outline the most important tasks that face us and secondly, to suggest what kind of policy and administrative changes will need to be made to tackle them effectively.

Task No 1: Complacency must be shed

The record shows that there has so far been no stern political will to tackle the country's central problem of poverty and therefore of poor resource management. This in turn is due to the fact that the people who matter mistakenly believe that all is well on the agricultural front because we can operate the PDS without having to import foodgrams. Unless this vicious circle is broken by a sustained and effective campaign for shedding complacency and creating greater awareness of the perils inherent in the continued neglect and mismanagement of our natural resources, there is little likelihood of any great improvement in the situation.

A decision should be taken to mount such a campaign and to make the ministry of information and broadcasting responsible for it.

Task No 2: Soil and Water must be Conserved to the Maximum Possible Extent

There is no question that soil erosion – which affects around 150 mh out of the country's total land area of 305 mh – constitutes the biggest single threat to the sustainability of our agriculture, as well as

of our economy as a whole. For not only does it increasingly reduce the productivity of the lands subject to erosion but also results in the loss to the sea of large quantities of priceless sweet water, in the siltation of reservoirs and rivers and in the aggravation of both floods and droughts.

The technologies for conserving both soil and water are wellknown and simple in nature and an increasing number of villages (like Ralegaon Shindi) which have adopted them have demonstrated that these can be easily implemented by farmers themselves with only a little outside help. Denuded lands must be enabled to regenerate themselves, through the control of grazing, and their soil and moisture regimes must be improved by biotic as well as engineering devices, such as contour trenches, before thay are placed under plantations whether of fruit, fodder, fuel or timber. Simultaneously, agricultural lands – which are almost invariably situated in the lower reaches of the mini-watersheds – must be terraced and bunded along true contour lines. Run-off losses must be reduced at every possible point in each mini-watershed by creating physical barriers, such as weirs, nallah plugs and check-dams and storages, across all drainage lines. Such impediments not only help to conserve local resources of rainfall to the maximum possible extent in the form of soil moisture, ground water and small storages but also act as silt traps, and ensure that the water that leaves the mini-watershed is genuinely surplus to its own requirements.

A total approach of this kind has already brought about dramatic changes wherever it has been tried and needs to be adopted in all parts of the country, regardless of whether they receive heavy rainfall, or moderate rainfall or little rainfall. The concept of zero or minimum soil loss, aimed at achieving the maximum conservation of both soil and water through biotic as well as engineering means needs to be popularised among all rural communities so that they may begin to take an increasing interest in managing their own resources. At the same time, all the schemes which are essentially aimed at soil and water conservation but are being carried out today under a variety of descriptions – such as DPAP, DDP, RVP, FPRY, NWDPRA, IWDP, JRY, EAS, GGS – and by a number of departments, should be merged into a single scheme for 'soil and water conservation' which should be squarely based on the 'complete mini-watershed' principle.

Such a reform will result in saving a lot of the expenditure which is at present being incurred wastefully because in the absence of inter-departmental co-ordination, none of the existing schemes, whether of the ministry of E and F or of A and C or of R A and E, is being implemented according to the 'complete mini-watershed' principle. Considering that the total resources that are being invested in such schemes are over Rs 4000 crore per annum this reform will result in great financial benefit to the country.

It is suggested that a 15-year perspective national plan for the conservation of both soil and water and therefore for the amelioration of all the 150 odd mh of degraded lands and wastelands that are erosion-prone should be formulated and taken up for implementation not later than the start of the Ninth Plan. This Plan should be only indicative in nature and should not be imposed in any way on state governments. It is the affected villages that should be encouraged to draw up their own plans which should then be consolidated into district and state plans.

Responsibility for this ambitious programme should appropriately be placed on the ministry of R A and E which is responsible for the alleviation of rural poverty. The ministry must achieve the requisite co-ordination between all the three ministries concerned with afforestation and soil and water conservation schemes, if necessary, by obtaining orders of the cabinet on this all-important point. It must also arrange for the suitable re-orientation and training of all existing staff in these three ministries. It must also consider how it should reorganise itself for its new responsibilities, and how the existing DWD should be transferred to a department of land resources. The dissolution of both the NWDB and the NAEB is another matter which will need to be considered urgently.

Task No 3: Reclamation of waterlogged and saline lands

This is a subject that has suffered great neglect. So much so that even reliable data regarding the extent of the damage done is not readily available. However, as already mentioned above, it is very likely that in 1995, the affected area is as large as around 27 mh.

Sinch most such areas require to be provided with drainage, preferably underground, the cost of reclamation is very high – somewhere in the region of Rs 30,000 to 40,000 per hectare. Perhaps it is this circumstance which has prevented both the department of agriculture and the ministry of water resources from taking an active interest in this matter.

As in the case of land subject to erosion, a 15-year plan must be drawn up for ameliorating not only the lands that have already suffered damage but also those which are likely to face this threat in the near future. The responsibility for formulating and implementing this plan must be placed squarely on MWR because of its expertise in executing drainage works and its responsibility for reducing seepage losses from unlined canals and preventing the improvident use of water, both of which contribute to waterlogging.

Task No 4: Containment of deserts

It is estimated that around 25 mh suffer from wind erosion. These are mostly lands situated in the Rajasthan desert, and there are reports that it is slowly expanding as a result of the movement of sand through wind action.

The ways of controlling the spread of deserts are known – they lie mostly in the putting up of wind barriers and shelter belts. A 10 to 15-year plan to enclose the Rajasthan desert within a belt of suitable trees should be drawn and implemented. Simultaneously steps should be taken to reclaim desert areas by controlling grazing so that natural regeneration of trees and grasses may take place.

Responsibility for this programme should be placed on the ministry of R A and E.

Task No 5: Protection of good agricultural lands

As already noticed there are only about 50 mh of agricultural lands that are apparently in good health today, but are vulnerable to many serious threats. The health and physical integrity of all such lands must be carefully monitored and guarded as suggested above.

Responsibility for this task should be placed on the ministry of agriculture.

Task No 6: Protection of remaining natural forests

The pace at which the deterioration of our 39 odd mh of good natural forests is taking place is not generally recognised. Many of these forests are not classified as 'Reserve Forests' because of the rights enjoyed by local tribal populations. There are also other legal impediments in the way of effective action.

The Veerappan incident in the south and the apparent ease with which the extraction of valuable timber continues to take place in the north-east show how serious the problem is. It is necessary to give the highest priority to this matter and put a complete and very early end to all unauthorised fellings in our remaining forests, if necessary by arming our foresters with enhanced punitive and legal powers, as well as with weapons wherever the situation may so require.

Responsibility in this field should be placed on the ministry of environment and forests.

Task No 7: Containment of coastal erosion

This is another area of great neglect which, considering the length of our coastline, can be the cause of great damage along uninhabited reaches without the government becoming aware of it. The matter needs to be carefully studied with the use of satellite imagery so that vulnerable areas maybe regularly monitored, and effective steps taken in time.

Responsibility for this task should be placed on the department of ocean development.

Task No 8: Review of flood control policies

The failure of existing policies in this field is apparent from the fact that although Rs 2,500 crore were spent on 'flood control' programmes such as the construction of earthen embankments and dykes between 1954 and 1989, the area described as 'flood prone' has nevertheless increased from around 25 mh in 1950 to around 40 mh in 1989.

It is time to realise that the root of the trouble lies in excessive run-off and soil losses in denuded catchments. These place additional demands on the water-carrying capacity of rivers even while reducing it by raising their beds through siltation. The real answer to the problem therefore lies in stepping up natural regeneration, afforestation and soil and water conservation programmes in catchment areas in an effective manner. The emphasis should shift from 'flood control' to 'flood prevention' and from the treatment of symptoms to the treatment of the disease itself. The money saved by curtailing infructuous expenditure on the construction of earthen structures that get washed away ever so often should be diverted to the treatment of catchment areas.

Responsibility in this regard should be placed on the ministry of water resources.

Task No 9: Review of policies in surface water

The MWR has been traditionally concentrating only on the construction of surface irrigation projects as if this was an end in itself and not merely a means to the end of greater agricultural production. This concept needs to be given up and replaced by one that stresses the accountability of MWR for its performance in terms of its actual contribution to enhanced production. This is a matter of great importance because the more we succeed in the field of irrigation, the less will be the pressure on marginal rainfed agricultural lands which, in happier circumstances, should be reverted from cropping to horticulture, silviculture or pasture production in the interests of their own health and productivity as well as of downstream areas.

The seriousness of the present situation in the field of surface water management has already been described at length in Section II. The suggestions contained in that section deserve to be considered urgently by the MWR.

Task No 10: Review of policies in ground water

Ground water is bound to assume even greater importance in the years to come, firstly, because of the failure of surface water projects and, secondly, because of the extreme ease and speed with which it can be developed in the private sector wherever it is available at reasonable depths. However the very attractiveness of this priceless resource is turning into a threat to its health and sustainability. Water tables are going down rapidly in many regions under conditions of indiscriminate over-pumping and in certain, mostly coastal, areas, aquifers are getting infested with saline water.

So far inadequate importance has been given to ground water management by a ministry that is overly pre-occupied with the expansion of the M and M sector. However it would be a tragic mistake to continue to neglect this resource and take it for granted so to say, merely because it is a free gift of Nature. Action clearly needs to be taken in the following three major directions:

(a) The exploitation of ground water should be controlled to ensure that withdrawals do not exceed sustainable limits – the CGWB and state government water boards should be vested with the necessary administrative and legal powers to achieve this end and also suitably strengthened.

(b) Research in ground water should be stepped up. We must have the most complete possible knowledge of the nature and capability of each aquifer, and the source and exact extent of its recharge. Research in artificial recharge should be given particular attention for obvious reasons.

(c) In view of the growing demands on this resource, its replenishment should be facilitated by all possible means, both natural and artificial. As far as the former is concerned, the successful implementation of Task No 2 above will go a long way towards the enhancement of ground water resources.

Responsibility for this task has to be borne by the ministry of water resources.

Task No 11: Creation of a central land use commission

The "vacuum in policies, organisation, and programmes relating to land and soil management" that was noticed by the NCA in 1976 has unfortunately yet to be filled even though more than 20 years have elapsed since the proposal for an adequately structured and adequately empowered Central Land Use Commission (CLUC) was first mooted in 1973. There is no question that if we really mean business in the all-important field of resource management this vacuum should be filled without any further delay.

The exact form the proposed commission should take is a matter that will require detailed study. However, a suggestion that (following the pattern of the Planning Commission) can be safely made is that it should be presided over by the minister for R A and E (who is responsible for the amelioration of rural poverty) and have three or four whole-time members of suitable rank who should be well-versed in matters relating to land management and of whom one should be designated as the deputy chairman. Other members of the proposed body should be the secretaries of the concerned departments, namely, agriculture and co-operation, environment and forests, water resources, rural areas and poverty alleviation and the Planning Commission. The member-secretary of the proposed commission should be a whole-time officer of the rank of secretary to the GOI, and should be assisted by an adequately equipped secretariat.

The commission should be given a suitable mandate which should include responsibility for ensuring that the 10 tasks mentioned above are pursued energetically by the ministries concerned and are not allowed to recede into the background. It should act as custodian and conscience keeper of the country's land resources and a vigilant watch-dog of its interests.

Responsibility for this task should be placed on the ministry of R A and E.

Task No 12. Creation of land use authorities at the state and district levels.

Although state governments were advised as far back as 1974 to set up state land use boards, the boards that have been formed are more or less defunct. There is obvious need for setting up state land use boards in the image of the CLUC and ensuring that they work energetically at the district level, the zilla parishad should discharge all functions covering the optimal use of local land resource.

Responsibility in this regard will rest with the ministry of R A and E.

VIII
Last Word

When all is said and done, it must be remembered that like any other issue of great importance better resource management is too serious a matter to be left to be tackled by government alone. This is particularly true at a time when the latter have their hands full with many crises of a much more immediate nature than the insidious threat posed by the continuing mismanagement of the country's natural resources, however awesome this threat may be. One must also reckon with the fact that in the absence of a strong and informed public opinion on the subject, there is at present no will on the part of any political party to pressurise the government on this forgotten front.

In the circumstances, very great responsibility rests on concerned citizens, who can read the writing on the wall, to come together to create a strong voluntary organisation that will act as a watch-dog of the nation's interests in this neglected field. Such a body should do everything possible to see that the issues that have been discussed above are kept alive, the greater awareness is created with regard to their urgency and that governments, both at the centre and in the states, are constantly reminded of their duties in this field.

Com H-70-15
11

Poverty and Income Distribution in India

K N Ninan

Against the background of global poverty and income distribution pattern, this paper analyses the trends and causal factors behind rural poverty in India both at the national and state levels during 1957-58 to 1986-87. Adopting an alternate model and categorisation of the time period of analysis into two phases which is empirically and theoretically justified the paper observes that contrary to the findings of other researchers, not only are there distinct time trends in the incidence of rural poverty in India, but also while these trends were positive and significant in Period I (1957-58 to 1968-69), they were negative and significant in Period II (1969-70 to 1986-87). Also, the rate of decline in the incidence of rural poverty in the latter period was much higher than the rate of increase in rural poverty in the preceding period. These observations are valid for both all-India and across states, using alternate measures of poverty, i e, the head count ratio and Sen's poverty index. The paper then attempts both a time series and cross-section analysis of the causal factors behind rural poverty in India, especially probing into the role of agricultural growth, inflation, access to subsidised food through the public distribution system, population pressure on environmental resources, rural consumption levels and inequality, and infrastructure development on the incidence of rural poverty for all-India and across states.

The paper suggests that policies to accelerate agricultural growth, infrastructure development and provide better access to subsidised food, along with measures to control inflation promise to be most effective in reducing the incidence of rural poverty in India. Measures to control population growth and promote environmental conservation too ought to be incorporated into anti-poverty alleviation strategies in India. The paper cautions against the implications of recent policy changes in India, viz, structural adjustments, resulting in low priority to agriculture as against industry, slashing of public expenditures on social sectors including subsidised food, etc, which are detrimental to the poor and could reverse the negative trends in rural poverty visible after 1969-70.

I
Introduction

SUSTAINED economic growth along with investment and public policies to improve labour productivity and access to basic needs are widely perceived to be most effective in reducing poverty. The experience of the western countries earlier and more recently of those from east Asia bears this out. On the other hand the experience of some of the south Asian and African countries shows how the absence of such a growth momentum and policy environment could constrain efforts to reduce poverty. In some countries such as Brazil and Pakistan, despite rapid economic growth, progress in terms of social indicators like under five mortality, primary enrolment rates has been dismally low. Whereas Sri Lanka, despite slow economic growth, ranked high in terms of social or quality of life indicators. The countries of sub-Saharan Africa provide the curious combination of low economic growth and social progress resulting in endemic poverty. Whether there are trade-offs between growth and poverty or inequality as suggested by the Kuznet's hypothesis or the Immiserisation hypothesis are difficult to surmise in the face of diverse evidences. While countries like Japan, Korea recorded significant declines in poverty following a reduction in inequities after widespread land reforms, others like Indonesia were able to reduce poverty with the income distribution pattern unchanged; in still others such as Brazil, Costa Rica a worsening of poverty was associated with worsening inequities. All these illustrate how complex a subject poverty is and that no study of poverty will be complete unless it takes note of local conditions and historical processes distinct to each country and region.

It is in this context that this paper focuses on poverty in India. The size of India's absolute poor (around 420 million people in 1985 with annual per capita incomes below US $ 370), the availability of time series data on poverty and related factors for a reasonable length unique for any developing country as also the diversity of situations and experiences make India ideal for analysing the dynamic processes and causal factors behind poverty. Moreover, given the similarity of problems faced by many developing countries the Indian experience may also have lessons for other developing countries to imbibe. Our focus is specifically on rural poverty. This is because unlike many Latin American countries where poverty is largely an urban phenomenon, in India as in the rest of Asia and Africa it is largely a rural phenomenon. The rural poor constitute about 80 per cent of India's total poor. Apart from analysing the trends in rural poverty in India over time and states, the paper also attempts to analyse the factors influencing rural poverty in India both at the national and state level.

Pioneering efforts in this direction have been made by Ahluwalia (1978), Narain [*vide*, Mellor and Desai 1985] and others [cf various articles in Bardhan and Srinivasan 1974; Srinivasan and Bardhan 1988; Krishnaswamy 1990]. Ahluwalia's analysis for the period 1956-57 to 1973-74 revealed no underlying time trend in rural poverty in India and for most states. He also observed wide fluctuations in the inter-temporal incidence of rural poverty in India. Other researchers using two point comparisons, tabular or graphic analysis, came to diverse conclusions. While Bardhan (1973) observed a rising trend in rural poverty between 1960-61 and 1968-69, Minhas (1970) noted a fall between 1956-57 and 1967-68; Mellor and Desai (1985), Sundrum (1987) and Bhattacharya et al (1991) observed a zig-zag pattern in the inter-temporal incidence of rural poverty, rising for a few years, then falling, again rising and falling subsequently. These contradictory findings may be attributed to the differences in methodology employed, the time period and choice of base and terminal years. A major short-coming of most of these studies is that while attempting to draw inferences about underlying time trends in rural poverty, they implicitly assume that the time period under consideration is structurally and in terms of the policy environment favouring the poor homogeneous which is far from true. Adopting an alternate model and a categorisation of the time period of analysis into phases which is theoretically and empirically justified, we come up with more meaningful and consistent results. These show that contrary to the findings of other researchers, not only are there distinct time trends in rural poverty both at the all-India and state-level, but also while these trends were positive and significant in one period, they were negative and significant in the subsequent period. The rate of decline in rural poverty during Period II was higher than the rate of increase in rural poverty during Period I, both for all-India and most states. Our study also confirms the strong

negative association between agricultural performance and the incidence of rural poverty observed by Ahluwalia and others, using both all-India and inter-state data, and to that extent disproves the proposition of a weak link between agricultural growth and rural poverty put forward by some, notably Rajaraman (1975) and, Griffin and Ghose (1979). It also confirms the positive association between inflation and rural poverty observed by Narain. But unlike Narain's results, ours are based on more rigorous tests covering not only all-India data, the head count ratio (as the dependent variable) and absolute prices but also inter-state data using alternate measures of poverty and price including examining the effects of lagged agricultural output and price variables on rural poverty. We also extend our horizon beyond the narrow confines of the agricultural performance and price variables to also empirically study the relatively neglected issues relating to the role of population growth and environment, access to subsidised food through the public distribution system (PDS), the level of infrastructure development, inequality and other factors on the incidence of rural poverty. The paper also questions on theoretical and empirical grounds the practice common among many poverty researchers of including a separate time trend variable as an additional explanatory variable in poverty functions to serve the role of a cover-all variable for all other time-related factors not explicitly considered in the given model. In short, we not only seek to update and extend further the contributions of Ahluwalia, Narain and others in this area, but also overcome some of their shortcomings. As mentioned earlier, in addition to trends in rural poverty at national and state level we also analyse the causal factors behind rural poverty in India. This is at two levels—a time series analysis of factors affecting the incidence of rural poverty at all-India level and a cross-section analysis of factors affecting inter-state incidence of rural poverty at three points of time. The data for the study are drawn from official reports and refer to the period 1957-58 to 1986-87.

Before proceeding, it will be useful to situate the poverty and related question of income distribution in India in an international perspective. Table 1 shows that south Asia (including India) with 23 per cent of the world's population alone accounts for almost half of the world's poor. India's share itself is more than a third of the world's poor. In terms of some social indicators India lags behind though in terms of life expectancy and net primary school enrolment rates India's position is better. However, within India, some regions (e g, Kerala) are on par with developed countries in terms of social progress. India's per capita income in 1989 was US $ 340 which is higher than that of Bangladesh but lower than of Pakistan, Sri Lanka and China. Using the UN's ICP estimates, with the US per capita income as base with 100, India's per capita income which is 4.7 of this, is on par with that of Bangladesh, but less than that of Pakistan, Sri Lanka. The income distribution pattern in India conforms to that in many countries. For instance, the share in income of the bottom 20 per cent population in India and Japan is over 8 per cent each whereas that of the top 10 per cent are 27 and 22 per cents respectively. The share of the bottom 20 per cent population in India is higher than in the UK, US, Brazil and several other countries. But then the income levels in India are several times lower compared to in Japan, the UK US, Brazil and several other countries.

II
Trends in Rural Poverty

Most poverty studies on India rely on the household consumer expenditure survey data collected by the National Sample Survey (NSS) for their analysis. These are available almost uninterrupted on an annual basis from the mid-50s up to 1973-74. Subsequently

TABLE 1: POVERTY AND INCOME DISTRIBUTION: A GLOBAL PROFILE

Countries/Regions	Percentage Share to World Total		Proportion of Poor (Head Count Ratio in Per Cent)		Social Indicators		
	Population (in 1985)	Poor (in 1985)	1985	2000 (Projected)	Under 5 Mortality (Per 1000 Births)	Life Expectancy (Years)	Net Primary School Enrolment Rate (Per Cent)
Sub-Saharan Africa	9.4	16.1	47	43	196	50	56
East Asia	32.8	25.1	20	4	96	67	96
China	23.2	18.8	20	3	58	69	93
South Asia	23.0	46.6	51	26	172	56	74
India	17.1	37.6	55	25	199	57	81
Eastern Europe		0.5	8	8	23	71	90
Middle East/North Africa	8.3	5.4	31	23	148	61	75
Latin America and Caribbean	8.7	6.3	19	11	75	66	92
All developing countries	82.2	100.0	33	18	121	62	83

Countries	GNP Per Capita in US $ (1989)	UN's ICP Estimates of GDP Per Capita: US=100 (1989)	Year	Share in Household Income by Percentile Groups of Households	
				Bottom 20 Per Cent	Top 10 Per Cent
Bangladesh	180	4.7	1981-82	9.3	24.9
India	340	4.7	1983	8.1	26.7
China	350	—	—	—	—
Pakistan	370	8.2	1984-85	7.8	31.3
Ghana	390	—	1987-88	6.5	29.1
Sri Lanka	430	10.5	1985-86	4.8	43.0
Indonesia	500	—	1987	8.8	26.5
Colombia	1200		1988	4.0	37.1
Botswana	1600	19.3	1985-86	2.5	42.8
Malaysia	2160	—	1987	4.6	34.8
Venezuela	2450	—	1987	4.7	34.2
Brazil	2540	—	1983	2.4	46.2
UK	14610	66.1	1979	5.8	23.3
USA	20910	100.0	1985	4.7	25.0
Japan	23810	71.5	1979	8.7	22.4

Notes: (1) The poverty line in 1985 purchasing power parity (PPP) dollars is $ 370 per capita a year for the poor.

(2) Social indicators: Under 5 mortality rates are for 1980-85 except for China and south Asia where the period is 1975-80. These are the probabilities of dying before age 5; life expectancy at birth—it is the number of years a new-born infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life; net primary enrolment rate—the number of children aged 6 to 11 enrolled in primary school as a percentage of the population age 6 to 11, adjusted for each country's age structure for primary school, the figures of the latter two indices refer to the mid-80s.

(3) The UN's international comparison programme (ICP) has developed measures of real GDP on an internationally comparable scale, using purchasing power parities (PPP) instead of exchange rates as conversion factors.

(4) Income distribution: For Bangladesh, India, Ghana and Indonesia data refer to per capita expenditure; for Pakistan—household expenditure; for Sri Lanka, Colombia, Malaysia and Venezuela—per capita income; for remaining countries—household income.

Sources: (1) *World Development Report 1990—Poverty*, World Bank, Oxford University Press, New York, 1990.

(2) *World Development Report 1991—The Challenge of Development*, World Bank, Oxford University Press, New York, 1991.

the NSS decided to collect these data on a quinquennium basis. However, with a view to building a time series of data a decision was again taken to collect such data on an annual basis from 1986-87 based on a smaller sample to supplement those from the quinquennium surveys. In the absence of time series data on household incomes, most poverty researchers in India have relied on the NSS consumer expenditure survey data. Moreover, consumer expenditure being a better proxy for permanent income is more suited for such analysis than household income data which may correspond to only current income. Most Indian researchers on poverty have used a poverty norm of Rs 15 monthly per capita consumption expenditure at 1960-61 prices for rural India to estimate the incidence of poverty in rural India [cf Dandekar and Rath 1971; Bardhan 1973; Ahluwalia 1978]. This expenditure was deemed to ensure a person access to a specified minimum bundle of goods and services. This norm was inflated for subsequent years using the Consumer Price Index for Agricultural Labourers (CPIAL) with the base 1960-61 = 100, collected by the labour bureau, government of India which is the only available rural-specific consumer price index. Because of variations in commodity prices and rates of inflation across states to derive the corresponding state-specific poverty lines this norm was adjusted using the state-specific consumer price indices for rural areas with the all-India rural price as 100 for a given year. Details as to how these are computed are available in a number of studies [cf Bardhan 1973]. The state-specific CPIALs are used to inflate the state level poverty lines for subsequent years. This norm has been used to arrive at the incidence of poverty for rural India as a whole and statewise. Of the measures used to estimate the incidence of poverty, the most popular are the head count ratio which estimates the proportion of poor with reference to the specified poverty line and the Sen's poverty index which is a more sophisticated and composite poverty index which takes note of the proportion of poor, the gap between the poverty line and the mean consumption of the poor and the Lorenz ratio of consumer expenditure of the below poverty households. Using the NSS consumer expenditure data and the above norms Ahluwalia (1978) estimated the incidence of poverty in India in terms of these two indices for the period 1956-57 to 1973-74. These indices have been updated up to 1986-87 for all-India and statewise by Suryanarayana and are readily available in a recent study [Mahendra Dev et al 1991]. These estimates supplemented by those from Ahluwalia's study have been used for our analysis.

Though our analysis spans a 30-year period, as mentioned earlier, we have only 17 observations at our disposal for analysis, because of gaps in the data cited earlier. This implies that while our trends are based on annual observations from 1957-58 to 1973-74, save for two or three missing observations, thereafter up to 1986-87 they are based on observations available at greater point intervals. Most of the trend fitting exercises earlier [cf Ahluwalia 1978] implicitly assume that the period to which the observations belong are structurally and in terms of the policy environment favouring the poor homogeneous which is far from true. It is our view that the period stretching from 1957-58 to 1986-87 can be broadly visualised as consisting of two phases, Period I from 1957-58 to 1968-69 and Period II from 1969-70 to 1986-87, the latest year for which poverty estimates were available at the time of writing. As is well known the green revolution marked an important phase in India's agricultural development when there was a structural break in the trend rate of agricultural growth. Due to the bad drought years of 1965-66 and 1966-67 and its after-effects the benefits of the green revolution were perceptible only from 1967-68/1968-69 onwards. Even a visual examination of the time series data reveals that the incidence of poverty measured in terms of the head count ratio or Sen's poverty index except for the late 50s generally showed an upward tendency and reached peak levels during 1965-68 and thereafter reversed to record a fall. The post-1969-70 period also marked an important shift in the policy environment towards the poor when following the split in the ruling Congress Party Indira Gandhi in a bid to outwit her political opponents and fulfil her 'Garibi Hatao' (Banish Hunger) slogan sought to give a pro-poor content to her party's programmes. Recognition regarding the limitations of the market mechanism in reaching the fruits of development to the poor and also political and economic compulsions, the post-1969-70 phase witnessed a spurt in poor-centred welfare programmes through direct institutional interventions such as Integrated Rural Development Programme, National Rural Employment Programme, Food for Works Programmes, Employment Guarantee Scheme, Mid-day Meal Schemes for school children, etc, focusing on improving their asset base, employment generation and providing access to basic needs, etc. Thus there are strong theoretical and empirical grounds to treat the period from 1957-58 to 1986-87 as consisting of two distinct broad phases, Period I from 1957-58 to 1968-69 and Period II from 1969-70 to 1986-87, as indicated earlier.

Now regarding the mechanics of our analysis. For fitting trends we have two options. One is to fit separate trends for the two sub-periods. But with only limited observations available we will be left with few degrees of freedom for econometric analysis if we fit trends thus. Moreover, this would also imply that our observations pertain to two different samples. Using an alternate methodology which overcomes these shortcomings we propose to estimate the trends for rural poverty in India, using the following model, viz.,

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$g_t = a_0 + a_1 t + a_2 d + a_3 (d.t)$

where, g = Head count ratio or Sen's poverty index; t = Time; d = Dummy variable where d=0 for Period I; and d=1 for Period II; d.t = Product of dummy and time.

The advantage of this model is in terms of more degrees of freedom at our disposal for econometric analysis; inferences about periodwise trends can be drawn from a single sample rather than two (as per the alternate methodology posed earlier), and more important it enables us to see whether the slope itself has undergone a change over the two periods. Linear trends using Ordinary Least Squares (OLS) method have been used to estimate the trends in rural poverty at all-India level and across states. The estimates for Periods I and II presented in Table 2 are derived from the estimated linear equations using the above model. The trends are calculated using two alternate measures of poverty, viz, the head count ratio and the Sen's poverty index, as mentioned earlier.

The results presented in Table 2 are quite interesting. Contrary to Ahluwalia's findings and those of other researchers who observed no underlying time trends in the incidence of rural poverty in India and for most states, our results show otherwise. Not only is there a distinct time trend in rural poverty in India but also while this trend was positive and significant in Period I, it was negative and significant in Period II. This is true irrespective of whether poverty is measured in terms of the head count ratio or the Sen's poverty index. Further the rate of decline in the incidence of rural poverty in the latter period was much higher than the rate of increase in rural poverty in the preceding period. These observations hold true at the state level too with most states reporting positive trends in rural poverty during Period I and negative trends in Period II with respect to both indices as well as the rates of decline in rural poverty in Period II being higher than the rates of increase in rural poverty in Period I. These trends (positive or negative) were statistically significant too in most cases. Interestingly three states, Andhra Pradesh, Tamil Nadu and Punjab reported negative trends in both periods. While our results indicate negative trends in rural poverty for India as a whole and across states after 1969-70, it may be noted that the absolute poor still constitute a significant component in India.

III
Factors Affecting Rural Poverty

An obvious question that arises is as to what are the factors accentuating or reducing rural poverty in India and across states. This is our concern in the remaining part of our analysis. Given the importance of the agricultural sector in the Indian economy—contributing as it does to about 40 per cent of the GNP and providing sustenance to more than two-thirds of the people—it is obvious that the fortunes of the rural poor in India are intrinsically linked to that of the agricultural sector. Ahluwalia's study cited earlier observed a close negative association between the incidence of rural poverty in India and agricultural growth. Agriculture impacts on the poor in more ways than one. A higher agricultural output helps lower food prices as well as improve food availability both of which are to the advantage of the poor. It will not only generate employment opportunities in the agricultural sector but also through its linkage effects spur growth in the non-agricultural sector too thereby creating income earning opportunities. Agricultural growth on the whole will give a fillip to overall economic development raising agricultural incomes. However, if agricultural growth involves a shift from labour-intensive crops and technologies to labour saving ones this could as well work to the detriment of the rural poor rather than beneficial since wages from agricultural employment constitute a major component of the incomes of the poor. Evidences from India, however, suggest that on the whole the green revolution resulted in a net increase of labour use and real wage rates [Dantwala 1985]. Some, however, feel that in the context of the institutional and structural constraints characteristic of most low income countries including India the beneficial effects of growth would be mostly expropriated by the non-poor [cf Griffin and Ghose 1979]. The trickle-down effect implied by Ahluwalia's finding of a negative correlation between agricultural growth and the incidence of rural poverty was thus

TABLE 2: TRENDS IN RURAL POVERTY IN INDIA: STATEWISE AND FOR ALL-INDIA, 1957-58 TO 1986-87
Period I—1957-58 to 1968-69; Period II—1969-70 to 1986-87

States		Dependent Variable: Head Count Ratio		Dependent Variable: Sen's Poverty Index	
		Constant	Time	Constant	Time
Andhra Pradesh	I	0.5090*	−0.0053***	0.1927*	−0.0027
	II	0.6949	−0.0189*	0.2645**	−0.0079**
Assam	I	0.2084*	+0.0156*	0.0418***	+0.0058**
	II	0.4617**	−0.0077**	0.1452**	−0.0024*
Bihar	I	0.4767*	+0.0140**	0.1857*	+0.0103**
	II	0.6785	−0.0071**	0.3195	−0.0048**
Gujarat	I	0.3645*	+0.0109***	0.1224*	+0.0061
	II	0.3075**	−0.0160*	0.2481*	−0.0071*
Karnataka	I	0.3611*	+0.0206*	0.1232*	+0.0118*
	II	0.6590*	−0.0128*	0.3005*	−0.0072*
Kerala	I	0.5493*	+0.0090***	0.2490*	+0.0040
	II	1.0170*	−0.0290*	0.4897*	−0.0155*
Madhya Pradesh	I	0.4404*	+0.0074	0.1782*	+0.0038
	II	0.7453**	−0.0139**	0.3244***	−0.0071***
Maharashtra	I	0.4911*	+0.0065	0.1819*	+0.0036
	II	0.6854***	−0.0118**	0.2413	−0.0039***
Orissa	I	0.5932*	+0.0039	0.2776*	−0.0001
	II	0.8312**	−0.0131**	0.4401**	−0.0097**
Punjab and Haryana	I	0.2294*	+0.0048	0.0790	−Negligible
	II	0.3618**	−0.0097*	0.1182	−0.0038***
Haryana+ only	I	0.2160*	+0.0118	0.0500**	+0.0100
	II	0.3033	−0.0084	0.0966***	−0.0036***
Punjab+ only	I	0.3169*	−0.0157	0.0200	+0.0180
	II	−0.2374	−0.0077	0.0711	−0.0030***
Rajasthan	I	0.3143*	+0.0028	0.1153*	+0.0017
	II	0.5617*	−0.0141*	0.2650*	−0.0080*
Tamil Nadu	I	0.6004*	−0.0017	0.2937*	−0.0057***
	II	0.7634***	+0.0145***	0.3175	−0.0068
Uttar Pradesh	I	0.3938*	+0.0125***	0.1526*	+0.0049
	II	0.5907	−0.0098**	0.1863	−0.0026
West Bengal	I	0.5124	+0.0167**	0.1785*	+0.0115**
	II	0.9424*	−0.0178*	0.4545*	−0.0102*
All-India	I	0.4442*	+0.0055	0.1558*	+0.0048**
	II	0.6615**	−0.0135*	0.2823**	−0.0069*

Notes: (1) These equations are derived from the estimated equations using the model mentioned in the text. The trends computed here are linear trends.

(2) *, **, ***—Statistically significant at 1, 5 and 10 per cent levels of significance. In the equations for Period II derived from the estimated equations, the significance of the constant term is inferred on the basis of the statistical significance of the dummy variable in the estimated equation, while that of the time trend variable is inferred on the basis of the statistical significance of the (d.t) variable.

(3) + – Trends computed separately for Punjab and Haryana are based on data for the period 1964-65 to 1986-87; Period I—1964-65 to 1968-69 and Period II as in all other cases.

Sources: The basic data for the above analysis were taken from Mahendra Dev et al (1990) and Ahluwalia (1978).

challenged by a number of researchers [cf Rajaraman 1975; Griffin and Ghose 1979]. However, these observations are based on weak theoretical or empirical support. To cite an instance, Rajaraman's empirical findings implying a weak causal link between agricultural growth and rural poverty was based on just 10 observations of which only four pertain to the post-green revolution period.

Another factor influencing the incidence of poverty is inflation. Inflation acts like a regressive tax hitting hard the poor leading to a deterioration in their entitlements and real incomes [Sen 1982; see also Sen in Mellor and Desai 1985]. Agricultural growth itself has an in-built inflationary or deflationary effect. A bumper harvest tends to depress prices whereas a bad harvest tends to push them up. Other domestic and external factors too such as demand-supply situation, import/export decisions, uncertainty, etc, also affect prices. Since food constitutes a predominant portion of the consumption basket of the poor it is the food prices which cause most anxiety to the poor. Dharm Narain's study [*vide*, Mellor and Desai 1985] highlighted the role of nominal prices in affecting the incidence of rural poverty. However, Narain's analysis was restricted only to all-India data, the head count ratio and absolute prices. There is a need to validate this further using data for regional disaggregates, alternate measures of poverty (say, the Sen's poverty index) and prices (relative prices too in addition to absolute prices), including the lagged effects of agricultural output and price on rural poverty. These are attempted in our analysis.

Population growth, poverty and environment are closely inter-linked. Rapid population growth impacts on poverty in many ways. It can offset the beneficial effects of economic growth on poverty as experienced by some of the south Asian countries. Moreover, poverty intertwined with rapid population growth exercises intense pressure on scarce environmental resources resulting in environmental degradation through overexploitation of fragile resources—all of which have an adverse effect on poverty. The role of the above factor on rural poverty too needs to be probed into.

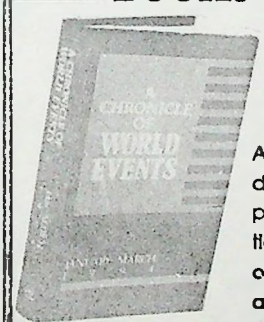
A factor which is believed to have worked to the advantage of the poor in India particularly after 1969 is the plethora of poor-centred welfare programmes through direct institutional interventions. There is hardly any empirical attempt to test the influence of these programmes on rural poverty. Of the various institutional interventions, provision of subsidised food through a public distribution system (PDS) assumes importance for the poor. However, except in Kerala and other southern states the programme is largely urban-oriented, though it is gradually being extended to rural areas in some of the other states too. The specification of this variable posed problems for our analysis. Except for one year (1986-87) where the NSS have furnished data on commoditywise actual purchases from PDS to total purchases separately for rural and urban areas, time series data on PDS are available only in the form of PDS offtake aggregated for the rural and urban sectors. Rather than using a time trend variable (for a critique of this procedure, see below) to account for this factor we preferred to use the PDS variable as limited by the data availability expressing it in the form of PDS offtake to total net availability of foodgrains or alternatively the fair price shops per lakh of population except for the cross-sectional analysis pertaining to 1986-87 where actual data on PDS purchases to total purchases of foodgrains for rural areas have been used. Here only rice and wheat which account for bulk of the cereal purchases through PDS have been considered.

The role of other factors, viz, the rural consumption levels, inequality in rural consumption (a proxy for income inequality), and infrastructure development too need to be incorporated in our analysis.

It has also been customary for some researchers [cf Ahluwalia 1978; Rao and Mishra 1981; Narain *vide* Mellor and Desai 1985; and Saith *vide*, Bhattacharya et al 1991] to include a time trend variable as an additional explanatory variable in poverty functions to serve as a cover-all variable for all other time-related factors influencing poverty not explicitly considered in a given model. This implicitly assumes that all such time-related factors not accounted for have a unidirectional influence on poverty which is questionable. In fact, while some such time-related factors, for e g, rural population pressure on agricultural lands, could be expected to exercise an upward-push effect on poverty, others such as PDS offtake are expected to exercise a downward-push effect on poverty. The inclusion of a separate time trend variable in these circumstances is questionable and could even affect the estimates of other explanatory variables.

Keeping the above factors in view and the limitations of data, we propose to examine the causal factors behind rural poverty in India between 1957-58 to 1986-87. The analysis is at two levels—a time series analysis at all-India level and a cross section analysis of inter-state data. To test the robustness of our results the cross-section analysis of inter-state data is attempted at three points of time, viz, 1960-61, 1970-71 and 1986-87. While 1960-61 falls within Period I, 1970-71 and 1986-87 belong to Period II. Though some have expressed their reservations about cross-sectional analysis [cf Srinivasan, in Mellor and Desai 1985] others have felt that it is important in itself as it offers important perspectives on the varying conditions under which poverty occurs [Mellor and Desai 1985]. Moreover, some of the estimation problems one faces in time-series data (e g, multicollinearity, auto-correlation) pose a less serious problem in cross section data.

BOOKS THAT MATTER



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The variables for our analysis are as follows:

Dependent Variable

Head count ratio (in per cent) or alternatively the Sen's poverty index.

Independent Variables

To study the impact of agricultural growth (or performance), prices, rural population pressure on environmental resources, PDS, rural consumption levels and inequality, and infrastructure development on rural poverty the following variables are considered:

i) Agricultural Output/Performance variables (four alternate specifications):

NDPAGRI—Real Net Domestic Product from Agriculture at 1960-61 prices per head of rural population.

NDPPRM—Real Net Dometic Product from Primary Sector (excluding mining and quarrying) at 1960-61 prices per head of rural population.

NDAGRI—Index of Agricultural Production per head of rural population.

NDFDGR—Index of Foodgrains Production per head of rural population.

ii) Price Variables (three alternate specifications):

RDPR—Consumer Price Index for Agricultural Labourers for Food Items (where 1960-61 = 100).

RELFDPR—Relative Food to General Consumer Price Index for Agricultural Labourers (1960-61 = 100).

RELCWPI—Relative Cereal to General Wholesale Price Index.

iii) Population Pressure on Environmental Resources:

RPPAL—Rural Population Pressure on Agricultural Lands expressed in lakh population per ha of gross cropped area (so as to take note of land augmenting technologies which became prominent in Period II)

iv) Institutional Intervention (PDS):

PDS—Proportion of PDS Offtake to Total Net Availability of Foodgrains

PDSFP—Fair Price Shops per lakh of population.

PDSr—Proportion of Rice Purchased from PDS to Total Rice Purchases in Rural Areas.

PDSw—Proportion of Wheat Purchased from PDS to Total Wheat Purchases in Rural Areas.

The last two variables were available only for 1986-87 and were used for the cross-section analysis for the year 1986-87.)

v) Consumption Levels/Consumption Inequality:

INEQRC—Lorenz Ratio of Rural Consumption.

AVPCEG—Average Monthly Real per Capita Consumer Expenditure of the General Rural Population.

AVPCEBD—Average Monthly Real Per Capita Consumer Expenditure of the Bottom Decile of the Rural Population.

vi) Infrastructure Development:

INFDEVIND—Infrastructure Development Index as constructed by the Centre for Monitoring Indian Economy (CMIE), Bombay.

Not all these variables have been included in an equation at a time because of the constraint of limited observations. Further, while some variables, viz, NDPAGRI, RELFDPR, PDS, PDSFP, INEQRC were common to both the time series and cross-section analyses, others, viz, NDPPRM, INDAGRI, INDFDGR, RELCWPI, AVPCEG and AVPCEBD were included only in the time series analysis; similarly FDPR, RPPAL, PDSr, PDSw and INFDEVIND figured only in the cross-section analysis.

In addition, the agricultural output and price variables indicated above were also used in their lagged forms. One could take a stand that the level of poverty in a given year is not only determined by that year's agricultural performance but also that of the previous year. A good crop not only enables a poor household to repay past debts but also build up reserves to meet unforeseen eventualities. Similarly inflation too has a lagged effect. For instance, given the low incomes of the poor a steep rise in prices of essentials may force them to borrow in order to arrest a deterioration if not maintain their consumption standards, the reverberations of which will be felt in subsequent years as well. To take note of these lagged effects, an alternate specification of the agricultural output and price variables is introduced which is computed thus: (t + t-1)/2. Thus in all we have four sets of equations. In one set the dependent variable is the head count ratio, in another the Sen's poverty index. Within these two categories, again one set of equations are without lagged variables and another set with lagged variables.

Multiple linear regressions using OLS technique were used to estimate the coefficients. A few variables, viz, AVPCEG, AVPCEBD and RELCWPI had to be dropped from the analysis as these were found to be highly correlated with other explanatory variables. The PDS variable was also found to be strongly correlated with the price variable RELFDPR and its lagged version in the time series analysis. In such a situation it is common among researchers to drop one of the two collinear variables. However, this could affect the estimates of the retained variables [Koutsoyiannis 1977] particularly if it is an important one. Using a procedure akin to Frisch's confluence analysis suggested by Koutsoyiannis which

TABLE 3: DETERMINANTS OF RURAL POVERTY IN INDIA, 1957-58 TO 1986-87

Equation No	Estimated Linear Equations	R^2	DW Statistic
Dependent Variable: Head Count Ratio (in per cent):			
	Without Lagged Variables:		
1	125.8248* – 0.4643 NDPPRM* + 0.0328 RELFDPR	0.64	1.8014
2	84.5681* – 243.7478 INDAGRI* + 0.1733 RELFDPR	0.51	1.5947
3	70.6672** – 206.6404 INDFDGR* + 0.2185 RELFDPR	0.49	1.5947
4	113.4423** – 0.4599 NDPAGRI* + 0.0276 RELFDPR + 29.3922 INEQRC	0.58	1.7118
5	118.4528** – 0.4655 NDPPRM* + 0.0515 RELFDPR + 18.5776 INEQRC	0.64	1.8479
6	69.2002 – 206.6731 INDFDGR* + 0.2222 RELFDPR + 3.6017 INEQRC	0.49	1.4335
	With Lagged Variables:		
7	112.9312* – 413.3022 INDAGRI* + 0.2685 RELFDPR***	0.80	1.5247
8	98.0312* – 323.4192 INDFDGR* + 0.2075 RELFDPR	0.79	1.5369
9	180.4665* – 0.8017 NDPAGRI* – 0.5094 PDS*** + 26.3342 INEQRC	0.84	1.7635
10	183.3582 – 0.7759 NDPPRM* – 0.4129 PDS + 15.7246 INEQRC	0.85	1.6617
11	99.9550* – 416.7543 INDAGRI* + 0.2980 RELFDPR** + 35.2317 INEQRC	0.80	1.6809
12	96.7555* – 323.4634 INDFDGR + RELFDPR + 3.3385 INEQRC	0.79	1.5474
Dependent Variable: Sen's Poverty Index:			
	Without Lagged Variables:		
13	0.5730* – 0.0028 NDPAGRI* + 0.0008 RELFDPR	0.72	1.8680
14	0.5659* – 0.0028 NDPPRM* + 0.0010 RELFDPR	0.76	2.0353
15	0.3318** – 1.5254 INDAGRI*+ 0.0019 RELFDPR***	0.67	1.6658
16	0.2464** – 1.3053 INDFDGR* + 0.0022 RELFDGR**	0.66	1.5626
17	0.5536** – 0.0028 NDPAGRI* + 0.0010 RELFDPR + 0.0500 INEQRC	0.72	1.8854
	With Lagged Variables:		
18	0.8566* – 0.0040 NDPAGRI* + 0.0004 RELFDPR	0.81	1.0839
19	0.8443* – 0.0039 NDPPRM* + 0.0003 RELFDPR	0.82	1.5979
20	0.4703* – 2.3514 INDAGRI* + 0.0024 RELFDPR*	0.86	1.6559
21	0.3872* – 1.8503 INDFDGR* + 0.0020 RELFDPR*	0.86	1.6266
22	0.9290* – 0.0043 NDPAGRI* – 0.0018 PDS + 0.0271 INEQRC	0.84	1.7173
23	0.7796* – 0.0041 NDPAGRI* + 0.0002 RELFDPR + 0.2399 INEQRC	0.82	1.5921
24	0.7932* – 0.0040 NDPPRM* + 0.0004 RELFDPR + 0.1522 INEQRC	0.83	1.6222
25	0.4543* – 2.3557 INDAGRI* + 0.0024 RELFDPR* + 0.0435 INEQRC	0.86	1.6640

Notes: (1) For a description of the independent variables refer the text.

(2) *, **, ***—Statistically significant at 1, 5 and 10 per cent levels of significance.

(3) In the equations with lagged variables only the agricultural output and price variables are used in their lagged forms; the other variables in this set of equations are not lagged.

enables one to test for the presence of multicollinearity and also adjudge which of such variables to include or drop, it was noted that inclusion of PDS resulted only in a slight improvement in the R^2. Hence in the time series analysis wherever price was included as an explanatory variable, the PDS variable was excluded. However, because of our interest in knowing the nature of relationship between PDS and the incidence of poverty, we also fitted a set of equations excluding the price variable but including PDS. Only those equations which gave meaningful results have been presented. These estimated equations for the time series analysis are presented in Table 3.

The results are quite interesting. As evident while agricultural output variables are negatively correlated with the incidence of rural poverty measured in terms of either the head count ratio or the Sen's poverty index, the relative food price variable is positively correlated with poverty. The coefficients are statistically significant in most cases. These results are in conformity with the findings of Ahluwalia and Narain. More noteworthy is that while the PDS variable has the expected negative sign, the inequality in rural consumption (a proxy for income inequality) is positively correlated with poverty. This is true of both sets of equations where we have used or not used lagged variables as well as where the dependent variable are alternatively the head count ratio and the Sen's poverty index. Thus our results suggest that while agricultural growth and PDS tend to reduce rural poverty, price and inequality in rural consumption which are positively correlated with poverty tend to push it up. The R^2s of most of the equations are not only quite high but also they are much higher in the case of the equations using lagged variables, indicating the important role of dynamic factors in affecting the incidence of rural poverty.

To analyse factors affecting the inter-state incidence of rural poverty in India we now turn to the results of our cross-section analysis presented in Table 4. Here again while agricultural growth was negatively correlated with poverty, price variable was positively correlated with poverty. The PDS variable was negatively correlated with poverty. Interestingly RPPAL and INEQRC were positively correlated with poerty indicating that rural population pressure on agricultural lands as well as inequality in rural consumption exercise an upward-push effect on poverty. Infrastructure development index was negatively correlated with poverty, as it should be. Again, as earlier, these observations generally hold true for the four sets of equations, i e, with/without lagged variables and where the dependent variable are alternatively the head count ratio and the Sen's poverty index. The R^2s of most of the equations were quite high. Thus our cross-section analysis reveals that while the incidence of rural poverty across states is negatively correlated with agricultural growth, PDS and the level of infrastructure development, it is positively correlated with price, rural population pressure on agricultural lands and inequality in rural consumption.

IV
Conclusions

Contrary to the findings of other researchers of there being no underlying time trends in rural poverty in India, our evidence shows that there were distinct time

TABLE 4: DETERMINANTS OF INTER-STATE INCIDENCE OF RURAL POVERTY IN INDIA—A CROSS SECTION ANALYSIS FOR 1960-61, 1970-71 AND 1986-87

Equation No	Estimated Linear Equations	R^2
	Year 1960-61	
	Dependent Variable: Head Count Ratio (in per cent)	
	Without Lagged Variables	
1	−87.6262 − 0.0639 NDPAGRI*** + 1.4284 FDFR + 4.3046 RPPAL − 0.6847 PDS	0.53
2	−30.8533 − 0.0760 NDPAGRI** + 9.9978 INEQRC + 0.8952 FDPR + 2.1655 RPPAL	0.50
	Dependent Variable: Sen's Poverty Index	
	Without Lagged Variables	
3	−0.8299 − 0.0004 NDPAGRI*** + 0.0107 FDPR*** + 0.0264 RPPAL − 0.0050 PDS	0.59
4	−0.4209 − 0.0005 NDPAGRI** + 0.1121 INEQRC + 0.0067 FDPR + 0.0108 RPPAL	0.55
	Year 1970-71	
	Dependent Variable: Head Count Ratio (in per cent)	
	Without Lagged Variables	
5	10.8175 − 0.0555 NDPAGRI** + 111.9093 INEQRC + 0.1126 FDPR + 2.8090 RPPAL − 0.1607 PDSFP	0.70
6	0.9489 − 0.0560 NDPAGRI** + 130.1453 INEQRC + 0.2424 RELFDPR + 3.1941 RPPAL − 0.1120 PDSFP	0.69
	With Lagged Variables	
7	−66.1861 − 0.0506 NDPAGRI** + 1.1489 RELFDPR + 4.2802 RPPAL − 0.2267 PDSFP	0.63
8	4.5138 −0.0590 NDPAGRI* + 149.0907 INEQRC*** + 0.0785 FDPR + 2.6643 RPPAL	0.70
9	5.6970 − 0.0566 NDPAGRI** + 130.8710 INEQRC + 0945 FDPR + 3.1153 RPPAL − 0.0756 PDSFP	0.71
	Dependent Variable: Sen's Poverty Index	
	Without Lagged Variables	
10	−0.1514 − 0.0002 NDPAGRI + 0.0020 FDPR*** + 0168 RPPAL − 0.0022 PDSFP***	0.61
11	0.2173 − 0.0002 NDPAGRI*** + 0.6703 INEQRC + 0.0014 FDPR + 0.0156 RPPAL − 0013 PDSFP	0.66
	With Lagged Variables	
12	−0.1750 − 0.0003 NDPAGRI** + 0.0022 FDPR**	0.52
13	−0.2551 − 0.0003 NDPAGRI** + 0.9191 INEQRC** + 0.0012 FDPR − 0.0131 RPPAL	0.66
14	−0.2470 − 0.0002 NDPAGRI*** + 0.7950 INEQRC + 0.0013 FDPR + 0.0162 RPPAL − 0.0005 PDSFP	0.66
	Year 1986-87	
	Dependent Variable: Head Count Ratio (in per cent)	
	Without Lagged Variables	
15	12.2324 − 0.0256 NDPAGRI** + 0.0372 FDPR	0.43
16	29 8869 − 0.1595 INFDEVIND** + 0.0202 FDPR + 1.1758 RPPAL − 0.1263 PDSr	0.41
	With Lagged Variables	
17	41.5414 − 0.0329 NDPAGRI* + 0.0052 FDPR + 0.0219 RPPAL − 0.2959 PDSr***	0.62
18	22.0765 − 0.0322 NDPAGRI* + 0.2062 RELFDPR + 0 0565 RPPAL − 0.2950 PDSr***	0.62
	Dependent Variable: Sen's Poverty Index	
	Without Lagged Variables	
19	0.0271 − 0.0001 NDPAGRI** + 0.0002 FDPR	0.43
20	0.1033 − 0.0007 INFDEVIND** + 0.0001 FDPR + 0.0054 RPPAL − 0.0006 PDSr	0.41
	With Lagged Variables	
21	0.1567 − 0.0001 NDPAGRI* + 0.00002 FDPR+ 0.0001 RPPAL − 0.0014 PDSr***	0.62
22	0.0651 − 0.0001 NDPAGRI* + 0.0010 RELFDPR + 0.0003 RPPAL − 0.0013 PDSr***	0.62

Notes: (1) For a description of the independent variables refer the text.
(2) *, **, ***—Statistically significant at 1, 5 and 10 per cent levels of significance.
(3) In the equations with lagged variables only the agricultural output and price variables are used in their lagged forms; the other variables in this set of equations are not lagged.

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Population, Poverty and Employment in India

T N Krishnan

This paper represents a preliminary attempt to examine the successes and failures of the Indian economy in integrating population issues with development planning and what were, or would be, the consequences of rapid population growth for the alleviation of poverty in the country.

The first section of the paper discusses the momentum of population growth since independence and examines the prospects of reducing its growth rate in future. This section analyses the crucial role of social and human development in influencing fertility rates and shows how little emphasis was placed on promoting these objectives in Indian planning.

The second section is devoted to a detailed examination of the relationship between foodgrains production and population growth. This section examines the factors that determine the inter-state differences in foodgrains consumption and evaluates the role of the public distribution system in lessening the inequalities in consumption.

The third and final section presents a broad analysis of a few important questions relating to labour market adjustments in response to population growth. This section touches upon the questions of the inadequacy of the concepts used in measuring employment and unemployment within the institutional and social structure prevailing in different parts of the country, the relationship between agricultural wages and agricultural productivity and the likely pressure on employment generated by the enormous increase in labour force during the next 35 years.

FORTY-FIVE years after attaining independence, in spite of notable achievements, unrelenting population growth, pockets of acute poverty and tardy growth in employment in modern industry continue to plague the Indian economy. The Indian planning strategy was precisely designed to tackle these very issues. India was the first country in the world to recognise the perils of unmitigated population growth and to proclaim an official policy to bring down the rate of population growth. However, throughout this period, the annual population growth rate exceeded 2 per cent. The population of India rose from 361 million in 1951 to 844 million in 1991. Why did nearly 40 years of planning fail to bring down the rate of population growth? What went wrong with the elaborate planning exercises that paid particular attention to social objectives and sectoral consistencies? Nonetheless, one marvels at the resilience and performance of certain segments of the Indian economy in coping with the excessive burden imposed on it by population growth and how it managed to feed its bulging population and also in absorbing millions of persons who entered the labour force. Food output certainly kept pace with population growth and, at least in rural areas, unemployment did not appear to have risen significantly or at all in response to population growth. Therefore, one would be curious to know how the Indian economy coped with its population increase and what were the factors that aided this adjustment to demographic pressures. This paper represents a preliminary attempt to examine the successes and failures in integrating population issues with Indian development planning and what were or would be the consequences of rapid population growth for the alleviation of poverty in the country. The first section discusses the momentum of population growth since independence and examines the prospects of reducing its growth rate in future. This section analyses, and provides empirical support, to the crucial role of social and human development in influencing fertility rates and shows how little emphasis was placed on promoting these objectives in Indian planning.

The second section is devoted to a detailed examination of the relationship between foodgrains production and population growth. Foodgrains is the main source of calories in the Indian diet, providing as much as two-thirds or more of the total calorie intake among the lowest income groups. This section examines the factors that determine the inter-state differences in foodgrains consumption and evaluates the role of the public distribution system in lessening the inequalities in consumption.

The third and final section represents a broad analysis of a few important questions relating to the labour market adjustments in response to population growth. This section touches upon the questions of the inadequacy of the concepts used in measuring employment and unemployment within the institutional and social structure prevailing in different parts of the country, the relationships between agricultural wages and agricultural productivity and the likely pressure on employment generated by the enormous increase in labour force during the next 35 years.

I
Planning and Population Growth

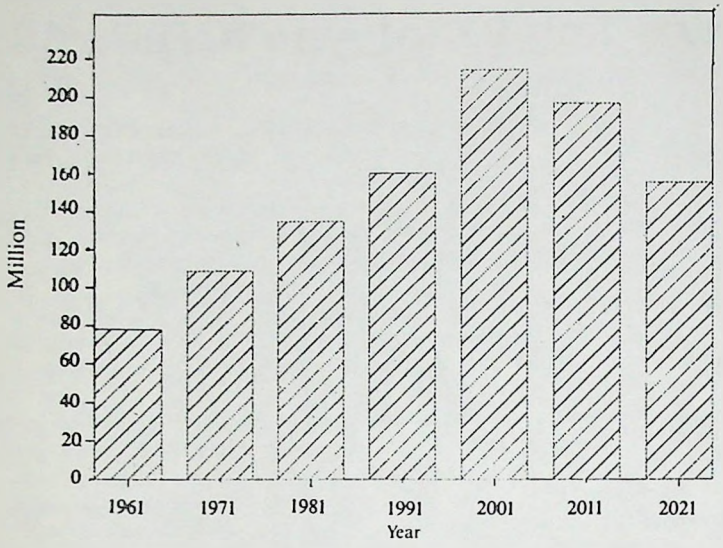
Forty-five years after independence, the population of India has grown to nearly two and a half times its size at the time of independence. The latest population census counted 843.9 million Indians on March 1, 1991 [Premi 1991:1]. During the next 35 years, it is estimated that an additional 600 million will be added to this number [United Nations 1991:208]. India's population is projected to exceed 1,000 million by the year 2000 when it would constitute 28 per cent of Asia's population or nearly 17 per cent of world population.

It is a matter of great concern that nearly 40 years of planned development has failed to initiate any retardation in India's population growth. During this entire period, the annual population growth rate averaged 2.1 per cent. Though the 1991 population census indicated that the decadal growth rate had marginally declined from 24.66 per cent to 23.50 per cent, it is not of much consolation. In every decade since 1951, the net additions to total population had been rising steadily, from 77.68 million during 1951-61 to 160.60 million during 1981-91 [Premi 1991:6]. The latest United Nations population projections indicate that the net addition to the 1991 population during the next decade would be close to 215 million even with a marginal rate of decline in growth rate [United Nations 1991:208]. The net addition to India's population is expected to fall below that of 1981-1991 only in the second decade of the next century (Figure 1).

Birth and Death Rates

The rate of growth of population reflects the differences in the rates of change in birth and death rates. Demographic transition implies changes in all these rates; it disturbs the long-term static condition where both birth and death rates are high but stable and the corresponding population growth rate is low. In the initial phase of transition when birth and death rates begin to decline, the

FIGURE 1: DECADAL ADDITIONS TO POPULATION
1961 TO 2021



latter declines at a faster rate thus raising the population growth rate. The birth and death rates were estimated at 44 and 26 per 1,000 population for the decade 1951-61 but declined to 37 and 15 during 1971-81 [Premi 1991:23]. The birth rate remained unchanged at 34.8 per 1,000 population during the period 1977-1984. The estimates of birth and death rates are 30.6 and 10.3 in 1989 [Registrar General, June 1991].

The all-India birth and death rates conceal the wide disparities between regions and states within the country. Birth rate exceeds 39 per 1,000 population in about 20 per cent of the total number of districts (90 districts) in the country [*The Hindu*, March 21]. Table 1 provides the state-wise estimates of birth and death rates based on three-year moving averages for two periods, namely, 1979-81 and 1987-90. Birth and death rates are lowest in Kerala and Goa and highest in the BIMARU states. The table also gives the rate of decline in birth and death rates for each state during the entire period. While death rates have declined in most states by a much higher proportion, births show much lower rates of decline. Therefore the backward states still suffer from higher rates of population growth.

KERALA-GOA MODEL

Kerala and Goa, among the states in India, have successfully brought down the birth rates during the past 35 years. The birth rate in Kerala declined from 30.5 per 1,000 population during 1971-73 to 20.7 during 1987-1989. Similarly, birth rate declined from 25.4 to 17.5 in Goa for the same period [Registrar-General, June 1991]. Therefore it is not necessary to look elsewhere to learn how a rapid demographic transition could be initiated within India. The case histories of Goa and Kerala demonstrate that it is possible to reduce the birth rate from 35 to 20 per thousand in a period of about 25 years. But this requires determined action on a number of fronts.

The process of demographic transition is a result of the interaction of a number of diverse aspects of psychological, social, economic, technological and institutional factors. Essentially it involves the collective decision of a society to shift from a large family size norm to a small family size norm. The earliest explanations attributed this shift to modernisation, urbanisation and industrialisation. However, Kerala and Goa are neither industrialised nor urbanised to the extent necessary to explain the decline in their birth rates. While Goa's demographic transition remains almost unexplored, Kerala has been studied in considerable depth [cf Krishnan 1976, Mari Bhat, et al 1991]. A comparison of the trends in birth rates and the possible factors in both states seem to indicate that similar factors have contributed to their demographic transition.

A recent view stresses psychological modernity as an important factor contributing to health and demographic transitions [Mechanic 1992]. The psychological factors relate to one's attitude to the practice of family limitation, the desire underlying the decision on the number of children one wishes to have, the attitudes towards health care and the ability to handle illnesses of children, etc. These psychological changes may be closely related to the historical and expected probabilities of child survival in a given society. If parents are convinced that the survival probabilities are high then they may decide to have fewer number of children. Therefore, the preconditions for a fall in birth rates are (1) the access to the means to reduce infant and child mortality, and (2) measures leading to changes in psychological and social attitudes towards health care and family size.

Reductions in infant and child mortality depend upon the availability and quality of maternal and child health care, the extent and quality of medical attention during child birth and the coverage of protection of children through immunisations from infections and other childhood diseases. Basically it is the access to health care, attitudes towards dealing with illness and child care that finally help to bring down the infant mortality rate. Access to health care involves three components: (a) locational access; (b) economic access; and (c) social access. Locational access is particularly important for poorer income groups since it can increase their opportunity cost of treatment. For instance, if an agricultural labourer has to seek medical assistance in a far off town, he might be required to forego a day's earnings which might be his only source of income. In such situations he might either hesitate or even give up seeking medical assistance for himself or his family unless it was an emergency. Most states in India have paid scant attention to this question. In most states nearly three-fourths of the total number of hospital beds and the attendant medical facilities are located in urban areas and in large towns (Table 2). The number of beds per lakh of rural population clearly indicate that the extent of availability of health facilities are almost similar in both Goa and Kerala. Therefore, we find that their infant mortality rates are also similar. It is hardly necessary to spell out the arguments in favour of economic access. Provision of free or subsidised health care on the basis of income is an accepted principle in most societies. In our country social access assumes great significance because of our past history of denial of such services to certain castes and social groups.

Attitudinal changes to health and family size seem to be determined by levels of education and the spread of literacy especially among women. Studies from different countries show that the number of children born to a woman declines as her educational level rises. So does infant mortality rate. Thus access to health and female education appear to be the most critical factors in birth rate decline. Female education not only initiates changes in one's attitude towards family size and health of children but also enables women to improve their status within family and in society. Both in Kerala and Goa their demographic transitions were preceded by health and educational transitions. In Kerala, these changes were first initiated in the princely states of Travancore and Cochin at the beginning of the 19th century but with the formation of the Kerala state it was also demonstrated that the implementation of

similar policies and programmes in Malabar, which had higher birth and mortality rates, yielded identical results. The distribution of beds under health care points to the superior positions of Goa and Kerala. Rural populations have access to health in these two states and this is reflected in improved maternal and child health care and in lower infant and child mortality rates. An evaluation of universal immunisation programme undertaken in 1989 indicated that the proportion of pregnant mothers and infants immunised were the largest in Goa and in Kerala. The proportion of pregnant women receiving tetanus toxoid immunisation was 97.6 in Quilon district in Kerala, 92.3 in north Goa, 78.6 in Pune district, 28.1 in Katihar district of Bihar and 22.38 in Kanpur Dehat district of Uttar Pradesh. Similarly, the proportion of children immunised without measles was 83.6 in north Goa, 80.5 in Quilon, 71.1 in Pune, 4.3 in Katihar and 11.4 in Kanpur Dehat. These rates of protection of pregnant mothers are reflected in the proportions of neo-natal mortality attributed to neo-natal tetanus. 55 and 70 per cent of neo-natal mortality were due to tetanus infection in Katihar and Kanpur Dehat districts while there was no death due to this factor in Goa, Kerala and Pune [Gupta and Murali 1989:212]. Access to clinics and primary health centres is an important factor in pregnant women receiving ante-natal care and in the proportion of children being immunised. Such access ensures that child births occur under the supervision of either medical personnel or trained birth attendants which contribute to a significant reduction in maternal and infant mortality rates. For instance, in the rural sector of Kerala 40 per cent of births took place in medical institutions in 1978 but rose to 83 per cent by 1988. Along with other factors this too might have contributed to the decline in peri-natal mortality [Krishnan 1991a].

Social access was also a key factor in the relative spread of health care in the states of Travancore and Cochin compared to Malabar in its early period of development. In the initial period, access to health and education were denied to backward communities and the then untouchable communities. However, the emergence of a few educated persons from these communities enabled them to agitate and organise for the opening up of these facilities to persons belonging to their communities too. These agitations and demands begun at the end of the last century in Travancore and Cochin finally resulted in providing access to education and health to the untouchable communities [Kabir and Krishnan 1992].

The social and psychological attitudes towards health care and population planning are essentially shaped by education. Goa and Kerala demonstrate that it is female education that is vital for these changes. Female literacy rates are highest in these two states and had been so for decades. Fertility has been found to be negatively correlated with the level of female education. The status of women is closely related to the level of education which in turn initiate concomitant changes in the age at marriage, employment status, income levels, utilisation of health care and in the attitude towards the practice of family planning. Birth and infant mortality rates are negatively correlated with all these factors.

Tests of the Relationships

In order to test the significance of female education and access to health on fertility rates, we estimated regression relationships between female literacy and infant mortality rates and the total fertility rate. We used total fertility rate rather than birth rate because the former is already standardised for age distribution. For this purpose we utilised two different sets of data—state-wise as well as district-wise. We were able to undertake the latter exercise because district-wise data on child mortality, total fertility and literacy rates are available for 1981 [Registrar General, 1989a, 1989b]. However, due to high degree of multicollinearity among the explanatory variables, we failed to obtain significant results in the regression with state level observations for 1981. Therefore, we estimated the Spearman rank correlation coefficients with the state data in order to gauge the strength of the relationships. The most important finding that emerges is the role of female literacy rate not only in reducing directly the fertility rates but also in indirectly influencing birth rates through its role in raising the age at marriage and in reducing the infant or child mortality rates. Female education (female literacy) strongly acts to raise the age at marriage of girls and also in reducing the child mortality rate because better educated mothers paid greater attention to the health and well being of their children. We also at-

Table 2: Distribution of Beds under Health Care System

States	No of Beds Per Lakh Population, 1989	Per Cent of Beds in Rural Area in 1989	No of Beds Per Lakh Population in Rural Area 1989
1	2	3	4
Andhra	59	10.59	9
Assam	60	23.56	16
Bihar	34	8.20	3
Goa	257	24.20	105
Gujarat	129	11.06	22
Haryana	50	7.32	5
Jammu and Kashmir	107	4.30	na
Karnataka	80	9.82	12
Kerala	254	56.12	193
Madhya Pradesh	36	9.41	4
Maharashtra	130	9.98	21
Orissa	43	16.28	8
Punjab	115	41.48	68
Rajasthan	51	8.55	6
Tamil Nadu	86	21.05	28
Uttar Pradesh	40	12.44	6
West Bengal	85	15.04	18
India	77	17.75	18

Source: Estimated from CMIE, *Basic Statistics Relating to Indian Economy*, Vol 2, September 1991.

Table 1: Percentage Change in Birth and Death Rates, 1971-89

States	Live Birth Rates		Per Cent Change in Birth Rate	Death Rates		Per Cent Change in Death Rate
	1979-81	1987-89		1979-81	1987-89	
1	2	3	4	5	6	7
Andhra	31.6	27.8	-12.03	11.7	9.9	-18.18
Assam	32.9	32.1	- 2.43	11.5	11.3	- 1.77
Bihar	38.4	36.1	- 5.99	14.7	12.6	-16.67
Goa	17.7	17.5	- 1.13	7.1	7.8	8.97
Gujarat	35.1	29.7	-15.38	12.4	10.2	-21.57
Haryana	36.8	34.5	- 6.25	11.0	9.0	-22.22
Himachal Pradesh	31.6	30.2	- 4.43	10.8	8.9	-21.35
Jammu and Kashmir	31.3	31.4	0.32	9.3	7.9	-17.72
Karnataka	28.0	28.5	1.79	9.7	8.8	-10.23
Kerala	26.0	20.7	-20.38	6.8	6.2	- 9.68
Madhya Pradesh	37.5	36.3	- 3.20	15.7	13.5	-16.30
Maharashtra	28.3	28.9	2.12	10.0	8.4	-19.05
Orissa	31.9	31.1	- 2.51	14.0	12.7	-10.24
Punjab	29.6	28.5	- 3.72	9.2	8.2	-12.20
Rajasthan	37.1	34.2	- 7.82	13.5	12.1	-11.57
Tamil Nadu	28.3	23.3	-17.67	11.7	9.3	-25.81
Uttar Pradesh	39.5	37.3	- 5.57	16.4	13.4	-22.39
West Bengal	32.5	28.8	-11.38	11.3	8.7	-29.89
All India	33.8	32.1	-16.85	12.7	10.7	-31.54

Source: Estimated from *Sample Registration Bulletin*, June 1991.

tempted an alternative regression relationship with state-level data for 1989 where we used the crude birth rate instead of the total fertility rate. In this equation we also included couple protection rate as another explanatory variable in order to estimate the impact of the family planning programme in reducing the birth rate. Similar problems of multicollinearity again cropped up in this equation and therefore we had to drop either infant mortality rate or female literacy rate from the equation. The results of these estimates are given below:

Regressions with State Data

$$(1)\ BR = 50.38 + 0.0899(IMR) - 1.585(AM) + 0.045(CP)$$
$$(2.4159) \quad (-2.422) \quad (0.6261)$$
$$R^2 = 0.786$$

$$(2)\ BR = 34.23 + 0.0436(IMR) + 0.00358(CP) - 0.2156(FLR)$$
$$(0.7237) \quad (0.0510) \quad (-2.0322)$$
$$R^2 = 0.760$$

List of Variables:

(1) BR = Crude Birth Rate
(2) TFR (unadj) = Total Fertility Rate unadjusted
(3) TFR (adj) = Total Fertility Rate-adjusted
(4) PMF = Proportion of Married Females
(5) CMR = Child Mortality Rate
(6) FLR = Female Literacy Rate
(7) CP = Couples Protected
(8) IMR = Infant Mortality

At the state-level analysis the contribution of couple protection rate to the birth rate proved to be insignificant. The reasons for this are explained later. But, infant mortality and literacy rates and age at marriage appeared important in explaining the inter-state differences in fertility rates. However, when we used all three variables in the same equation, the coefficients were not significant due to multicollinearity. There is also a high degree of correlation between infant mortality and female literacy rates which is apparent from the second regression. However, the Spearman rank correlation coefficients demonstrate without any doubt the interrelationships among all these variables.

We tested whether these relationships were equally significant district level. We did not face any problem of multicollinearity at this level of disaggregation because the total number of observations exceeded 400 for each variable. This is the only year for which district-wise data for these variables are available. In these equations we have used child mortality at age 2 instead of infant mortality as the explanatory variable. These relationships appear even more robust with district-wise data. Therefore, these findings provide strong support to the analytical and policy linkages between fertility levels, infant mortality and female education. The results of the regressions prove unmistakably the importance of age at marriage (for which the proportion married women in total women is used), infant mortality rate and female literacy rate in reducing the birth rate. Female literacy rate is a proxy to represent the status of women and women's empowerment in household and in society.

In the absence of the preconditions necessary to achieve a decline in birth rate, one should not be surprised at all if birth rates continued to remain high or even rose in some states. Nearly 45 years after independence, our record on improving female literacy and reducing infant mortality was indeed dismal. According to the 1991 census, there were only eight out of 25 states in India, namely, Goa, Himachal Pradesh, Kerala, Maharashtra, Mizoram, Nagaland, Tamil Nadu and Tripura, where female literacy was 50 per cent or higher. (Literacy rate is applied to populations above age 7.) In the BIMARU states, it ranged between 20 and 28 per cent. The highest female literacy rates were in Goa and Kerala, 68 and 87 per cent respectively. When we considered the literacy rate separately for the rural sector then the corresponding figures were even much lower. They would lie below 20 per cent in the BIMARU states and below 30 per cent in other states [Registrar General 1989a]. But such rural-urban differentials were non-existent in Goa and Kerala. Even within the backward states there were further wide regional and inter-district variations in female literacy rates.

Our record in reducing infant mortality is equally disappointing. During the year 1992, 2.40 million children would have died before they reached their first birthday. Infant mortality rate was still close to or exceeded 100 per 1,000 live births in the rural sector in Assam, Bihar, Gujarat, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh [Registrar General, June 1991]. These were also the states where birth rates were the highest. In fact, infant mortality rate in rural Uttar Pradesh, which was still the highest among the states, had remained unchanged between 1970 and 1984. It began to decline only recently. It is a matter of great concern that infant mortality continued to remain so high, in spite of the operation of a number of special schemes such as the Integrated Child Development Scheme.

It is not difficult to trace the factors that lie behind the continued prevalence of high infant mortality rate. We had indicated earlier that access to maternal and child care were vital for reducing infant mortality rates. But, such access was out of reach of most of the rural populations of all states except Kerala, Goa and possibly Punjab. Less than 20 per cent of hospital bed facilities were located in the rural areas. Timely medical attention was unavailable to deal with complications in child births. In many situations births were supervised by untrained birth attendants. Further, poor hygiene, absence of immunisations and lack of proper medical attention at complicated child births were factors that led to increased mortality. The approach to the delivery of health care in rural areas is mechanical and bureaucratic and fails to take into account the needs of the population.

The story is not altogether different when it concerns the extension of education to the rural population, especially among female children. One gets the impression that there is a deliberate attempt to keep the population ignorant and backward for the purpose of political, social and economic exploitation.

Approach to Family Planning

India was the first country in the world to declare an official population policy as early as 1952. However, this policy was translated into a pure family planning programme and was not integrated with health and education. At the same time, the family planning programme was implemented through the health department. Therefore, it came to be dominated by a medical approach. However, the amount of resources devoted to family planning was a paltry sum during the first 25 years of planning. During 1956-80, the total outlay on family planning and family welfare amounted to only Rs 1,020 crore. Against this, the outlay during the Sixth Plan alone amounted to nearly Rs 1,500 crore and since has been raised substantially (Planning Commission, 1985). But, the declines in birth rates are probably only weakly correlated with the rise in expenditure. In fact, during the Sixth Plan though expenditure rose, birth rate hardly showed any decline.

Part of the blame for the poor performance of the family planning programme lies in our approach. Basically, this is to specify a target for the number of couples to be brought under protection during any plan period which is further broken down into annual targets. For instance, during the Sixth Plan 17 million sterilisations were carried out against a target of 24 million. The Seventh Five-Year Plan document stated that the effective couple protection achieved by March 1985 with the above performance is of the order of 32 per cent which means that

Table 3: Spearman Rank Correlation Matrix (State-wise Data)

	PMF	FLR	CMR	BR	TFR
PMF	1.00	-0.78***	0.75***	0.57*	0.66**
FLR		1.00	-0.60*	-0.72**	-0.67**
CMR			1.00	0.59	0.76***

Significance Level: * 5 per cent, ** 1 per cent, *** .01 per cent.

the effective couple protection has been raised by 10 percentage points, i e, from 22 to 32 per cent but it is still below the Sixth Plan target of 36.6 per cent [Planning Commission, 1985]. But the document fails to raise the question why, in spite of an increase in couple protection rate (CPR) by 10 points, the birth rate remained sticky around the figure of 34? But the Eighth Five-Year Plan document is very frank in admitting the root cause. It states: While the Seventh Plan targets of achieving CPR of 42 per cent was achieved, this was not matched by a commensurate decline in the birth rate, possibly because of improper selection of the cases [Planning Commission, 1992: 332].

An examination of the age distribution of the wives of acceptors of family planning indicates why the couples protected are improperly chosen. During 1982-83, wives above age 30 formed 64 per cent of vasectomy acceptors, and 53.5 per cent of those who underwent tubectomy were also over 30 years. Thus the mean age of wives of vasectomy acceptors in 1982-83 was 32.1 years and of those who underwent tubectomy 30.8 [Ministry of Health and Family Welfare 1984]. When these ages are compared with the mean age at marriage in different states, the reasons for the above anomaly becomes apparent. Mean age at marriage is below 20 years in most states and it is especially low in those states with birth rates above 35 per 1000 population. Therefore, most married women would have been nearer the end of their child-bearing period by the time they received family planning protection. This is corroborated by the poor correlations obtained in our regressions between birth rates and the per cent of eligible couples protected in different states.

The approach to family planning also suffers from certain inherent limitations arising from its heavy dependence on medical infrastructure. This dependence is due to the fact that the programme's major emphasis has always been sterilisation. During the period 1967-73, nearly 85 per cent of total sterilisations were vasectomies, but by 1983-84 tubectomies accounted for a similar share [Ministry of Health and Family Welfare, 1984]. Also sterilisation accounted for 80 per cent of all effective protection of couples. Paucity of health care facilities and the consequent low proportion of child births in medical institutions made sterilisation highly undependable and impractical as a major instrument to bring down birth rates in rural areas (Table 2). Besides, sterilisation being a terminal method, young couples were unwilling to adopt it especially in those states where infant mortality continued to remain high. These factors explain why family planning has failed to make any headway in most states in India, except Goa and Kerala. For instance, 80 per cent or more of rural child births were under institutional care and the infant mortality rate had already fallen to 20 or below per 1,000 live births [Bureau of Economics and Statistics, Kerala, 1992]. The proportion of pregnant mothers immunised in Goa also indicates how institutional care of pregnant women and new born children is important not only in reducing mortality but also in providing access to family planning [Gupta and Indira Murali, 1989].

Outlook for the Future

The United Nations latest assessment (1990 revision) predicts that India's population would be between 1294 million and 1567 million in the year 2025 [United Nations, 1991:208]. If we accepted their medium projection, then the projected population would be 1,442 million in that year [United Nations, 1991:208]. The medium projection puts India's population at 1,041 million in the year 2000. The latest UN projections have revised upwards their earlier population figures for India because of the slow rate of decline in fertility rates. Apart from a great deal of rhetoric there was very little realisation what such increases in population implied for the prospects of future development of India. While we could do very little now to change this picture insofar as it concerned the next decade or so, the nature of the action that we take now would determine the size of the ultimate stable population. The earlier we reach a net reproduction rate of unity, the smaller would be the size of the ultimate stable population.

A projection exercise undertaken by Pathak and Ram indicates that the size of the ultimate stable population on the basis of 1981 population would be approximately 1,507 million if the net reproduction rate of unity was reached 30 years beyond 1981. But, if this occurred only 40 years after 1981, the ultimate stationary population would have risen to 1,680 million [Pathak and Ram, 1985]. This is only for the purpose of illustrating the consequences of lengthening the period to reach the net reproduction rate of unity. A delay of 10 years would add to the population as much as between 170 and 200 million. Another projection undertaken in 1984 indicated that India's population would stabilise at about 1,700 million by the year 2,155 [Pathak and Ram 1985]. It is very likely that this prediction might come close to reality. Whatever action we might initiate from now on to reduce the birth rate, it is unlikely to reduce the size of the ultimate stationary population below 1,700 million. One could predict with a fair degree of confidence that when India's population stabilised it would have certainly more than double the 1991 population. There is no doubt that our approach to family planning has failed to bring down the birth rates significantly. A careful analysis would show that whatever little decline occurred in birth rates during the past twenty years might be attributed to urbanisation and a marginal rise in the effective age at marriage.

What should be the approach in the Eighth Five Year Plan to family planning in order to hasten the decline in net reproduction rate? Our analysis of the performance of family planning clearly demonstrates that the strategy followed till now appears inadequate to achieve this objective. The present practice of laying down exogenously a target number of couples to be protected through family planning should be abandoned. Instead, the strategy should take into account the interrelationships between female education, infant mortality and birth rates. The parameters of these interrelationships might be different for different regions depending upon the availability of health care and the level of female literacy. While access to and the means to limit the number of children should be provided for everyone who desires the same, such provisions would come to naught in situations of high infant mortality and low levels of literacy.

This new approach would require the endogenisation of the demographic parameters in the mathematical framework for planning. We are now in the midst of a major re-thinking on the adequacy and strategy of our planning process. In the past, we had attached overwhelming importance to planning of the commodity producing sectors at the expense of social sectors. The development of human resources is closely related to the improvements in social sectors. It is now generally recognised that the quality of life can be substantially improved with the development of social sectors and this can be achieved even at comparatively low income levels. Therefore the planning framework in India should develop a disaggregated socio-economic- demographic framework incorporating female education, female employment, utilisation of health care, levels of infant mortality and other social variables for the endogenous determination of the number of couples to be protected in different age-groups to achieve different rates of population growth. The building blocks of such a socio-economic-demographic model should be the states

Table 4: Regression Results with District Data

Dependent	Constant	PMF	CMR	FLR	R2	F-Value
BR	35.928	−0.0222	0.0349	−10.3891	0.31	58.66
	(32.185)	(−2.029)	(5.9086)	(−5.8041)		
TFR(unadj)	2.4485	0.0080	0.0108	−1.0567	0.44	104.83
	(10.13)	(3.3865)	(8.4414)	(−2.7269)		
TFR(adj)	5.0087	−0.00302	0.00695	−2.4835	0.32	61.99
	(19.946)	(−1.2274)	(5.2303)	(−6.1679)		

Notes: Figures in brackets show t-values. TFR(adj) for Sample Registration estimates may under- or over-estimate the rates in some cases. The equation with TFR(unadj) provides better results.

which alone would be able to take care of the differences in social, economic and cultural factors prevailing within their region. These shifts in the objectives of planning would also require major changes in the institutional structure of planning. Social planning also implies greater emphasis on the spatial elements of planning. This would not be possible under the present centralised control of the planning process. Social planning would become feasible and would succeed only under decentralised planning with greater popular participation at local levels.

The endogenisation of demographic parameters as suggested here would enable the explicit recognition of the complementarities between female education, health development and birth rates. This would also help to develop some norms regarding the allocation of expenditure for family planning. For instance, in a state like Uttar Pradesh, for any given amount of expenditure, if the decline in birth rate would be larger if it is spent on education and health rather than on family planning, then the allocation of expenditure should follow accordingly. In such situations, the policy must permit a larger allocation of resources for education and health than to family planning.

This section was meant to raise a few issues relating population policy to planning and to suggest the broad contours of an alternative integrated approach. The issue of population growth has not yet received the singular attention it deserves among economists. The government also appears unable to articulate and execute an effective family planning programme because it was ignored the interrelationships between fertility, mortality, education and health. The potential effect of a large population of around 1,700 million on the standard of living and on the demand for resources cannot be ignored. The problems of providing adequate food, the question of employment generation for a growing labour force, the probable enlargement of population dependent on poverty alleviation programmes, and the increasing difficulty of raising resources to meet the requirements of educating and keeping the population healthy are the challenges of the future.

The implications of a large and growing population for India's development can be discerned only if we take a long-term perspective on planning. Unfortunately, Indian planning is increasingly becoming myopic, and short-term expediency is often substituted for long-term objectives. The impact of population growth is not immediately felt on the economy unlike the effect of, say, a decline in foodgrains output, and therefore there are neither political nor economic compulsions to institute countermeasures urgently. We are now in the process of a major redefinition of the goals, guidelines and practices of planning. Planning till now placed overwhelming importance on commodity producing sectors to the detriment of social sectors. With the liberalisation of the economy and the transfer of administrative control of the commodity producing sectors to the regulation of the market mechanism, the government and the Planning Commission would have the time and energy to concentrate on the development of the social sectors. The greatest external economies lie in the development of human resources and it is the quality of human resources that ultimately determines the pace and pattern of the economic, social and cultural development of a nation. I hope that we realise the significance of this factor and shift the priorities of public planning to the development of social sectors and leave the rest of the economy to function under a planned market economy.

A large population, soon exceeding 1 billion, would affect decisively our strategy, policy and the pace of development of our society and economy. During the past 45 years, we have managed to raise the supply of food *pari passu* with the growth in population, but this may require much greater effort in the future. The potential to raise productivity in agriculture may still be high, but it might be achieved only by applying larger and larger doses of chemical fertilisers, extension of area under irrigation and at higher costs and prices. The application of larger doses of fertilisers regularly might also create long-term environmental hazards. Food-population relationships, hence, may continue to be critical requiring constant attention. What measures are needed to raise food output in the future? What are the regional dimensions of the food- population relationship? What is the role of public action in ensuring the availability of food? Some of these questions need discussion and I shall take up a few aspects of these relationships in the next section.

A large population also implies a large and growing labour force. Will growth in employment keep pace with the increase in labour force? Where will employment generation take place? What has been the past trends in wage rate? What is the scope for increasing real wage rate? Some of these questions will be taken up for discussion in the final section.

II

Poverty, Food and Public Distribution

Poverty is multi-dimensional, though some facets of poverty may be more critical than others. Illiteracy, low income, unemployment, malnutrition, frequent illnesses, high infant and child mortality and lower life expectancy are attributes of poverty. High birth rates also co-exist with poverty though it is not high birth rates that breed poverty but it is poverty that breeds more children. Not only survival rates of children are poor in an environment of poverty but the very survival of the family may need more children to supply labour. Under such circumstances children are considered assets and the benefits derived by the family by having a larger number of children outweigh their costs. It is also true that when infant mortality is high one needs more births for the survival of a desired number of children. The World Fertility Survey showed that the desired number of children rose monotonically with higher infant mortality and lower rates of female education [Lightbourne and Macdonald, 1982]. Therefore the mutual links between population and poverty are many and complicated.

Food is an important link between population and poverty. In the Indian context, the measurement of poverty was closely related to food intake. Historically, population as a pre-eminent issue began with a discussion on the relation between population growth and food supply. Malthus wrote the theory of population to demonstrate the consequences of population growth; how food production would fail to keep pace with the increase in population and thus presented a first study relating population, food and poverty. Though we do not subscribe to a simplistic interpretation of this relationship, there are many aspects of the food-population relationship which are important and require deeper analysis in the Indian context. In the Indian situation, though aggregate food supply has kept pace with the growth of population, we have been invariably treading a delicate balance. We avoided major catastrophes in the post-Independence period similar to the Bengal famine of 1942 because we have now in place a food management system which has proved reasonably successful in dealing with the distribution of the food in the country.

I do not propose to enter into either a discussion on or even attempt a measure of the extent of poverty in India. A large number of studies on measurement of poverty exist in India [Cf Kakwani and Rao 1990]. These studies also demonstrate that such estimates of poverty are highly sensitive to the assumptions underlying their estimates. We all agree that various manifestations of poverty with different degrees of intensity exist in all parts of our country. A few of these manifestations may even appear in conflict with each other. For instance, states which show high levels of calorie intake also report high infant mortality, thus blurring the relationships between malnutrition and mortality. Similarly, states which have higher per capita income do not necessarily have high cereals consumption. On the other hand, Kerala state which reported low per capita state income as well as low calorie intake reported one of the lowest infant mortality rates and the longest expectation of life. All these indicate that poverty is multi-faceted and each of these attributes merits discussion by itself for an understanding of the nature of or lack of interrelationships among various micro economic variables and to suggest appropriate policy measures.

FIGURE 2: INTER-STATE VARIATION IN PER CAPITA CEREAL PRODUCTION

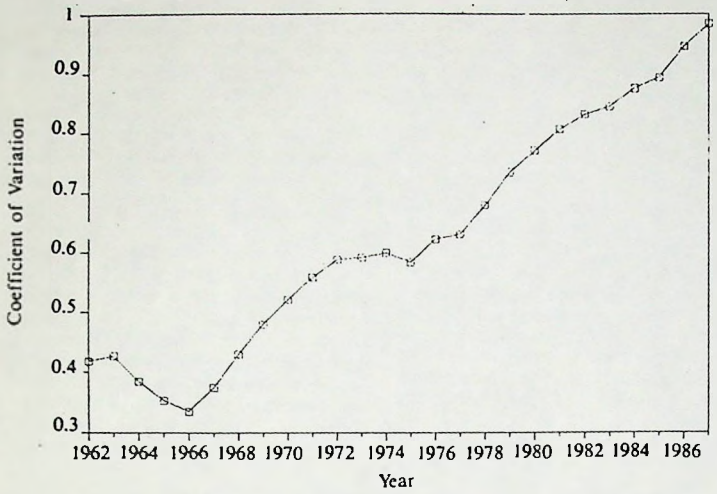
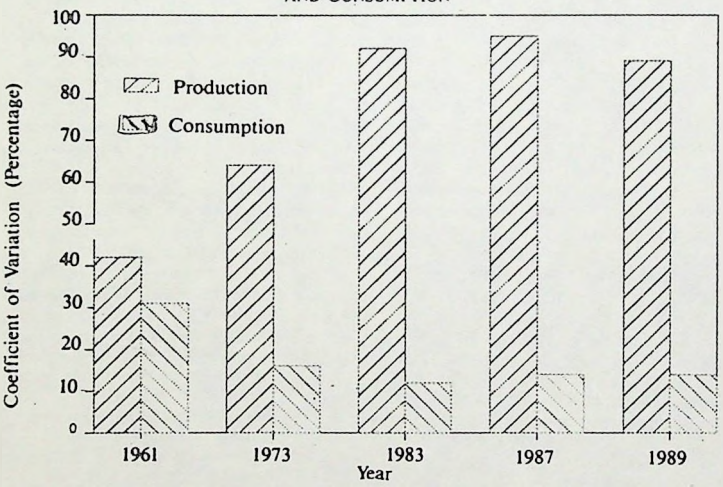


FIGURE 3: INTER-STATE VARIATION IN PER CAPITA CEREAL PRODUCTION AND CONSUMPTION



I do not also propose here to enter into a discussion on the merits or otherwise of the theoretical aspects of the relationships between population and food. On the other hand, I shall concentrate on some neglected aspects of the functioning of the Indian foodgrains economy and how these might be relevant for an understanding of the relationship between food intake and poverty. The discussion, *inter alia*, would also indicate the implications of population growth on food consumption.

NATURE OF THE FOODGRAINS ECONOMY

India's foodgrains output rose from 59.2 million tonnes in 1953 to 170.25 million tonnes in 1989 [Ministry of Agriculture, 1990]. This is an impressive achievement but it conceals an important aspect of reality, namely, that per capita availability of foodgrains has practically remained stagnant during this period. In fact, between 1971 and 1989, per capita availability was below that of 1971 for 12 out of the 19 years [Ministry of Agriculture, 1990]. The per capita availability of cereals other than of rice and wheat, in fact, declined significantly during this period, from 44 kilograms in 1971 to 30 kilograms in 1989 or even below in some years [Ministry of Agriculture, 1990]. The total per capita availability has remained more or less constant largely due to the steady rise in wheat production. These changes in the composition of foodgrains and the shift in the regional pattern of production have important implications for food intake and poverty.

During the past 30 years, the regional disparity in per capita production widened because growth rates of foodgrains output showed significant variations among different states. The coefficient of variation in per capita cereal production rose from 0.54 in 1970-71 to 0.84 in 1988-89. (Figure 2). We estimated the compound rates of growth in per capita cereals production for the period 1961 to 1989 for each state separately. These were estimated by fitting semi-logarithmic equations to the detrended per capita production data by taking three-year moving averages. The estimated growth rates are given in Table 5 for three separate time periods.During the post-green revolution period, per capita cereal output really rose only in Haryana, Punjab and Uttar Pradesh. Per capita output more or less remained constant in Andhra Pradesh, Madhya Pradesh, Maharashtra and West Bengal and declined in all other states. If we considered only the marketed surplus the regional disparities would have been even greater as the surpluses were confined to a few states only.

However inter-state disparities in consumption appear to have declined marginally during the same period as most states managed to maintain either their level of per capita consumption of cereals or in a few cases even showed marginal improvements. The coefficient of variation in per capita consumption between states marginally declined in the 80s compared to early 70s and was around 12 per cent compared to over 80 per cent in per capita production (Figure 3) [Krishnaji 1988]. It was also interesting to note that per capita consumption in states like Punjab, Haryana and Uttar Pradesh did not rise in spite of significant increases in per capita production. On the other hand, in some cases it even declined. Some of these changes probably reflected changes in the composition of the food basket arising from substitution between different food groups brought about by higher income and changes in taste patterns.

INTER-STATE DIFFERENCES IN FOODGRAINS CONSUMPTION

An earlier study analysed the determinants of inter-state levels of foodgrains consumption (in terms of calorie intake) for the year 1961-62 and came to the conclusion that it was not determined by the level of per capita state income but mainly by the level of per capita state foodgrains output [United Nations 1975]. States which had higher per capita incomes had lower per capita consumption of foodgrains than states with lower per capita incomes. There was no guarantee that an increase in income would automatically raise the level of consumption of foodgrains. The foodgrains sector of the Indian economy presented a clear case of market failure [United Nations 1975]. It was surmised that foodgrains did not move across the country through the normal operations of the market mechanism to even out inter-state differences in per capita production and thus reduce the disparities in consumption.

This aspect of market failure in foodgrains

is closely related to poverty and income distribution. It was found that the Spearman rank correlation between cereal price and per capita cereal production was high and positive implying that cereal price was higher in those states which had lower per capita cereal production and vice versa. The implicit prices derived from the NSS value and quantity of consumption data indicated the extent of variation in prices. For instance, in 1973-74 the price of cereals at 1970-71 prices was Rs 1.68 in Kerala compared to Re 0.77 in Punjab; only part of the difference could be explained by the differences in the proportion of wheat in total consumption in the respective states [NSS 1981]. Inter-state movement of foodgrains was mainly geared to meet urban demand where income levels were high enough to afford to pay higher prices. Foodgrains from the surplus states failed to move to the rural areas of low per capita production states because prices were not high enough to make it worthwhile for the trade to move grain to these areas. Though income elasticities for grain among the poorer income groups would be high, so too would be their price elasticities. Thus as price of foodgrains rose, there would be a steep decline in the demand for grains among the poorer income groups pushing down their consumption even further. In the case of higher income groups both income and price elasticities would be low and thus market failure would not materially affect their level of consumption. Market failure, however, was probably a blessing for the poor in the high per capita output states because part of the marketed surplus which was not transferred from that state would be available at a lower price for their consumption. Thus the poor would be able to consume more grain in the high per capita foodgrains output states, though the opposite would be the situation in the case of the poor in the low per capita production states.

We have data now to verify whether the relationships between food intake, per capita income and per capita food production have changed since 1961-62. Such data are available from the National Sample Survey for the years 1973-74, 1983, 1986-87 and 1988-89. Since calorie intake data are not available for all the years per capita quantity of cereals consumed is used instead. Therefore we have used per capita quantity of cereal consumption in the estimation. Among the determinants of consumption in 1961-62 we had found that the degree of inequality in land distribution also was an important factor. However, due to the non-availability of information on land distribution for these latter years, we did not include this variable in the present analysis. We experimented with various alternative specifications for the regressions and found that the semi-logarithmic form provided the best fit. Not only were the coefficients under this specification turned out to be most significant but also the assumptions underlying it were more consistent with the theory of consumption.

Our analysis indicated that per capita foodgrains consumption was still positively correlated with foodgrains output and negatively correlated with per capita state income. While it was found that the consumption-income relationship was somewhat weak in 1961-62, it depicted strong negative relationships in the equations for later years. It was surprising that these relationships had not changed at all in spite of the fact that there were no zonal restrictions on the movement of foodgrains in the latter half of the 80s. There are reasons to believe that private trade in grains should have been more active in the 80s because of the virtual removal of compulsory procurement in most of the deficit states. During this period all the marketed surpluses in these states would have shifted to private trade. Secondly, with the growth of black money, private financial credit might have also found a good haven in grain trade. We also note that while in all equations there was a negative relation between price and quantity consumed it was not found to be statistically significant. This lends further support to the view that price differentials had no influence on the quantum of inter-state movement in foodgrains. We attribute this largely to the fact that the food-population balance continued to be the same throughout this period.

Our analysis indicated that there had not occurred any significant or important change in the structure of the grain market during the period 1961 to 1989. On this account, we would hypothesise that whatever grain movement that took place under private trade, it would have only catered to the requirements of the urban population. Further, private trade was unlikely to have moved any significant quantity of grain from the surplus states to the far off deficit states.

Poverty and Food Intake

The National Sample Survey data also provide information on quantity of consumption of foodgrains classified according to different expenditure classes. Based on this information, we estimated the quantity of cereals consumed by the bottom 30 per cent of the rural population in each state for the years 1961-62, 1973-74, 1983 and 1986-87. This was estimated in two stages. First, we estimated food demand functions by regressing the quantity of cereals consumed by each expenditure class and the corresponding total expenditure. Second, we fitted lognormal distributions to the total expenditure data for each year and for each state and estimated the mean expenditure corresponding to the bottom 30 per cent of the population. Then the quantity of cereals consumed by the bottom 30 per cent of the population was estimated from the first

Table 5: Rate of Growth of Per Capita Cereal Production

States	1960-61 to 1988-89			1960-61 to 1968-89			1969-70 to 1988-89		
	Coefficient in Per Cent	t-Values	R2	Coefficient in Per Cent	t-Values	R2	Coefficient in Per Cent	t-Values	R2
1	2	3	4	5	6	7	8	9	10
Andhra	−0.06	−0.35	0.004	−1.67	−5.27	0.82	0.23	0.71	0.03
Assam	−1.20	−16.96	0.92	−0.35	−0.96	0.13	−0.12	−10.62	0.86
Bihar	−0.22	−1.06	0.04	−1.30	−0.80	0.09	−1.84	−3.14	0.36
Gujarat	−0.50	−1.07	0.04	0.45	0.57	0.05	−1.90	−2.41	0.25
Haryana	2.80	10.03	0.83	na	na	na	2.30	7.66	0.77
Karnataka	−0.18	0.02	−0.85	−0.31	−0.27	0.01	−1.30	−6.30	0.70
Kerala	−1.65	−9.37	0.78	−0.42	−0.63	0.06	−2.60	−17.82	0.95
Madhya Pradesh	−0.21	−1.00	0.77	−2.90	−2.00	0.40	0.44	0.13	0.001
Maharashtra	0.15	0.34	0.03	−2.80	−2.18	0.44	1.21	1.44	0.10
Orissa	−1.00	−7.14	0.00	−0.82	−0.91	0.12	−0.91	−3.52	0.42
Punjab	4.30	15.60	0.67	0.63	0.24	0.009	3.60	18.62	0.95
Rajasthan	−0.38	−1.71	0.91	−1.38	−2.16	0.43	−1.03	−2.63	0.28
Tamil Nadu	−0.92	−4.93	0.10	−1.82	−5.11	0.81	−1.51	−4.69	0.56
Uttar Pradesh	2.10	14.03	0.49	1.50	1.55	0.29	2.10	7.88	0.79
West Bengal	0.14	0.70	0.88	0.15	0.19	0.006	−0.46	−1.26	0.86
India	0.72	6.96	0.006	−0.73	−0.08	0.06	−0.46	3.52	0.42

Source: Bulletin on Food Statistics.

equation corresponding to the mean total expenditure of the bottom 30 per cent of the population (Table 7). These estimates thus provide not only the quantity of cereals consumed but also the mean expenditure of the bottom 30 per cent of population.

The estimated total consumer expenditure of the bottom 30 per cent of the population rose between 1961-62 and 1988-89 but the rates of increase varied considerably (Table 7). Since the bottom 30 per cent in most of the states would be labour households, the improvements in real consumer expenditure probably also reflected some improvements in real wage rates. However the improvements in real consumer expenditure did not appear to have led to an improvement in the quantity of grain consumption. In fact, per capita per month quantity of grain consumption was substantially lower in almost all states including the grain surplus states in 1973-74 and in 1986-87 compared to that in 1961-62. The per capita consumption of grains derived from the National Sample Survey estimates, total as well as the figures for the bottom 30 per cent of the population reflected the general trends in per capita availability estimated from production statistics. The share of grain consumption of the bottom 30 per cent of the rural population more or less remained unchanged between 1973-74 and 1986-87 though it had declined drastically from 1961-62 (Table 7). We have not examined the factors behind this decline and such factors may vary between states. In states like Andhra Pradesh and Punjab these changes possibly reflected the increasing commercialisation of agriculture. These calculations of consumption of grains by the bottom 30 per cent of the population further reinforce our earlier findings that the inter-state levels of per capita production basically determined the levels of consumption. Not only that. When foodgrains output declined the consumption of the bottom 30 per cent of the population possibly declined by a larger proportion. These findings provide strong evidence why measures of poverty using different criteria could be misleading and indicate contradictory and conflicting changes in the levels of poverty. While it is very likely that the proportion of the poor would have declined if consumer expenditure was taken as a norm, it would not be so when we considered a calorie intake norm as a cut-off point for measuring poverty. In fact there is no a priori reason to believe that poverty under a calorie norm would have at all declined in India between 1961 and 1989. On the contrary, even on the assumption of a constant proportion of the poor in the total population, the absolute number of the poor or hungry in the country would have certainly risen. The decline in the proportion of poor as estimated from expenditure data by the Planning Commission may thus be a misleading finding.

The variances of the lognormal distribution fitted to the total consumer expenditure of each state would indicate the changes in inequality in expenditure distribution. They show that inequality in expenditure (and income too) rose in most states between 1973-74 and 1988-89.

Role of Public Distribution

We have already mentioned that in spite of the widening disparity in per capita food production, per capita consumption had either remained steady or slightly improved among the states in India. During the past 30 years we have managed to avoid major food crises; till recently, we also succeeded in keeping the foodgrains prices within reasonable limits. How did we manage these results even though per capita availability had hardly risen and inter-state disparities in output had risen?

We achieved these results by putting into place a food management system which with all its limitations had enabled us to overcome to a large extent the results of market failure. The food management system was basically built on three blocks:

(1) A production strategy which broadly enabled food output to keep pace with population growth; this strategy, however, had resulted in greater inter-regional disparities and in inter-crop shifts in food production;

(2) A food procurement programme with support prices as a major element of the strategy; and,

(3) A public distribution system which moved grains from the surplus production states to the deficit consumer states. This transfer of grain not only reduced the inter-state disparities in per capita consumption but also provided grain through ration shops or fair price shops at subsidised prices.

We already mentioned that inter-state disparities in per capita production had increased between 1961 and 1989 but aggregate availability had more or less remained steady. The inter-state disparities had risen because the increase in output was largely due to the increase in wheat output and wheat production was concentrated mainly in three states, namely, Haryana, Punjab and Uttar Pradesh. This was a direct result of the production strategy adopted from the mid-60s which was built on high-yielding varieties of wheat with high levels of fertiliser and water inputs. While per capita production of wheat rose, per capita production of grains like jowar, bajra and other dryland crops in fact declined. The decline in the output of these grains not only had regional implications but also important implications for the poor in those states where they were the major crops. These inferior grains normally commanded lower absolute prices compared to those of rice and wheat. The decline in their per capita availability, therefore implied that the poor would be either required to reduce their total consumption of grains or be forced to spend more due to higher prices of the superior grains, namely, of rice and wheat. These shifts also implied changes in relative prices within the cereals group which would have also adversely affected the consumption of the poor.

Along with the new production strategy, the government also established the Agricultural Prices Commission to determine support prices. Initially, the support prices were meant to protect the farmers from declines in grain prices in the immediate post-harvest period but over the years, with the concentration of marketed surplus in three or four states, these support prices were gradually converted into government procurement prices. As the dependence of the public distribution system on procurement increased, the farmers in the grain surplus states were able to put pressure on the government to raise procurement prices continuously. As part of the production strategy, farm inputs, especially fertilisers, were also provided to the farmers at subsidised prices. All these changes resulted in a situation where the procurement price acted as a secular push factor in rising foodgrain prices.

With the widening gap between the procurement and issue prices of cereals supplied through the public distribution system, the amount of food subsidy also rose over these years. Such subsidy not only enabled the consumers to obtain part of their consumption at lower prices but also had probably other desirable macro-economic impact, namely, such as acting as a damper on the

Table 6: Regression Results

Year	Constant	Per Capita SDP	Per Capita Cereal Production	Cereal Price	R2
1973-74	411.36	−67.22**	37.63**	−27.27	0.80
	(4.4373)	(-4.460)	(2.8270)	(-1.074)	
1983	489.28	−65.76**	20.98*	−24.9154	0.61
	(5.3242)	(-3.939)	(2.342)	(-0.987)	
1986-87	454.10	−63.96**	24.82**	−10.00	0.72
	(6.0049)	(-4.8926)	(3.933)	(-0.422)	
1988-89	543.10	−58.71**	15.95*	−29.2572	0.57
	(4.6592)	(-3.6609)	(2.489)	(-1.075)	

Significance Level: * = 5 per cent, ** = 1 per cent.
Dependent Variable: Annual Per Capita Cereal Consumption in Kilograms.

rate of inflation.

The quantity of foodgrains distributed through the public distribution system has increased four and a half times, from 4 million tonnes in 1961 to 18 million tonnes in 1988. However, the ratio of public distribution to total production has remained within a narrow range, around 10 to 13 per cent, between 1971 and 1989 (Table 8).

The source of grain for public distribution, however, had undergone a major shift. In 1961, nearly 80 per cent of the requirement for public distribution was met through PL480 import of grains but in 1980s imports were rarely resorted to and almost 100 per cent of the requirements for public distribution came out of domestic grain production. Interestingly, the proportion of total foodgrains procured also had remained constant during the period 1961 to 1989, around 9 to 12 per cent (Table 8). However, there were some important shifts in the quantum of procurement in different states. In the mid-70s, procurement was undertaken even in deficit states, by enforcing a levy either on millers or on large farmers. But with the increase in grain procurement from the northern states, the procurement of grains in most other states either declined or were eliminated completely in the 80s (Table 9).

The concentration of procurement in three or four states also seemed to have promoted a higher degree of commercialisation of grain production in these states. The level of per capita consumption of foodgrains appeared to have either remained stagnant or declined in these states while the proportion of output procured rose continuously. This process converted foodgrains production from a subsistence crop to a commercial crop. As a result, the proportion of marketed surplus had risen in the grain surplus states and the availability of grain in the rural areas of those states might have declined,thus affecting the levels of consumption of landless labourers.

As already mentioned, the inter-state inequality in per capita consumption of cereals had probably declined in the 80s compared to earlier periods. A similar change probably had also occurred in the rural-urban ratio of public distribution. In the 60s and early 70s, public distribution was probably urban-biased but in the 80s a distinct change appears to have taken place. Mahendra Dev and Suryanarayana analysed the public distribution data collected by the National Sample Survey for the year 1986-87 and found that the criticism that the PDS was urban-based was no longer correct [Mahendra Dev and Suryanarayana 1991]. They adopted four different criteria to evaluate the role of public distribution, namely, (1) rural sector's share in total PDS purchase, (2) relative dependence on the PDS given by ratio of PDS purchase to total purchases, (3) PDS quantity purchased per capita and (4) PDS quantity purchased per market dependent. While the nature of bias varied depending on the criterion used, it was generally found that the PDS was generally rural-biased for foodgrains. However, this conclusion needed some modifications when applied at the state level. In those states where PDS was weak, the coverage of the PDS in the rural area also was found to be inadequate [Mahendra Dev and Suryanarayana 1991] (Table 10).

Mahendra Dev and Suryanarayana also examined the extent of dependence of the poor in the rural areas on the PDS. They found that the poor was able to secure only less than 16 per cent of rice and wheat and less than 5 per cent of coarse grains of their requirements from the PDS. This situation arose from two facts: one, procurement of cereals other than rice and wheat were negligible and second, the poorer income groups consumed mainly other cereals since their absolute prices were lower and were unable to pay the higher prices of rice and wheat for their cereal requirements. It was found that the urban poor also depended on the open market for a major share of their needs. Another major consideration was probably the fact that the poor did not often have enough cash to buy their entitlement of the ration whereas the private trader granted them credit and naturally enabled multiple purchases as and when needed. The lower share of purchase of grains from the PDS in some states might also reflect the system of wage payment, namely, the preponderance of payments in kind, which used to be in terms of grains.

Foodgrain Prices And Inflation

Given the overwhelming dependence on foodgrains and the prominence of inferior cereals in calorie intake, the behaviour of foodgrain prices would be critical for the poor. First, there has been a secular decline in the per capita production of cereals other than of rice and wheat. This would especially affect those states where the poor mainly depended on the inferior cereals for their consumption. Second, the prices of inferior cereals and rice have risen relatively at a higher rate than that of wheat. In inflationary situations, the prices of inferior cereals rise by a much larger proportion than those of rice and wheat. Fourth, the PDS provided mostly rice and wheat and therefore the food subsidy was confined to these grains only. On all these accounts, during periods of inflation, the consumption of cereals by the poor would decline by a larger proportion than that of other income groups in the society. Radhakrishna

Table 7: Cereal Consumption and Expenditure by Bottom 30 Per Cent of the Population (Rural)

States	Quantity of Consumption of Cereals by Bottom 30 Per Cent of the Population (Monthly Per Capita)			Ratio of Consumption of Bottom 30 Per Cent to Mean Consumption			Total Amount Spent by Bottom 30 Per Cent for Consumption in Rs at 1960-61 Price*		
	1961-62	1973-74	1986-87	1961-62	1973-74	1986-87	1961-62	1973-74	1986-87
1	2	3	4	5	6	7	8	9	10
Andhra	15.77	12.36	9.78	0.94	0.78	0.70	9.45	11.11	12.55
Assam	12.89	10.68	9.76	0.75	0.70	0.74	13.78	7.37	13.90
Bihar	16.13	10.42	10.72	0.88	0.70	0.70	9.60	9.07	11.37
Gujarat	13.55	11.45	7.95	0.85	0.83	0.72	12.07	11.96	12.67
Haryana	na	12.79	13.74	na	0.77	0.93	na	na	na
Jammu and Kashmir	na	15.7	15.54	na	0.82	0.87	na	11.93	14.67
Karnataka	15.58	9.75	9.18	0.78	0.62	0.70	11.09	9.43	11.33
Kerala	9.16	4.85	8.11	0.91	0.63	0.79	10.67	10.04	13.82
Madhya Pradesh	21.58	12.84	12.19	1.02	0.75	0.81	11.66	8.63	9.94
Maharashtra	13.72	9.98	8.63	0.84	0.74	0.73	10.74	9.50	10.78
Orissa	8.58	12.49	12.59	0.47	0.79	0.79	8.61	7.94	10.04
Punjab	15.15	10.68	8.22	0.82	0.72	0.69	13.45	14.30	16.68
Rajasthan	19.71	15.31	12.88	0.88	0.82	0.77	10.67	12.25	12.90
Tamil Nadu	14.07	10.69	8.99	0.89	0.73	0.73	11.66	11.53	11.53
Uttar Pradesh	15.19	11.57	11.91	0.82	0.71	0.77	9.54	11.34	11.34
West Bengal	12.63	9.69	11.83	0.78	0.75	0.77	10.66	8.91	9.82

* We have used the Agricultural Labourer's Cost of Living index to deflate the current expenditure figures.

Source: Tables with Notes on Consumer Expenditure, NSSO Reports, various issues.

had shown in a recent paper that the impact of inflation on different income classes essentially depended on the root cause of any given inflation [Radhakrishna 1992]. If inflation was mainly triggered by rise in foodgrain prices then its impact on the poor was found to be greater. On the other hand, if it was due to increases in the prices of industrial goods then its impact on the poor would be the minimum.

Food Subsidy and Public Distribution

The public distribution system is to be judged in the context of the analysis just presented. In the absence of public distribution inter-state inequalities in grain consumption (and also in total calorie intake) would have been greater. Also, the inter-state differential in foodgrain prices would have been larger. In those states like Kerala where public distribution system functions well, it has helped the poor to obtain a significant share of their grain consumption at lower prices. Therefore, food subsidy performed a socially desirable redistributive function. PDS also helped to regulate open market prices and, hence indirectly, the general level of prices. Because of the overwhelming importance of foodgrains in the consumption of the bulk of the population, stability in foodgrain prices is vital to the stability of our social and economic system. Therefore, food subsidies should not be treated like other subsidies. Food subsidy can help to dampen the inflationary pressure, contribute to the alleviation of poverty and reduce inter-state disparities in food consumption. All these are desirable economic and social goals and therefore food subsidy should be treated as an essential item of social investment. However, in view of the future size of the population of the country and the requirements of the public distribution system this argument is sure to encounter increasing resistance. Therefore, it is important that we begin to explore alternative strategies for foodgrains production and distribution within our country.

Even though the proportion of the poor measured variously either by the Planning Commission or by other scholars are declining, their absolute number might still be very high in view of the high rate of population growth. Therefore, even if the PDS was specifically targeted to the poor, the quantum of grain to be distributed and the amount of food subsidy required might continue to remain substantial. On the other hand, if the food distribution was left to the functioning of the market mechanism, as we have indicated earlier, it would probably fail to move enough grains from the surplus to the deficit states at prices affordable by the poor. Therefore this alternative would not be desirable in the context of an affirmative social policy.

Table 8: Production, Procurement and Public Distribution of Foodgrains

Year	Production (000 Tonnes)	Procurement (000 Tonnes)	Public Distribution (000 Tonnes)	Ratio of Procurement to Production (Col 3/Col 2)	Ratio of Public Distribution to Production (Col 4/Col 2)
1	2	3	4	5	6
1960	76672	1275	4937	0.017	0.064
1961	82018	541	3977	0.007	0.048
1962	82706	479	4365	0.006	0.053
1963	80151	750	5178	0.009	0.065
1964	80642	1430	8665	0.018	0.107
1965	89356	4031	10079	0.045	0.113
1966	72347	4009	14085	0.055	0.195
1967	74231	4462	13166	0.060	0.177
1968	95052	6805	10221	0.072	0.108
1969	94013	6381	9385	0.068	0.100
1970	99501	6714	8841	0.067	0.089
1971	108422	8857	7816	0.082	0.072
1972	105168	7665	11396	0.073	0.108
1973	97026	8424	11414	0.087	0.118
1974	104665	5645	10790	0.054	0.103
1975	99826	9543	11253	0.096	0.113
1976	121034	12853	9174	0.106	0.076
1977	111167	9874	11729	0.089	0.106
1978	126407	11098	10183	0.088	0.081
1979	131902	13836	11663	0.105	0.088
1980	109701	11178	14993	0.102	0.137
1981	129588	12975	13014	0.100	0.100
1982	133295	15419	14768	0.116	0.111
1983	129519	15571	16206	0.120	0.125
1984	152374	18723	13326	0.123	0.087
1985	145539	20116	15799	0.138	0.109
1986	150440	19720	17269	0.131	0.115
1987	143418	15667	18700	0.109	0.130
1988	138414	14065	18306	0.102	0.132

Notes : Production, procurement and public distribution are in thousand tonnes. Procurement and public distribution are for calendar years. Foodgrains production is for agricultural year.

Source: Col 2, *India Data Base* by H L Chandhok and Policy Group, Vol 2, Cols 3 and 4, *Bulletin on Food Statistics 1987-89*.

The Politics of Food

The question of subsidy has become now inextricably mixed up with the politics of food in India. The quantum of food subsidy began to rise only in the 80s which also coincided with the structural changes in the foodgrains economy. Nearly 80 per cent of total procurement of foodgrains were from the states of Haryana, Punjab and Uttar Pradesh and therefore the farmers in these states began to exercise monopsony power through political lobbying over government procurement. This had resulted in continuous upward revision of procurement prices which if passed on to the consumers would have resulted not only in increases in foodgrain prices but also in higher rates of inflation. As the dependence of the central government on these states for procurement increased with the growth of population as well as of urbanisation, the central government is bound to face increasing pressure to raise procurement prices in the future.

Another aspect of these changes in procurement was the virtual withdrawal of procurement from the large farmers in the food deficit states. This too had been done under political pressure from farmers on the respective state governments. This change took place mainly in the 80s when with the commercialisation of food production in the wheat belt, enough grains became available to meet the requirements of public distribution system from the central pool.

An important impact of public distribution, which remains unnoticed, is the complacency that it has induced among the food deficit states in implementing institutional reforms and agricultural development strategies to raise agricultural output. The fact that the state governments could depend on the central pool to obtain foodgrains to meet their public distribution system seemed to have acted as a kind of insurance against food shortages in their respective states which enabled them from taking hard decisions and drastic institutional measures.

The solution to the elimination of subsidy is not import of grains for feeding the public distribution system. Import of foodgrains would certainly lead to compromising national sovereignty and integrity as we had already found out on earlier occasions. Food as a powerful weapon to discipline third world countries is part of the international politics of food-exporting countries. Food security is as important as national security and food production should be accorded the

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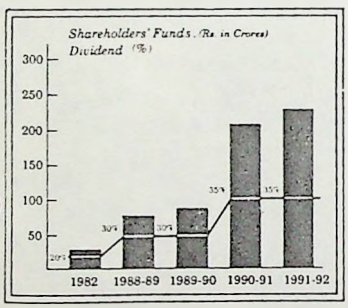
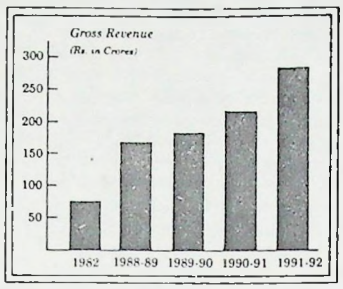


profit by a phenomenal 478%, capital employed



by 306%. And the EPS from Rs. 5.24 to Rs. 17.47. Our dividend record has been consistently growing, and today stands at 35%.

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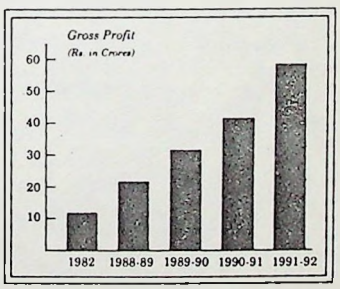
As we said, making money could be anybody's business. Creating wealth, of course, is an entirely different business.



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same priority as defence. Besides, not only are international prices higher but regular imports would also require foreign exchange earnings to pay for such imports. Food imports would only lead to further burden to the balance of payments position.

There is a strong case to procure grains from all large farmers at below market prices in all states in India. Agriculture is not taxed at all and in the circumstances procurement at below market prices should be looked upon as an indirect method of taxing agriculture. The Agricultural Prices and Costs Commission should lay down each year targets for procurement of grains for each state and the allocation of grain from the central pool should be made on a *pro rata* basis.

Finally there is another important reason why continuous raising of procurement prices is harmful to the development of Indian agriculture. There is a close link between procurement price and open market price of grains. Whatever be the technical relations between the two, open market price is arrived at by adding a mark-up over the procurement price. Thus the annual increases in procurement prices also lead to annual increases in open market prices of grains. But the most crucial effect of the continuous increases in procurement prices is its adverse impact on agricultural productivity. Price increases which over-compensate cost increases can discourage measures to raise agricultural productivity since such price rises automatically lead to higher profits for the farmer. Once farmers get used to this softer option to raise profits, they resort to political action to obtain higher prices for their products rather than resort to the adoption of difficult innovations to raise productivity and thus their profits. The only guarantee to ensure the continuous adoption of innovations to raise productivity is to ensure stability in agricultural prices rather than continuous increases in agricultural prices. While there is a case for the greater play of price signals for industrial products, there is a greater need to emphasise non-price factors in agriculture as opposed to price factors [Raj 1990].

Need for Alternative Food Strategy

The principal finding of our analysis is foodgrains intake, and hence total food intake, depends on level of foodgrains production in that state or region. Procurement and food subsidy have become essential because food surpluses are concentrated in two or three states and are located far away from consuming centres. The food production strategy till now have failed to take into account the distributional implications of that strategy. The country would not be able to afford the increases in the distribution costs to feed the future population of this country. In the light of our findings, it is suggested that we undertake a mapping of the country into distinct regions within which grain would move freely. These may be described as grain marketing regions. It is possible that the grain marketing region may be co-terminus with agro-climatic regions. This would certainly be an advantage but not essential for our proposal. After identifying such regions, the potential for food production in each of these regions should be evaluated under varying assumptions regarding technology and farm inputs. It is possible that the potential for increases in food production is not realised at present because of institutional constraints rather than of technological limitations. Wherever institutional factors are holding up increases in agricultural productivity it is necessary to initiate institutional reforms without delay. Further, agricultural strategies should be developed for each of these grain marketing regions such that each of these becomes self-sufficient in its grain requirements.

The basic strategy that we propose is to aim for regional self-sufficiency in foodgrains as long as it is within the technological and economic feasibilities of each region. However, while evaluating economic feasibilities it is necessary to include all the considerations mentioned in our analysis. Such increases in foodgrains output not only would raise overall consumption levels but would certainly improve the nutritional intake of the poor.

Finally, it is also important to mention the role of the relative price structure within agriculture for the success of the proposed strategy. A number of studies exist on the role of the terms of trade between agriculture and industry and its impact on agriculture. However fewer studies exist on crop substitutions arising from changes in relative prices. Land is not like capital. It is a more malleable factor and is capable of growing a number of alternative crops where irrigation is especially available. Therefore it is important to have an appropriate relative price structure in each region to achieve the desired goal in food production.

III
Wages and Employment

As population grows so too would labour force. A crucial link between population growth and poverty is employment. Since employment is the means to secure entitlement a number of questions come to one's mind. At what rate would the economy generate employment? Where would these jobs be created? How would wage rates res-

Table 9: Percentage Share of States in Total Foodgrains Procurement

States	1961-62	1973-74	1983-84	1986-87	19878-8	1988-89
Andhra	0.00	12.56	10.81	9.45	10.23	10.28
Assam	14.60	1.70	0.11	0.08	0.05	0.03
Bihar	nil	1.10	0.16	nil	nil	0.08
Gujarat	nil	0.83	0.04	nil	0.02	0.16
Haryana	nil	9.42	3.24	17.04	13.72	14.82
Karnataka	nil	1.97	0.82	0.72	0.58	0.80
Kerala	nil	0.74	nil	nil	nil	nil
Madhya Pradesh	2.20	5.26	1.84	2.90	2.32	1.76
Maharashtra	nil	4.09	0.45	0.33	0.86	nil
Orissa	6.06	2.76	0.53	0.79	0.61	0.75
Punjab	48.76	33.32	53.88	49.81	55.71	51.74
Rajasthan	nil	3.10	1.41	0.51	0.24	0.71
Tamil Nadu	nil	5.76	2.01	4.88	4.71	3.77
Uttar Pradesh	28.37	13.52	14.14	13.00	10.17	14.05
West Bengal	nil	2.91	0.18	0.35	0.53	0.53
All India	100.00	100.00	100.00	100.00	100.00	100.00

Table 10: Ratio of Public Distribution of Foodgrains to Cereal Consumption

States	1961	1973-74	1983	1986-87	1987-88	1988-89
Andhra	0.01	0.04	0.13	0.16	0.10	0.10
Assam	0.08	0.09	0.16	0.23	0.18	0.15
Bihar	0.03	0.04	0.07	0.07	0.06	0.04
Gujarat	0.05	0.19	0.07	0.26	0.25	0.15
Haryana	NA	0.07	0.09	0.05	0.07	0.03
Karnataka	0.02	0.07	0.10	0.16	0.13	0.12
Kerala	0.12	0.48	0.49	0.53	0.52	0.43
Madhya Pradesh	0.02	0.04	0.05	0.08	0.06	0.05
Maharashtra	0.10	0.29	0.16	0.20	0.19	0.18
Orissa	0.02	0.06	0.09	0.07	0.06	0.07
Punjab	0.08	0.10	0.12	0.12	0.04	0.02
Rajasthan	0.01	0.06	0.02	0.16	0.15	0.08
Tamil Nadu	0.04	0.06	0.22	0.23	0.23	0.26
Uttar Pradesh	0.04	0.04	0.05	0.04	0.05	0.04
West Bengal	0.11	0.26	0.32	0.16	0.18	0.13

Source: Cereal Consumption—NSS's Reports on Consumer Expenditure, relevant rounds.

pond to growth in labour force? Would real wage rates continue to rise if increases in employment lag behind growth in labour force? What would be the strategy of trade unions in a labour market with high levels of unemployment? What would happen to traditional labour market relations in a context of increasing unemployment? Would competition for jobs lead to a break down of traditional labour market relations? All these issues deserve enquiry for a clearer understanding of the emerging scenario on the interrelationships between population growth, poverty and employment. However, considering the complexity of the issues involved, this section is confined only to a few selected aspects of these relationships.

Trends in Labour Force and Participation Rates

By the year 2025, the potential labour force, i e, the population between the ages 15 to 59, based on the United Nations population projections, would have risen from 481 million in 1990 to 929 million in 2025 [United Nations, 1991]. But all these persons may not actually be seeking or available for work. A number of them may still be in school or undergoing other training and thus be out of the labour market. Therefore, we shall follow an alternative concept, namely, of work participation adopted in the 1991 population census. Work participation rate is defined as the proportion of total workers in the population, and total workers are obtained as the sum of main and marginal workers (Registrar General, 1991). Thus totally unemployed persons are excluded from this category and to that extent the size of the labour force thus derived would be an underestimate. Even on this basis, India would have to provide additional employment for nearly 220 millions by the year 2025. These additional jobs would constitute about 70 per cent of the employed population in 1991 (Table 11).

Trends in Unemployment

An interesting aspect of the Indian labour market is that the growth in labour force did not seem to have significantly raised the proportion of unemployed in the labour force. The basic data on employment and unemployment collected by the National Sample Survey have been analysed by a number of scholars [cf Visaria and Minhas, 1991]. I do not propose here to summarise the findings of these studies.

The National Sample Survey employs three distinct definitions to estimate employment and unemployment, namely, usual status, weekly activity, and daily activity. On the basis of these three definitions three measures of unemployment are provided. The largest proportion of unemployed are reported under the daily activity status and the smallest for the measure based on usual status. According to the 38th round, the incidence of unemployment, based on the usual status definition, was below 4 per cent for males in all states excluding Kerala where it was as high as 10.5 per cent [National Sample Survey, 1987]. The incidence of unemployment among females was below 1 per cent in many states but was about 12 per cent and 17 per cent for Punjab and Kerala respectively. Table 12 provides data for a few states on the distribution of the labour force according to the number of days seeking or available for work. These clearly show that between 85 and 90 per cent are employed full time and only in three or four states this proportion falls below 85 per cent. In the rural sector of Kerala and Tamil Nadu only 64 and 70 per cent respectively are employed full time compared to 96 per cent in Rajasthan and in Madhya Pradesh. The average number of days worked, therefore, reflected these situations in different states. While in Kerala it was less than five days in a week in the other states it exceeds six days. These facts indicate that the increases in rural labour force either have been certainly absorbed in the economy or none of these definitions really caught the actual conditions of employment within the prevailing institutional and social structure of the rural labour market.

In any case, the low level of reported unemployment has important implications for the various rural employment programmes like the Maharashtra Employment Guarantee Scheme. In fact, the number of persons available for work under such employment programmes might reflect the true incidence of unemployment since the wage rates offered in such schemes were normally lower than the prevailing market wage rate. The offer of labour at wage rates below the prevailing market rate might indicate the extent of distress faced by the unemployed. The gender incidence of unemployment could also form another basis for targeting of the employment guarantee programmes.

Institutional Aspects of Labour Market Relationships

Indian studies on wages and employment have concentrated largely on the questions of measurement of unemployment and on the trends in money and real wage rates. Such aggregate studies do not throw light

Table 11: Potential Labour Force and Projected Total Number of Workers
(*Figures in 000s*)

Year	Population between Ages 15-59			Total Number of Workers*		
	Male	Female	Total	Male	Female	Total
1971	153493	143832	297325	149777	37543	187320
1981	196212	182488	378700	185919	64912	250831
	(2.28)	(2.28)	(2.28)	(2.25)	(5.58)	(3.00)
1991	249777	231503	481280	223506	91397	314903
	(2.28)	(2.28)	(2.28)	(2.00)	(3.50)	(2.53)
2000	312081	289022	601103	276807	114713	391520
	(2.25)	(2.25)	(2.25)	(2.00)	(2.00)	(2.00)
2010	385828	358846	744674	324142	135201	459343
	(2.25)	(2.25)	(2.25)	(1.62)	(1.62)	(1.62)
2020	452297	425166	877463	361871	152273	514144
	(1.62)	(1.63)	(1.62)	(1.12)	(1.14)	(1.14)
2025	477901	451578	929479	379520	160545	540065
	(1.01)	(1.25)	(1.12)	(0.89)	(1.13)	(1.00)

Notes: Figures in brackets show the compound rate of growth.
* Projected assuming the same work participation rate as in 1991 Census.

Table 12: Percentage Distribution of Persons (5+) in the Labour Force Classified according to Number of Days Seeking/Available for Work (Current Weekly Status)
(Rural)

States	0	3	3, 7	=7	Average No of Days Worked
Andhra	85.29	7.24	3.72	3.75	6.08
Bihar	86.29	6.89	3.03	3.79	6.34
Karnataka	86.59	7.77	3.15	2.49	6.15
Kerala	63.53	13.10	8.58	14.18	4.84
Madhya Pradesh	96.65	1.87	0.37	1.11	6.63
Maharashtra	87.72	7.04	2.49	2.75	6.20
Orissa	84.50	8.08	3.31	4.13	6.22
Rajasthan	96.27	1.16	0.69	1.88	6.65
Tamil Nadu	70.85	12.27	8.75	8.13	5.41
UP	94.42	2.64	1.23	1.71	6.51

Source: NSS Draft Reports on the Third Quinquennial Survey on Employment and Unemployment.

on how the labour market adjusts to the demographic pressures or how employment and wages respond to these changes. The institutional framework of the labour markets vary widely over the country, from predominantly feudal or semi-feudal relations in a state like Bihar to the operation of a relatively free labour market in Kerala. How employment and wages are determined under such differing labour market conditions is crucial for an understanding of the adjustment processes in the labour market for demographic pressures. The very low rates of unemployment, whatever be the definition, reported in many states in India might be partly attributed to the institutional constraints imposed on the operation of the labour markets. For instance, the existence of 'tied' or 'bonded' labour would not enable those under such systems to seek work or even report themselves as available for work. The point that one would like to emphasise here is that the perceptions about unemployment and employment would very much be coloured by the institutional and social structure under which the labour market operates. Amartya Sen distinguishes between three aspects of employment and one of them is the 'recognition aspect' which is influenced by the institutional and social structure within which a labourer operates [Sen, 1975]. Most studies on the measurement of the number of unemployed fail to consider this 'recognition aspect'. Therefore, estimates of unemployment or of employment might not truly reflect the extent of the demographic pressure on the labour market. On the other hand, levels of household income or expenditure and their temporal changes might provide truer indications of the consequences of population pressure on the household and the society. Even an analysis of trends in real wage rates would fail to indicate the extent of population pressure on the economic system, for, it is possible that real wage rate might go up while the number of days of total employment might have declined at the same time [Krishnan, 1991]. In normal situations, the operation of the labour market has to solve satisfactorily a number of issues concerning the determination of the wage rate. First, the wage rate must be sufficient enough to enable the continuous reproduction of labour. Second, it should satisfy the minimum needs of worker so that it induces him to put in enough work effort to maintain productivity. Third, if the wage rate in any sector is related to the wage rates in other sectors then it might also require that the wage parities are maintained. All these factors are closely related to the institutional structure under which the labour market operates. We have very little information and knowledge as to how wage rates for various categories of labour in different sectors are determined. It might be conceivable that within broadly segmented labour markets there also exist close interconnections among certain categories of wage rates. Such a finding emerged from a study of the rural labour market in Kerala [Krishnan, 1991].

An analysis of the wage structure in the rural and urban sectors of Kerala brought out many interesting features of the interrelationships among wage rates in the agricultural and construction sectors. We considered wages of eight categories of labour in the rural sector, namely, those of mason, carpenter, unskilled male and unskilled female labourer for the construction sector and of paddy field male labour, paddy field female labour, other agricultural male labour and other agricultural female labour in agriculture. During the period 1960 to 1988 it was found that the wage rates moved in such a way as to preserve the wage relativities. All the wage relativities were calculated in terms of the wage rate of mason. When the wage relativities were arranged in a descending order, they fell into a hierarchical pattern, and varied between 1.0 and 0.41 [Krishnan, 1991]. Male agricultural worker and unskilled male worker in construction received about two-thirds of the wage of mason whereas those of female workers were between 40 and 47 per cent. As we moved down the hierarchical ladder it was found that the coefficient of variation of the wage ratios also rose though the largest figure reported for female agricultural labour was still only 10 per cent. The smallest coefficient of variation was in the wage ratio for carpenters, only 2 per cent [Krishnan, 1991].

The stability of the wage ratios raised an important question as to whether the subset of wages considered in the analysis were mutually related. If the wage rates were subject to mutual feedback relationships, then a change in any one of the wage rate, whatever be its cause, would trigger changes in other wage rates in order to restore the wage parities. The existence of the feedback was verified by testing the relationships for Granger causality by fitting vector autoregressions and these tests were positive. The presence of Granger causality implied that the changes in wage structure could be divided into two separate processes when they were not attributed to a change in the general price level. A change in a particular wage rate brought about by a given factor in that labour market may be described as arising from a 'causal factor' for the initial wage change. The next process is the 'induced' change in other wage rates in order to restore parity. This latter wage adjustment we ascribe to 'structural' factors associated with the institutional structure of the labour markets for those categories of labour. The labour markets of those categories of labour which were structurally related were said to be interrelated as opposed to segmented.

The most important aspect of the phenomena of interrelated labour market is the mutual feedback among wage rates. Labour markets may be compared to a group of islands where communication exists within but not between islands. A group of interrelated labour markets is like a single island, but segmented labour markets are like separate islands with no means of communication. Within each segmented labour market there may exist interrelationships among wage rates. For instance the labour markets in agriculture and construction are interrelated but the market for industrial labour may be segmented from these two markets. However, within the industrial labour market, the wage rates for various categories of labour in a particular industry or even between different industries may again be interrelated. In that case the latter constitutes another interrelated labour market but unrelated to the first one.

The very existence of interrelated labour market is anathema to the application of supply and demand analysis to the problems of the labour market [Solow 1991]. So what explains the prevalence and persistence of wage relativities? The persistence of wage relativities in the building trades over along historical period was reported for England. We attribute the prevalence of wage relativities to the adherence to social norms. Agriculture and construction were in existence from time immemorial and therefore the wage parities developed over time through custom and usage. Such parities probably naturally got established themselves easily in hierarchical societies. Therefore, it was likely that some form of wage parities did prevail among long-established traditional occupations. When new occupations were created in the process of industrialisation, possibly the labour market got initially segmented but later established its own wage rules within such segmented labour markets.

The hierarchical nature of the Indian society was closely bound by the caste structure of our society. Caste and traditional occupations were also closely inter-linked. Any person living in such a society would be conscious of his rank within that society and would do everything necessary to protect his position. He would be constantly comparing his status with those above and below him. The wage differential might reflect partly social position and partly a premia for the embodiment of skill in different occupations.

Trends in Nominal and Real Wages

The caveats discussed above are important in an analysis of nominal and real wages. Therefore, we have derived indices of nominal and real wages relative to the wage rate in the state of Punjab. We have only considered the wage rate for male agricultural labour. Punjab reported the highest wage rate among all the states in India. Real wage rates were estimated by deflating the nominal wage rates by the agricultural labourer's cost of living indices of the respective states. We have also estimated the unweighted coefficient of variation in these wage rates. These estimates are shown in Tables 13 and 14. There are wide divergences in the wage rates between the states. The

lowest wage rate, nominal as well as real, is only about one-third of that of Punjab. Though we have not made any attempt to test the relationship, it appears that the more backward a state is with respect to social and institutional development the lower the prevailing wage rate.

The inter-state inequality in wage rate appeared to have increased by 1970 compared to 1960 but seemed to have decreased to some extent by 1987. During the period 1960 to 1987, the inter-state inequality in the agricultural wage rates appears to have persisted and even shown a mild increase. The factors underlying these trends deserve detailed analysis which is not attempted here.

Wage-Productivity Nexus

One of the factors underlying the disparity in wage rates might be the differences in agricultural productivity between different regions or states. The relationship between productivity and wages is closely tied to the marginal productivity theory of wages. While there are many problems in accepting the marginal productivity theory to explain the level of wages, it is important to recognise that levels and changes in productivity in relation to the wage rate do play an important role in determining the demand for labour. A V Jose hypothesised that "the single-most important variable influencing the movement of real wage rates in any state has been the level of agricultural output in the respective state" [Jose 1988]. In support of this Jose had compared the estimates of compound rates of growth in real wages and in net domestic product in agriculture for each state during the period 1964-84 and found that they moved together [Jose 1988]. We verified Jose's hypothesis by regressing real wage rate on net value of agricultural product per agricultural worker (cultivators plus agricultural labourers under the category of main workers) and on the proportion of agricultural labourers in total rural main workers. We also estimated alternative regressions where we substituted the value of agricultural product per worker with foodgrains output per agricultural worker. We also fitted another equation for money wages where cereal price was included as an additional explanatory variable. In this case we used foodgrains output per agricultural worker instead of value of agricultural product per worker in order to avoid problems of multi-collinearity. The results of these estimates are given below:

Variables

Mw = Money wages of male agricultural labour

Rw = Real wages of male agricultural labourer.

AGLR = Ratio of agricultural labour to total main workers.

VAD = Per worker value of agricultural product.

PFD = Per worker quantity of foodgrains output.

(1) $Rw = 2.0881 + 0.00043(VAD) - 1.2103(AGLR)$
$(4.677)\ (3.7534)^{***}\ (-0.8203)$
$R^2 2 = 0.60$

(2) $Rw = 2.3762 + 0.00035(PFD) - 1.4075(AGLR)$
$(4.6400)\ (2.5344)^{**}\ (-0.7955)$
$R^2 = 0.42$

(3) $Mw = 4.2025 + 3.9073(CPR) + 0.0029(PFD)$
$(0.6214)\ (1.9640)^{*}\ (3.1922)^{***}$
$-15.6445\ (AGLR)$
(-1.6493)
$R^2 = 0.57$

Notes: Figures in brackets show the respective t-values.
Significance level: *** = 1 per cent, ** = 5 per cent, * = 10 per cent.

We find that the proportion of agricultural labour in total agricultural labour force (including cultivators) was not significant in the real wage equation implying that the supply of labour was probably not an important factor in determining the wage rate. This probably implies that the demographic pressure operates in the labour market not through changes in wage rates but through an adjustment in the average number of days of work available to each worker or through other social mechanisms. On the other hand, our findings confirm Jose's hypothesis that the level of agricultural productivity was indeed a major factor. States with higher agricultural productivity were also states with higher per capita foodgrains production and hence inter-state variations in per capita foodgrains production also proved to be an equally powerful explanatory variable in inter-state variation in real wage rates. Though one may not attribute a causal relation between per capita foodgrains production and the level of real wages, it provides another important link between poverty and wage rate.

The proportion of agricultural labour in total agricultural work-force proved to be insignificant in the equation for money wages also. However, cereal prices and per worker foodgrains output turned out to be significant. It so happens (as mentioned in the second lecture) that cereal prices

Table 13: Index of Money Wage Rate for Agricultural Labourers

States	1960		1970		1980		1987	
	Male	Female	Male	Female	Male	Female	Male	Female
Andhra	53.72	57.14	40.03	40.00	47.69	35.92	52.22	50.00
Assam	95.87	112.42	65.95	65.89	56.35	50.00	71.19	71.46
Bihar	52.89	68.94	41.56	46.11	44.14	36.08	53.23	68.97
Gujarat	77.27	86.96	44.17	46.74	57.92	46.88	58.13	62.65
Haryana	na	na	89.57	84.21	95.96	66.64	92.99	65.57
Karnataka	68.60	78.26	44.48	35.58	49.50	37.36	43.73	51.35
Kerala	66.53	68.94	72.55	63.58	79.04	58.32	90.07	85.89
Madhya Pradesh	43.39	51.55	31.90	31.16	37.29	34.88	45.08	49.41
Maharashtra	62.40	53.40	46.47	40.63	43.56	29.36	42.25	48.65
Orissa	54.96	57.14	36.04	33.26	44.80	39.36	37.18	40.54
Punjab	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Rajasthan	na	na	51.99	37.47	61.14	46.48	71.82	56.76
Tamil Nadu	47.52	52.80	37.88	35.37	48.18	34.24	47.32	33.35
Uttar Pradesh	66.94	32.36	40.21	51.73	47.60	59.45	52.94	na
West Bengal	78.93	96.27	49.85	50.53	59.08	48.80	79.13	64.38
CV	0.25	0.27	0.38	0.39	0.31	0.36	0.31	0.28

Source: *Agricultural Wages in India*, relevant years.

Table 14: Index of Real Wage Rate for Agricultural Labourers

States	1960		1970		1980		1987	
	Male	Female	Male	Female	Male	Female	Male	Female
Andhra	55.60	59.35	45.90	46.03	59.93	45.18	64.45	61.76
Assam	97.41	113.55	63.22	63.18	57.88	51.50	69.57	69.93
Bihar	50.86	65.81	37.08	41.00	45.21	36.88	53.71	69.61
Gujarat	75.86	85.16	48.63	51.46	71.23	57.48	64.19	68.95
Haryana	na	na	na	na	89.36	84.10	66.78	108.15
Karnataka	71.12	80.65	47.72	38.49	57.88	43.85	46.80	54.90
Kerala	67.67	69.68	67.48	59.41	90.41	66.78	76.98	73.20
Madhya Pradesh	43.53	51.61	30.70	30.13	36.99	34.55	45.52	50.00
Maharashtra	59.48	50.97	48.63	42.68	47.95	32.56	42.97	49.35
Orissa	53.88	56.13	31.91	29.71	41.10	36.21	35.55	38.56
Punjab	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Rajasthan	na	na	53.19	38.49	61.64	46.84	75.70	59.80
Tamil Nadu	na	na	44.07	41.00	55.82	39.53	48.59	34.31
Uttar Pradesh	na	na	32.83	40.59	50.68	46.84	53.20	na
West Bengal	71.55	87.10	46.81	47.70	61.30	50.50	78.77	64.05
CV	0.25	0.26	0.37	0.37	0.30	0.33	0.28	0.26

Source: *Agricultural Wages in India*, relevant years.

tended to be high in low per capita foodgrains states and vice versa. Thus, higher money wages probably compensate the higher cereal prices where per capita foodgrains production is lower. While we have not analysed the relationship between wage and productivity in the industrial sector, one of the important factors in inter-state differential in agricultural wage rate appears to be productivity per agricultural worker. This is not only confirmed by the inter-state analysis but also by another analysis of the behaviour of acreage under paddy in Kerala [Krishnan 1991]. Kerala had the highest agricultural wage rate after Punjab and Haryana and agricultural labourers were also unionised in the state. The changes in acreage under paddy fell into two distinct phases: first phase from 1960-61 to 1974-75 when acreage rose steadily, from 779 thousand hectares to 881 thousand hectares; a second phase beginning from 1975-76 when paddy acreage began to decline steadily and was only 577 thousand hectares in 1988-89 [Krishnan 1991]. Throughout this period agricultural wages continued to increase. During the first phase, farm harvest price rose at a higher rate than that of wage rate and productivity also increased. These trends got reversed during the second phase. During the first phase, wage increase arose from a combination of two factors, the implementation of minimum wages and the bargaining strength from unionisation. In the second phase, wage increases appeared to have been triggered by entirely different reasons. From 1975, migration to West Asia began and the emigration of semi-skilled construction workers led to an increase in their wage rates. Besides, the remittance incomes also resulted in a sudden increase in construction activity within Kerala providing further fillip to wage increases. As mentioned earlier, the construction and agricultural labour markets were inter-linked and hence when construction wages rose, the agricultural wages also did likewise. However, in the absence of either productivity increases or rise in product price to compensate for the wage rise, the effect of the wage increase was to reduce the acreage under paddy. An acreage response function fitted to lagged price of rice and the wage rate indicated that there was a strong negative response to wage rate. The response coefficient to wage rate was highly significant whereas it was not so in the case of farm price [Krishnan 1991]. As a result of the decline in acreage under paddy either the paddy land was kept fallow or it was shifted to the growing of crops which required less labour input compared to that of paddy cultivation. A male agricultural labourer had employment for 198 days in a year in 1964-65 but could secure only 147 day's work in 1983-84 [Krishnan 1991]. This result was due to the operation of two distinct factors, one, increase in the number of agricultural labour households partly arising from population growth, and another due to the shift in cropping pattern brought about by rise in wage rates and in changes in relative prices of agricultural products.

The relationship between wages and productivity has important implications for employment and alleviation of poverty. While low wage rate and declining number of days of employment are contributory factors to the persistence of poverty, the long-term solution do not lie in raising wage rates when productivity continued to remain stagnant. This observation may sound trite but without increases in productivity attempts to raise wages would turn out to be counter-productive. This factor is especially important in revising minimum wages. In a situation of low wage-low productivity trap, attempts to implement minimum wages ignoring this relationship either would not succeed or forced would shift cropping patterns and labour use.

The construction of minor irrigation works to extend cultivation and the development of social forestry in all villages are closely related to agricultural development. Reforestation will not only provide relief to the shortage of domestic fuel but retaining moisture in the soil would also arrest soil erosion and decline in soil fertility. The extension of area under irrigation would enable double cropping and in crop diversification. Apart from raising the volume of employment, these measures would raise productivity, food consumption and also make it feasible the increases in wage rates.

While the importance of foodgrains in the Indian economy should not be belittled, the time has come for a major diversification in agricultural production. Given the massive increase in the numbers needing employment in future, we should realise that industry might not be in a position to absorb this labour force. Therefore, agriculture and allied activities would have to continue to expand their employment opportunities. This expansion of employment is vital to stem the tide of flows of employment seekers to the cities. Therefore, diversification of agricultural production and the development of agro-processing industries in and around rural areas would go a long way in tackling these issues.

Women's Status, Poverty and Employment

The importance of women's status for fertility reduction and alleviation of poverty needs to be explicitly recognised in development programmes. Women constitute not only about half the population of the country but, as various studies have shown, they bear the brunt of poverty. As mentioned in the first lecture, women's status and levels of education in society and family are vital for the success of family planning programmes. We would, therefore, like to suggest special measures for generating employment for women. It is suggested that women's co-operatives comprising of female agricultural labourers and women belonging to small and marginal farmers be constituted. Such co-operatives should be provided with technical and administrative help to set up agro-processing industries. The advantages of agro-processing industries are that their technologies are scale neutral, can be ubiquitous in location and are ideal as rural industries. The creation of such enterprises would enable the rural women to supplement their income, increase their level of work participation, promote social intercourse and provide some degree of autonomy in family decision-taking. All these factors might ultimately impact favourably on the acceptance and practice of family planning and in reducing population growth. An increase in female employment and income would raise food and nutritional intake and reduce malnutrition and the incidence of sickness arising from malnutrition. Thus women's employment can be a potent weapon for breaking the linkages between population growth and poverty.

Concluding Remarks

Our analysis of the issues of population, poverty and employment indicates that the achievements of Indian planning represent at best only partial successes. Primarily, the whole planning effort in India critically failed in achieving the most important social and human values any society normally cherished, namely, to have an educated and a healthy population. In large regions of the country, illiteracy, especially among women, continued to be still rampant, nearly 2 million children would die before they completed their first year of life and the bottom 30 per cent of the population still consumed only as much grain as they used to consume 30 or 40 years ago. In terms of absolute numbers, the number of illiterates, the total number of infant deaths and the total number of malnourished or partially hungry persons have all risen in 1992 compared to 1952 when we started our planning. The failure to eradicate illiteracy, to improve the status of women in society and to assure access to health care also accounted for the failure to reduce the rate of population growth. The real shortcomings of Indian planning lie in its overall neglect of social sector planning and thus in its failure to integrate population issues with development programmes and policies. Therefore the social objectives either enjoined in the Constitution of India or often politically articulated could never

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be fulfilled. Indian planning beginning with the Second Five-Year Plan over-emphasised physical and financial planning at the expense of social planning.

An important partial success of Indian planning was its ability to increase foodgrains output commensurate with the increase in population. At the time when the food production strategy was put in place, it appeared as a spectacular achievement, but with hindsight, it was probably a path guided by a softer option to solve the food crisis. Basically, the food policy was a wheat strategy and it widened the inter-state disparities in per capita grains production and necessitated the transport of large quantities of grains across the country. This strategy also led to the neglect of the development of minor and unconventional sources of irrigation to support the cultivation of inferior cereals on which the poorer population of large tracts of the country depended for their grain consumption. Barring three or four states, per capita grains output declined in all states during the period 1961-1989. Thus, the agricultural production strategy failed to raise productivity in states or regions where it was low. Our analysis showed that not only per capita consumption of grains depended on per capita output but agricultural wage rates too appeared to depend on the level of per capita grains output or level of agricultural productivity. Therefore, a regionally balanced agricultural development strategy would have provided a double benefit, namely, it would have contributed directly to reducing poverty by enabling the poor to raise their level of grain consumption and also indirectly by raising wage rates which would have further helped them to purchase larger quantities of grains.

Though we did not undertake any detailed examination of the process of labour market adjustment to the demographic pressure, some tentative hypotheses seem to emerge from our analysis. First and foremost, there is no strong evidence to suggest that wage rates respond to demographic pressure at all. This might be attributed to the institutional and social structure within which the labour market operated in a poor agrarian economy. However, there is some indication that wage rates are sensitive to grain prices and to agricultural productivity. These conclusions are based on the analysis of cross-section data and not on a study of wage movements over time. Similarly, the reported rates of unemployment in rural areas are also probably insensitive to demographic pressures. We tentatively hypothesise that both unemployment and rural wage rates are closely tied to the institutional and social structure of the organisation of the labour market and we have only a minimal understanding of these factors. However, the labour force entering the labour market during the next 35 years would be close to 220 million and this would not be a small figure to reckon with. Indian development would be put to a severe test in the coming years as the challenges posed by population growth, poverty, and the need to generate additional employment would prove to be more daunting during the next 35 years than they were hitherto.

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13

Poverty in West Bengal

What Have We Learnt?

Biswajit Chatterjee

This article reviews some of the existing studies on the incidence of poverty in West Bengal, with particular emphasis on the decades of 1970s and 1980s. Discussions of the implications of all-India or inter-state poverty studies on the poverty scenario in West Bengal are followed by a critical review of some of the major studies of rural and urban poverty in the state. The aggregative state level scenario as portrayed by these studies has been contrasted with the grass roots level picture of rural poverty as it has been brought out by some of the recent case studies based on household surveys /resurveys. The implications of all these studies for formulation of effective anti-poverty policies in West Bengal are also emphasised in this paper.

I
Introduction

INDIA is a poor country by world standards. There are considerable variations in poverty across the states of India, and wide fluctuations in living standards over time. Naturally, poverty is an important question which has attracted the attention of researchers and policy-makers during the 50 years of our national economic development through planning in a mixed economy framework. In the state of West Bengal, in 1977 a left-front government came to power with massive popular mandate. It took a pro-poor stance in its economic development policy. That government has now completed 20 years of rule in the state. The question is whether the incidence of poverty in this state has gone down over the years. In this article, we shall reflect on this question on the basis of available studies on the incidence of poverty and its variations over time. We shall also use the insights of some of the recent case studies on the subject to gauge the incidence and severity of poverty and related deprivations at the micro level on a selective basis. The relevance and sustainability of the existing poverty alleviation programmes in this state will be examined in view of our reappraisal of the available studies.

In Section II, I shall briefly review the major concepts of poverty norms and the results of some major studies on the estimates of poor in West Bengal as part of all-India and inter-state poverty estimates attempted by various scholars and institutions. The ranking of the state of West Bengal in terms of indices of poverty among all other states of India, its change over time, and attempts to identify the determinants of rural and urban poverty in the state will be critically reviewed in this section. This will be followed by appraisals of the results of some studies on rural and urban poverty undertaken exclusively for the state of West Bengal. In Section III, I shall present my own estimates of the incidence of poverty in rural and urban West Bengal during the 1970s and 1980s, using state-specific dietary norms and state-specific retail prices. I have also chosen some case studies at the micro level to report some of the important findings and argue that the extent of poverty in some areas is much greater than is revealed through the state level aggregative estimates. These micro-level case studies will be reviewed in Section IV. In Section V, I shall briefly comment on the policy of poverty alleviation in the state of West Bengal, particularly in the context of the market friendly economic reforms currently pursued in India. Section VI contains concluding observations.

Some general observations may be made at the outset about the relative backwardness of the state of West Bengal in India. The level and the rate of growth of per capita SDP of West Bengal consistently lags behind the per capita GDP for India, both measured at 1980-81 prices. The trend growth rate of SDP of West Bengal during 1970-71 to 1988-89 is 3.24 per cent compared to 4.17 per cent trend growth rate of India's GDP during the same period. In fact, the percentage deviations of per capita SDP of West Bengal from the per capita GDP for India as a whole, consistently widened during the decades of 1970s and 1980s, indicating clearly relative deceleration in West Bengal's standard of living *vis-a-vis* the all-India average. West Bengal's reliance on the primary sector for delivering increments in output has been much greater compared to the rest of India and the contribution of the industrial sector much lower. The relative growth performance in the industries in the state has been low compared to India as a whole, especially since the 1970s, and worsened since the late 1980s. The only redeeming feature in the decade of 1980s for the state of West Bengal has been the spurt in the trend growth rate of agricultural productivity much ahead of the all-India growth rate. This rise was accompanied by effective distribution of surplus agricultural land among the landless labourers, thus raising the share of landholding of marginal and small farmers in the state compared to the rest of India. Although West Bengal's performance is much better than the national averages with respect to male and female literacy rates, its relative ranking among the states of India has declined. The proportions of poor to total population in rural and urban areas of the state are higher than the corresponding all-India averages. The issues of poverty and deprivation are critical both for political economy discourses as well as for policy-making.

II
Aggregative View

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 rise to differences in conceptualisation 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. Attempts to quantify the incidence of

poverty involve a study of the level and pattern of individuals' personal consumption as well as their access to social benefits. For the practical purpose of segregating the poor from the non-poor, it would be useful to focus on a single criterion rather than multiple criteria, although from an analytical and conceptual point of view, one should adopt a multi-dimensional approach. In what follows, I prefer to avoid use of composite indices, because weighting arrangements for the construction of such a composite index generally remain ad hoc. I shall concentrate on income/expenditure deprivation aspect of poverty.

The empirical literature on poverty in India is vast, and has covered many dimensions and generated a lot of controversy. The major data base has been provided by the household consumer expenditure surveys conducted by the National Sample Survey Organisation (NSSO), supplemented by other sources like the data generated by the Central Statistical Organisation, Planning Commission, and reports of various ministries of the central and the state governments. The first major issue has been the choice of the poverty line to demarcate the poor from the non-poor. The exact estimates of the incidence of poverty depend on the location of the poverty line and the methods and norms underlying it. The idea of a basic minimum calorie requirement and the estimation of the cost of the diet that satisfy these requirements were the subjects of intense debate among researchers during 1960s and 1970s. While Bardhan (1970) and Minhas (1968) differed on the basic elements of the consumption basket for the poor in both rural and urban areas, their estimates of rural and urban poverty in India did not differ more than 5 per cent, and were stable during the decade of 1960s. Bardhan (1973) also obtained estimates of inter-state variations in the incidence of rural poverty for 1960-61 and 1967-68, and found that between 1960-61 and 1967-68, the rural head count ratio in West Bengal exhibited a sharp jump from 22 per cent to 74 per cent, while the all-India proportion rose from 38 per cent to 53 per cent during the same period. It may be noted that a sharp jump was noticed for most of the states by Bardhan (1973), and this was mainly due to his use of all-India CPIAL, and all-India consumption basket as the basis of inter-state variations in rural poverty. Among other studies attempting to estimate statewise poverty indices for the rural areas, one may mention Vaidyanathan (1974) and Bhatty (1974). Dandekar and Rath (1971) had used the calorie norm of 2,250 per capita per day for rural and 2,100 per capita per day for urban population to estimate the poverty line and the poverty percentages for the country as a whole. The debate following their work raised the valid point of non-equivalence between an average diet and a minimum diet, and the need to take into account both inter-personal as well as intra-personal variation in dietary pattern depending upon age, sex, climate, food habit and more importantly the type of work one is engaged in to estimate the extent of malnutrition and poverty which are two related but distinct phenomena. Their study took the country as a whole as the unit and did not contain any specific estimates for the states.

Nayyar (1991) attempted to estimate the incidence of rural poverty in different states of India for 1961-62, 1970-71 and 1977-78. She used two alternative calorie norms of 2,200 and 2,000 per capita per day with NSS data on consumption of different food items for different expenditure classes in rural India. She used the consumer's price index for agricultural labourers (CPIAL) for different states, to estimate the head count ratio (HC), poverty gap ratio (PG) and Sen's P-measure for rural areas of different states and India as a whole. Her method is similar to that of Dandekar and Rath in the sense that she used calorie norm as the basis of her estimates of rural poverty, but she extended the analysis to state-level disaggregation. Table 1 summarises her estimates of the incidence of rural poverty for West Bengal and India for the three years mentioned above. It is clear that her poverty estimates are sensitive to alternative calorie norms chosen to compute the poverty lines, and West Bengal on the whole exhibited a higher HC ratio and greater severity of rural poverty compared to all-India averages during the period.

In a country as diverse and large as India, the use of an all-India poverty line can be misleading. For meaningful estimates, one needs to consider the state-specific dietary patterns and state-specific retail prices faced by different fractile groups of income distribution to arrive at state-specific poverty lines. The inter-temporal variations in these poverty lines provide a clue to success or otherwise of various poverty alleviation programmes introduced by the government from time to time. This was first suggested in a seminal paper by Montek Ahluwalia (1978) and extended in 1986 in response to Dharam Narain's query about the impact of price variations on poverty estimates. He adopted the per capita consumer expenditure of Rs 15 per month (for 30 days) at 1960-61 prices adjusted with the help of CPIAL as poverty line for estimating the trends in the incidence of rural poverty (both HC ratio and Sen's P-measure) during the period 1956-57 to 1973-74 for India as a whole and for the different states. He found that the percentage of population below poverty line declined through the 1950s, rose to a peak in 1967-68, and then declined substantially though in an uneven manner, through the 1970s, and a similar pattern was discernible for the Sen-index as well. His time-series regression analysis revealed that (a) rural poverty was inversely related to agricultural income per head in rural areas, and this relationship was found to be strengthened when agricultural income was lagged, and (b) there was a positive relationship between poverty indices and price indices, but the absolute size of the response coefficient of price indices was found to have been much moderated when lagged agricultural income was included. Regarding state-level estimates of rural poverty (both HC as well as Sen's measure), Ahluwalia (1978) derived two types of estimates, one based on all-India dietary norm but state-specific retail prices based on Chatterjee and Bhattacharya (1974) estimates of price relatives, and another based on state-specific dietary norms coupled with state-specific retail prices as was estimated by state-specific CPIALs.

Table 1: Estimates of Rural Poverty on the Basis of Alternative Calorie Norms

	Calorie Norm					
	2,200 Per Capita Per Day			2,000 Per Capita Per Day		
	HC	PG	P-Measure	HC	PG	P-Measure
	(Per Cent)			(Per Cent)		
1961-62						
West Bengal	70.92	0.28	0.25	48.33	0.20	0.14
All-India	33.98	0.25	0.12	21.14	0.32	0.07
1970-71						
West Bengal	79.56	0.38	0.39	66.26	0.20	0.28
All-India	56.64	0.27	0.22	41.84	0.27	0.15
1977-78						
West Bengal	72.77	0.36	0.34	62.88	0.21	0.26
All-India	54.64	0.32	0.22	42.52	0.23	0.14

Source: Nayyar (1991), Chapter 2.

His second estimate taking into account inter-state variations in both the dietary norms as well as prices is a significant contribution to our poverty studies, because it incorporates all possible proximate causes of variation in poverty estimates across states. His regression analysis at the state level confirmed his hypotheses, but the significance of the relations differed across the states.

Gaiha (1989) extended Ahluwalia's analysis by developing a logistic model, where

$\log\left(\frac{H_t}{100-H_t}\right)$ and $\log\left(\frac{\text{Sen Index}}{1-\text{Sen Index}}\right)$ were regressed

on the index of agricultural productivity (IAPP) and fluctuations of CPIAL from its trend values (FCPIAL) for all years for the states. While Gaiha could not find uniformity in the response pattern of those variables across the states, his findings on West Bengal is worth noting. The co-efficient of IAPP was found to be positive but weakly significant, and that of FCPIAL was positive and strongly significant, but there was a rising residual time trend which attested to the Bardhan's (1985) hypothesis that agricultural growth in West Bengal is immiserising. Gaiha found similar results with the Sen index as well, with the difference that the co-efficients of IAPP were also statistically significant. He concluded that West Bengal constituted a special case inasmuch as agricultural growth reinforced the immiserisation resulting from price fluctuations and the factors underlying the time trend. It may be noted that beyond 1974, NSS has been conducting quinquennial surveys of consumer expenditures on the basis of large samples of households, while small or thin sample size is relied upon for consumer expenditure surveys for periods in between, thus making proper time-series studies on poverty difficult, and forcing scholars to make ad hoc adjustments. We shall return to this point later.

Planning Commission Estimates

We now move to the estimates of the incidence of poverty in rural and urban areas in West Bengal and India made by the Planning Commission from time to time. Here several approaches are discernible: (a) use of all-India poverty line for states, and their updating for inflation adjustment over the period, (b) use of state-specific poverty lines on the basis of Expert Group methodology and (c) the consensus approach as is used currently (also denoted as modified Expert Group method). Tables 2 and 3 present the percentage and number of poor in rural and urban West Bengal according to the Planning Commission and Expert Group methodology, and Table 4 presents the estimates according to modified Expert Group methodology, which is being adopted by the Planning Commission as official estimates from March 11, 1997.

It may be noted that the original Planning Commission methodology uses all-India poverty lines of Rs 49.1 and Rs 56.60 per capita per month respectively for rural and urban areas at 1973-74 prices corresponding to 2,400 and 2,100 calories norm per capita per day for rural and urban areas, with the help of NSS 28th round (1973-74) consumer expenditure data. It has updated the national poverty lines for subsequent years with the help of wholesale prices and GDP deflator for private consumption estimated from the National Accounts Statistics, and assumes that the price vector of the consumption basket implicit in the estimated all-India poverty lines for 1973-74 and its movement over time is identical across all states and for rural and urban areas. Such a restrictive assumption of using all-India poverty lines and all-India deflators for estimating the incidence of poverty across the states was perhaps motivated by the urgency of showing the dramatic success of the government in poverty alleviation, as both the percentage and number of poor people in West Bengal and India as a whole show dramatic decline during the period, despite a high population growth and disparate movement in relative prices of food and other articles in the states including West Bengal. This procedure is not only arbitrary and defective because it suppresses facts deliberately, but it also exposes the hollowness of poverty studies in our country since the early 1960s.

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 and 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 statewise head count ratios for

Table 2: Percentage of Poor in West Bengal and India

Year	Planning Commission Methodology						Expert Group Methodology					
	West Bengal			India			West Bengal			India		
	R	U	C	R	U	C	R	U	C	R	U	C
1972-73	64.00	35.90	56.80	54.10	41.20	51.50	73.16	34.50	63.39	56.44	49.23	54.93
1977-78	53.16	30.35	47.30	46.13	33.82	43.40	68.34	38.71	60.65	53.07	47.40	51.81
1983	35.84	19.40	31.45	32.73	21.68	30.08	63.05	32.21	54.72	45.61	42.15	44.76
1987-88	24.73	16.44	22.49	28.37	16.82	25.49	48.30	32.84	43.99	39.06	40.12	39.34
1993-94	13.34	8.32	11.94	19.24	10.11	16.82	40.80	22.51	35.69	37.27	33.66	36.31

Source: Planning Commission, 1993; and Malhotra, 1997.

Table 3: Number of Poor in West Bengal

(In lakh)

Year	Planning Commission Methodology			Expert Group Methodology		
	R	U	C	R	U	C
1972-73	220.90	41.60	262.50	257.96	41.14	299.10
1977-78	200.97	39.68	240.65	259.69	51.55	311.24
1983	152.68	30.07	182.75	266.65	50.45	317.10
1987-88	114.37	28.24	142.60	219.09	57.63	276.72
1993-94	68.64	16.57	85.21	209.90	44.86	254.76

Source: Planning Commission, 1993, and Malhotra, 1997.

Table 4: Percentage and Number of Poor by Modified Expert Group Methodology

Year	West Bengal				India			
	R (Per Cent)	U (Per Cent)	C (Per Cent)	Number of Poor (Lakhs)	R (Per Cent)	U (Per Cent)	C (Per Cent)	Total Number of Poor (Lakhs)
1972-73	73.14	34.67	63.43	299.30	56.44	49.01	54.88	3213.36
1977-78	68.34	38.20	60.52	310.57	53.07	45.24	51.32	3288.95
1983	63.05	32.32	54.85	318.69	45.65	40.79	44.48	3228.97
1987-88	48.30	35.08	44.72	283.61	39.09	38.20	38.86	3070.49
1993-94	40.80	22.41	35.66	254.56	37.27	32.36	35.97	3203.68

Source: Malhotra 1997.

rural and urban areas. Secondly, the group has added a federal dimension to the estimation of poverty when the all-India poverty proportions for rural and urban areas are derived as a ratio of aggregate statewise number of poor to the total 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 has used statewise NSS consumption expenditure distribution along with state-specific poverty lines in order to arrive as poverty percentages for different states. Thirdly, in order to arrive at state-specific poverty lines corresponding to the baseline consumption basket for 1973-74, they have estimated statewise price differentials separately for rural and urban areas with the help of specially 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 statewise population figures of Registrar General of Census for rural and urban areas on the poverty proportions of states, the total number of poor in each state for each of the years have been calculated, 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 the Modified Expert Group Methodology that is now adopted as the official consensus approach of the Planning Commission differs from the Expert Group method described above on two counts: (a) it drops the CPIUE and uses only CPIIW for updating the urban poverty lines across states, and thus the estimates of urban head court 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 states are slightly different even if the rural head count ratios are identical for the Expert Group and the Modified Expert Group estimates.

We are now in a position to reflect on the state of the poor in West Bengal. Both the percentage of poor and the number of poor in rural West Bengal has declined sharply during the 1980s as per the Expert Group and Modified Expert Group estimates, and this decline is largely due to a combination of technology-induced productivity upsurge in agricultural production, and institutional reforms like operation barga, land redistribution and decentralised planning through elected panchayats, which ensures equitable distribution of the gains of growth across population groups. So far as number of urban poors is concerned, there seems to be an inverted U pattern between 1973-74 and 1993-94, and this suggests the relative lack of effectiveness of urban poverty alleviation schemes, and slackening of industrial growth in the state, particularly after the mid-1980s. But the overall picture in poverty reduction in West Bengal appears to be much better compared to all-India scenario, and this suggests that in West Bengal, despite limitations at the micro-level, the poor have benefited more than the non-poor from the developmental programmes undertaken by the Left Front government for the last 21 years.

Derivation of a state-specific poverty line requires information about (a) state-specific dietary norm and the composition of the basket that satisfies this norm, (b) state-specific retail prices of food articles to which people belonging to different expenditure classes are exposed, (c) state-specific distribution of consumption expenditure, and (d) state-specific provision of public goods and free goods which are enjoyed by people in rural and urban areas of the given state. While information about (d) is difficult to obtain and evaluate, information about (c) is provided by the NSS consumption expenditure survey data for different states. The Expert Group did not differentiate between state-specific dietary norms, but made detailed investigation into the construction of state-specific prices. Since differential and intertemporal information about state-specific diets are difficult to obtain, a better way could be to do away with the roundabout ways of estimating the state-specific poverty lines by taking the state-specific mean per capita total (food + non-food) consumption expenditure (MPCE) as the cut-off levels to differentiate the poor from the non-poor for rural and urban areas of each state of India separately for different time periods. The variations in MPCE include variations in dietary norms, consumption basket, and retail prices for that state on an average over the period, and if the state-specific MPCE is chosen as the poverty cut-off level for a particular state, then we need not bother about base period adjustments in consumption basket as well as the retail prices. Such a procedure may be objected to on grounds of lack of comparability across states from a common reference point. A common reference point is however meaningless when we try to capture variations in deprivation levels in different states, and the purpose of poverty alleviation measures in a given state is to alleviate those who fail to command goods and services that an

TABLE 5: MPCE, HC RATIO, GINI AND SEN'S MEASURE AT 1960-61 PRICES

	Rural	Rank in India	Urban	Rank in India
A: MPCE				
1961-62	19.83	3	38.00	15
1968-69	14.93	2	31.30	14
1973-74	17.21	5	37.39	16
1977-78	18.46	4	31.91	13
1983	19.92	5	35.77	16
1986-87	22.90	4	38.43	15
B: HC Ratio				
1961-62	70.92	1	62.97	13
1968-69	59.21	13	61.45	17
1973-74	62.20	8	63.90	12
1977-78	63.90	12	66.50	10
1983	62.20	14	67.00	2
1986-87	60.40	18	69.90	2
C: GINI				
1961-62	0.2251	14	0.3246	10
1968-69	0.2277	14	0.2810	16
1973-74	0.2960	3	0.3170	5
1977-78	0.2920	12	0.3240	12
1983	0.2840	9	0.3350	3
1986-87	0.2370	18	0.3320	4
D:P-measure				
1961-62	0.3244	12	0.4018	10
1968-69	0.2670	15	0.3593	16
1973-74	0.3573	3	0.3915	6
1977-78	0.3555	12	0.3953	11
1983	0.3418	9	0.4211	5
1986-87	0.2826	16	0.4597	2

average person in that state is entitled to the prevailing price income configurations of that state. A person is deemed as poor in West Bengal if he faces entitlement failure compared to what others in that state, on an average, are capable of achieving, and not others, poor as well non-poor, in other parts of the country.

Chatterjee and Bhattacharya (1997) have estimated HC ratio, Gini-coefficient and Sen's P-measure for rural and urban areas of different states of India taking the state-specific MPCE for rural and urban West Bengal at 1960-61 prices as the cut-off level during the period 1961-87 with the help of NSS quinquennial consumption expenditure distributions for the state. Their estimates of HC ratio, Gini-coefficient and Sen's P measures for rural and urban areas of West Bengal are presented in Table 5. Certain interesting features about the incidence and severity of poverty in West Bengal are evident from Table 5. They are: (a) West Bengal's rank among all states of India both in rural and urban areas in terms of MPCE has remained more or less unchanged between 1961-62 and 1986-87; (b) rural HC ratio for West Bengal registered more than 10 percentage points decline during the period, but the urban HC ratio went up significantly. As a result, West Bengal which was first among Indian states in terms of rural poverty in 1961-62, ranked only 18th in 1986-87, whereas its 13th rank in the incidence of urban poverty deteriorated considerably and it ranked second in urban HC ratio in 1986-87; (c) the extent of inequality in rural consumption distribution in West Bengal has gone up slightly during the period, but the rank of the rural Gini has declined. A completely reverse picture emerges with respect to consumption inequality rankings in urban areas of West Bengal (it has gone up from 10 to 4), although the Gini-coefficient in urban areas has registered only mild increment over the years; (d) the severity of poverty as measured by Sen's P-measure has appreciably dismissed in rural West Bengal, but in urban areas of the state, it has gone up significantly, pushing its rank to 2 in 1986-87 compared to 10 in 1961-62. It thus appears that the urban areas of West Bengal pose serious and intricate challenges to policy-makers' aim to diminish the incidence and severity of poverty in West Bengal. But the relative success in poverty alleviation in rural areas of West Bengal is clearly a lesson for India as a whole, although the head count ratios for both rural and urban areas as estimated on the basis of MPCE as the cut-off level are much higher than those arrived at by the Expert Group, or the modified consensus approach now being accepted by the Planning Commission.

Determinantes of Poverty Indices

What could be the proximate determinants of the behaviour of poverty indices over time? This is an important yet tricky question whose solution requires time-series information on the relevant economic variables. As a first step, one would have to construct the time-series of poverty indices – HC, Gini or P-measures, which again would require mixing estimates based on large sample quinquennial surveys of NSSO with its annual expenditure survey data based on small/thin samples. This poses the danger of biased estimates based on too thin sample sizes being used for prediction, as N S Iyenger (1997) has rightly pointed out. There seems to be no way out but to use the estimates based on two types of samples. Chatterjee and Bhattacharya (1997) have estimated the HC ratio, Gini-coefficient and P-measure for rural and urban areas of the states for periods in between the quinquennial survey years of NSS with the help of annual expenditure data.

There is a debate in the literature on poverty studies in India regarding the role of growth and distribution factors. Whether the 'trickle down' effect of growth is sufficient to eradicate poverty or whether state-sponsored distribution mechanism is necessary for the purpose, has been debated by our policy-makers for long. According to Ravallion and Dutt (1996a, 1996b), economic growth factors dominate the distribution factors in diminishing the incidence of rural and urban poverty in India, and further that growth in the agricultural sector is seen to have exerted significant diminuitive impact on the incidence of rural poverty in India as a whole. To check the relevance of the above mentioned hypothesis of Ravillion and Dutt, Chatterjee and Bhattacharya (1997) have estimated the following relationships:

$$HC_R = \alpha_0 + \alpha_1 SHAG + \alpha_2 PCYAG + u_t \quad ...(1)$$

$$P_R = \beta_0 + \beta_1 SHAG + \beta_2 PCYAG + ut \quad ...(2)$$

where HC_R is the estimated HC ratio for rural areas, SHAG is the share of agriculture in the state domestic product (SDP), and PCYAG is the per capita income generated in the agricultural sector. For the urban areas, non-agriculture sector is used in place of agriculture sector such that the estimable equations for the urban areas are:

$$HCu = \alpha_0 + \alpha_1 SHNAG + \alpha_2 PCYNAG + u_t \quad ...(3)$$

$$Pu = \theta_0 + \theta_1 SHNAG + \theta_2 PCYNAG + u_t \quad ...(4)$$

The rationale of the above relationships has been to test the extent to which the relative importance of the agricultural and the non-agricultural sectors in the state domestic product of West Bengal and the per capita income generated in the two sectors respectively have a bearing on the behaviour of the incidence of poverty in rural and urban areas of the state over the period. It is true that structural shifts in the economy in the form of regime switching make the linear time series estimates inappropriate. To avoid this problem, the sectoral shares in the SDP, rather than the annual growth rates have been used as explanatory variables to ascertain the nature of associations, and not causality, between the variables. The estimated equations for the rural and urban areas of West Bengal respectively during 1961-87 are:

$$HC_R = 85.761 - 0.50920SHAG - 0.0082\ PCYAG$$
$$(14.00)\ (-3.340)\ (-4.13)$$
$$R^2 = 0.454;\ DW = 0.710;\ F = 9.58.$$

$$P_R = 0.3951 - 0.0020SHAG - 0.00001\ PCYAG$$
$$(4.52)\ (-0.956)\ (-0.358)$$
$$R^2 = 0.675;\ DW = 0.30;\ F = 13.932.$$

$$HC_U = 53.202 - 0.1336\ SHNAG - 0.0040PCYNAG$$
$$(14.00)\ (-2.02)\ (-9.72)$$
$$R^2 = 0.901;\ DW = 0.30;\ F = 104.51.$$

It is clear that the share of agricultural sector and per capita income in the agricultural sector have significant negative impact on rural HC ratio for West Bengal, but the effect is not significant on Sen's P-measure for rural areas of the state during 1961-87. For the urban areas of West Bengal, both the HC ratio and P-measure have been influenced significantly in the inverse direction by the share of the non-agricultural sector and per capita income from the non-agricultural (secondary plus tertiary) sector. Thus growth effects appear to be significant in poverty reduction in both rural and urban areas of West Bengal, but the effects appear weak on the severity of poverty in rural areas and significant on the severity of poverty in urban areas. Further investigations into such relationships are required to test the significance of the success of poverty alleviation endeavours in the state. With suitable specifications, one may test the importance of movements in inter-sectoral terms of trade, technological progress, public investment in infrastructures and also the role of institutional reforms in rural and urban areas as are undertaken

by the state government since 1977. One may also surmise the relationship, if any, between the decline of the industrial sector in the state during the 1980s, and the behaviour of urban poverty indices. All these would, however, require suitable time-series information on the relevant variables, which at present, are difficult to obtain.

The aggregative view surveyed in this section suggested a mixed picture of poverty in West Bengal. The arbitrary choice of the poverty lines in various all-India and inter-state studies have sometimes created false impressions, or erroneous signals to the policy planners in the state as well as in India as a whole. On the whole, however, the decade of 1980s saw significant reductions in the percentage of rural proverty in the state, although no such general claim could be made about the incidence of urban poverty in West Bengal. We need to supplement the aggregative view with the insights of some studies exclusively made for the state of West Bengal, followed by selective micro-studies which would help us focus on some serious problem areas.

Broadly speaking, available studies can be categorised into two groups, namely, those dealing with rural poverty and those dealing with urban poverty in West Bengal. The Planning Advisory Board (1979) had attempted to estimate the percentage of poor in rural West Bengal during 1963-64 and 1973-74, on the lines of Dandekar and Rath methodology, while Dasgupta (1989) attempted to estimate the extent of urban poverty in the state during 1966-67 and 1973-74. Jose (1984) used alternative indicators like land distribution, pattern of landholding by occupational groups, availability and actual consumption of cereals, real wage rates of agricultural workers, and access to health and educational facilities in the rural areas during 1960s and 1970s. Bardhan (1987) has used the NSS survey on employment and unemployment in urban areas of West Bengal during 1977-78 to relate the urban poverty indices for various occupation groups to the different socio-economic characteristics and found that household's level of living was higher in districts belonging to main urban agglomeration and where the importance of manufacturing and repair services is larger and in districts where the average foodgrains yield is larger compared to other districts.

III
The 1970s and the 1980s

We have mentioned the importance of using state-specific dietary norms along with state-specific retail prices to arrive at the poverty lines for rural and urban areas of a state. Fortunately for West Bengal, the Calcutta-based All-India Institute of Health and Hygiene has estimated an average Bengali diet for rural and urban areas of the state which conform to intakes of 2,400 calories per capita per day for rural areas and 2,100 calories per capita per day for urban areas. These dietary norms represent the average requirements of sedentary male workers in rural and urban areas of the state repectively, and not any nutritional minimum. Variations across gender and other types of work are ignored to simplify computation.

With the help of these average Bengali diets for rural and urban areas of West Bengal, Chatterjee (1991) has estimated the incidence of rural and urban poverty in the state during 1970s and 1980s, using the quinquennial consumption expenditure data of the NSSO. The estimates of HC ratio, Gini-coefficient, poverty gap index and Sen's P measure for rural and urban areas of West Bengal are presented in Tables 6 and 7, respectively.

The average Bengali diet is biased toward cereals, particularly rice, includes milk, and shows a preference for fish as a source of protein. For both rural and urban areas, the cost of the recommended diet is calculated using the consumer retail prices made available by the National Sample Survey Organisation (NSSO) and the Bureau of Applied Economics and Statistics (BAES), respectively. Having calculated the monthly cost of the food intake, all that is needed to arrive at the poverty line is to add an appropriate non-food component. One minus the average Engel ratio for all classes has been assumed to be the required proportion of non-food expenditure to total expenditure. The average Engel ratio is observed to be around 73 per cent for rural areas and around 61 per cent for urban areas for most of the years considered in the study. The formula for the poverty line (per capita per month) is therefore the monthly per capita cost of the minimum average diet divided by 0.73 for rural areas and by 0.61 for urban areas. Rents have been excluded from the calculation of non-food consumption expenditure for urban areas because of estimation problems. The ultra poverty line is defined as 80 per cent of the usual poverty line.

Rural Poverty

Regarding the estimates of rural poverty presented in Table 6, some observations may be made. First, the very high rural HC estimate for 1973-74 (nearly 80 per cent) is partly due to the prevalence of drought in that year. By 1974, the CPIAL food index had risen by 55.5 per cent compared to 1972. This HC estimate is therefore clearly abnormal. The year 1977-78 saw heavy rainfall and floods in many parts of the state. In 1983, the rainfall was moderate to low, but after 1983 West Bengal experienced consistently good rainfall. The HC estimates for 1973-74 and 1977-78 may therefore be interpreted as poverty during the worst of times. The figure for 1986-87 similarly represents poverty during relatively better times. Second, the poverty lines and their associated HC estimates for both rural and urban areas may be compared with the mean expenditures (at current prices) and

Table 6: Poverty and Inequality in Rural West Bengal, Selected Years

Measures	1973-74	1977-78	1983	1986-87	1988-89
Poverty line per capita per month (Rs)	62.95	72.29	124.51	139.14	156.33
Head count ratio (per cent)	79.42	76.85	74.95	60.50	53.10
		(-0.81)	(-0.50)	(-6.43)	(-6.11)
Poverty gap measures	0.572	0.497	0.474	0.343	0.302
		((-3.2)	(0.92)	(-9.21)	(-5.98)
Sen's P-measure	0.454	0.383	0.366	0.229	0.196
		(-3.90)	(-0.89)	(-12.47)	(-7.21)
Gini-coefficient					
No intra-class inequality	0.300	0.296	0.289	0.241	0.216
		(-0.33)	(-0.47)	(-5.54)	(-5.19)
Intra-class inequality	0.305	0.299	0.293	0.247	0.230
		(-0.49)	(-0.40)	(-5.23)	(-3.44)
Head count ratio for ultra poor (per cent)	66.74	64.70	58.83	38.27	32.60
		(-0.76)	(-1.810	(11.65)	(-7.41)
Number of poor (millions)	29.40	30.94	31.47	27.07	25.00
Mean per capita consumption expenditure at 1973-74 prices (Rs)	45.50	50.50 (1.6)	55.40 (1.9)	63.78 (5.04)	68.98 (3.46)
Percentage of population below mean expenditure line	47.50	59.27	104.59	139.02	169.98
	62.40	64.00	62.16	60.41	61.23

Note: Figures in parentheses are the annual average growth rate since the previous observation.
Source: National Sample Survey Organisation (various years).

the percentages of people living below them. For the years 1973-74, 1977-78 and 1983 even the average standard of living fell below the poverty line in rural areas, and this only reached the poverty line level in 1986-87 in rural areas. A look at the percentage changes in the rural areas (Table 6) leads to the conclusion that poverty has fallen significantly during the two decades under consideration. The pattern, however, has not been uniform. Three sub-periods can be identified according to the rate of change of the poverty indices: (a) the period of moderate to low rates of fall, (b) a somewhat stationary situation marks the period 1977-78 to 1983, and (c) the rate of fall is significant and faster after 1983 compared to the previous periods. The patterns of change of the HC ratio and of the mean expenditure (ME) at 1973-74 prices are similar. The correlation coefficient between the annual average growth rate of the ME and the annual average growth rate of HC is a high – 0.925. The Indian government started to implement its direct anti-poverty programmes after 1981. Whether the relatively faster rate of fall in HC and rise in ME in rural areas of the state after 1983 compared to the previous periods are due to the direct attacks on poverty or to pure economic growth is an open question. The broad pattern of change in poverty indices is, however, much more pronounced for the poverty gap (PG) measure and Sen's measure (P) than for the HC ratio. The correlation coefficient between the annual average growth rates of PG and HC is 0.99 and that between the growth rates of P and HC is 0.993.

Although the rate of fall in the rural HC ratio is negligible during 1973-78, the rates of fall in PG and P are much more significant. This implies that during this period the average standard of living of the rural poor went up (PG measure) and the inequality among them (P measure) went down. In other words, the intensity of poverty fell even though the percentage of poor people might not have changed much. It is in this sense that we characterise this period as a period of moderate to low fall in the incidence of poverty. The period between 1977-78 and 1983 is marked as a stable period so far as the incidence of rural poverty in the state is concerned because both the percentage of poor people and the intensity of poverty showed little change. Poverty fell significantly both in terms of the proportion of poor people and intensity after 1983. The absolute number of poor also fell. The pattern of change in the HC of the ultra poor is roughly similar to that of the HC of the poor, with one major difference, namely, the rate of fall in the HC of the ultra poor seems to be somewhat larger during 1977-78 to 1983. Once again the rate is especially significant between 1983 and 1986-87. On the whole, the situation of the ultra poor in rural West Bengal seems to have improved more than that of the poor after 1977-78.

A comparison of the two estimates of the Gini-coefficient reveals that intra-class inequality, although a small percentage of overall inequality, has increased over the years. Overall inequality has diminished over the years, though not at a uniform rate. The fastest rate of fall occurred during 1983 to 1986-87. From 1973-74 to 1983 the rate of fall was negligible. The correlation coefficient between the average growth rates of ME and the Gini-coefficient is –0.99. Economic growth in the rural areas may therefore be said to have benefited the poor more than the non-poor during the two decades, particularly after 1983.

The PG index, which may be interpreted as the proportion of total expenditure that must be transferred from the non-poor to the poor, to raise the latter's consumption up to the poverty line, tells a similar story. For the years 1973-74, 1977-78 and 1983 the PG estimates were 57 per cent, 50 per cent and 47 per cent, respectively. Expenditure of the non-poor however constituted only about 39 per cent, 32 per cent and 44 per cent, respectively, of total expenditure. This seems to suggest the view that reduction in inequality during this period is related to the implementation of direct anti-poverty programmes in rural areas. The increase in rural inequality in many states between 1983 and 1986-87 may have been due to a shift of emphasis from pure anti-poverty programmes toward growth-promoting policies. The continued importance of the former in West Bengal may explain why inequality fell significantly after 1983.

Urban Poverty

The growth rates of the poverty indices for urban areas of West Bengal (Table 7) reveal once again three distinct phases of change: (a) poverty increased during 1973-74 to 1977-78 ; (b) the indices fell at a significant rate during 1977-78 to 1983; and (c) the fall was much less discernible after 1983. The pattern of change of urban poverty was thus quite contrary to the pattern of change of rural poverty. For the period 1973-74 to 1977-78, in urban areas of the state the mean expenditure and poverty moved in the same direction, although the rate of growth ME was negligible. Thus, economic growth was immiserising in urban areas. ME and poverty indices moved in opposite directions after 1977-78. The correlation coefficient between the annual average rates of growth of ME and HC is around –0.44 in urban areas, which is significantly smaller than the corresponding figure for rural areas. This suggests that the trickle-down mechanism was more effective in rural areas than in urban areas. In rural areas, the presence of direct anti-poverty programmes may have ensured that the fruits of economic growth went largely to the poor. The absence of such programmes in urban areas may have weakened the trickle-down effect. Not only did the HC ratio go up over 1973-74 to 1977-78, but

Table 7: Poverty and Inequality in Urban West Bengal, Selected Years

Measures	1973-74	1977-78	1983	1986-87	1988-89
Poverty line per capita per month (Rs)	69.51	90.00	129.00	175.51	188.42
Head count ratio (per cent)	53.00	58.22	46.71	45.15	44.19
		(2.46)	(-3.59)	(-1.11)	(-1.06)
Poverty gap measures	0.308	0.315	0.226	0.209	0.191
		(0.5&0	(5.65)	(-2.50)	(-4.31)
Sen's P-measure	0.230	0.264	0.182	0.183	0.178
		(0.63)	(0.67)	(0.29)	(-1.37)
Gini coefficient					
No intra-class inequality	0.320	0.328	0.339	0.336	0.330
		(0.63)	(0.67)	(-0.29)	(-0.89)
Intra-class inequality	0.327	0.333	0.350	0.372	0.381
		(0.46)	(1.02)	(2.09)	(1.21)
Head count ratio for ultra poor (per cent)	35.72	53.61	30.77	30.80	25.00
		(12.52)	(-8.52)	(0.03)	(-9.41)
Number of poor (millions)	3.80	6.00	7.00	7.17	7.24
Mean per capita consumption expenditure at 1973-74 prices (Rs)	80.76	81.57	90.21	101.20	101.53
		(0.25)	(2.12)	(4.06)	(0.16)
Percentage of population below mean expenditure line	80.76	97.13	169.95	242.62	268.67
	64.00	63.70	64.81	67.62	66.18

Note: Figures in parentheses are the annual average growth rate since the previous observation.
Source: National Sample Survey Organisation (various years).

the average level of living of the poor also fell. The inequality among the urban poor, that is, the intensity of poverty, rose significantly. This clearly was the worst period for the urban poor. The best period was between 1977-78 and 1983, when all these indices of poverty recorded the fastest rates of decline. The period 1983 to 1986-87 was somewhat mixed. Whereas the HC fell at a moderate rate and the average level of living rose, inequality among the poor worsened somewhat. The correlation coefficient between the rates of growth of PG and HC is 0.99, higher than that for rural areas. The correlation coefficient between P and HC is 0.76, which is less than in rural areas. The pattern of change for the urban ultra poor is roughly similar to that for the urban poor in general. The ultra poor seemed to have been more adversely affected during 1973-74 to 1977-78 and better off between 1977-78 and 1983 and after 1986-87 than the urban poor in general. Unlike in rural areas, the absolute number of urban poor rose substantially during the two decades, with the worst change occurring once again between 1973-74 and 1977-78.

Analysis of changes in urban inequality reveals some interesting features. First, inter-class inequality rose slightly during the two decades, although growth rates were positive up to 1983 and negative thereafter. The rise is, however, more marked for overall inequality, especially after 1983. Thus, intra-class inequality has become much more noticeable over the years in urban areas. Inequality in general, and intra-class inequality in particular, is higher in urban than in rural areas. The correlation coefficient between the average growth rates in the overall Gini index and ME is 0.99 in urban West Bengal. Thus in urban areas, as compared to rural areas, growth seems to have been accompanied by worsening inequality, although in both cases, the situation of the non-poor has improved more than that of the poor. The direct anti-poverty programmes seem to have played an important role especially in rural areas.

Decomposition

Chatterjee (1991) has also presented an analytical decomposition of the changes in poverty over the different periods into changes due to pure growth (growth effect) and those due to changes in distribution (distribution effect) following Jain and Tendulkar (1990) and Ravallion and Dutt (1990) methodology. For each of the years, 1977-78, 1983, and 1986-87, head count ratios were simulated by assuming that the distribution of the previous period (1973-74 for 1977-78, 1977-78 for 1983, and 1983 for 1986-87) remained unchanged, whereas the expenditure of individuals increased by the same percentage as the ME for the total. The difference between the actual HC of the previous round and the simulated HC for the next round is defined as the pure growth effect, because if distribution had remained unchanged, but mean expenditure had gone up, then the simulated HC would have been the actual HC for the next period. The difference between the simulated HC and the the actual HC for the same period gives the distribution effect. The results of the above simulation excercise are given in Table 8.

For the rural areas for all the three periods, the growth effects have been larger than the distribution effects. This implies that for the poor in the rural areas growth-promoting strategies were likely to have made a greater impact on poverty than redistributive strategies. During 1977-78 to 1983, distribution has partially offset the favourable impact of economic growth on rural poverty. From Table 7, the Gini-coefficient is seen to have gone down over the period. The positive distribution effect is thus quite understandable. In urban areas the distribution effect is larger than the growth effect for the first period, which is not surprising as the growth rate during this period was negligible. During the first and last periods the distribution effects are quite significant and positive, which means that a worsened distribution has largely destroyed the benefits of economic growth for the poor. Inequality thus seems to contribute more to poverty in urban areas than in rural areas. This calls for a reorientation of distributive policies pursued by the government from rural to urban areas.

Chatterjee (1991) has also found that there has been an acceleration of agricultural productivity in West Bengal after 1983, which coincides with the period when the incidence of rural poverty in the state has registered the sharpest decline. He argues that the diminution of rural poverty since the early 1980s was mainly due to the upsurge in agricultural productivity in the state during the period, which was due to the adoption and spread of 'green revolution' technology across the state. The onset of direct anti-poverty programmes throughout India with massive public investment in rural asset/infrastructure creation also contributed to this growth and prosperity in rural West Bengal and the consequent decline in the incidence and intensity of rural poverty, particularly among the ultra-poor. The importance of the institutional reforms introduced by the Left Front government in West Bengal since 1981 in the form of registration of bargadars (share croppers), distribution of surplus land among the landless, and the decentralisation of administration through elected rural panchayats in the state, cannot be ignored in this context, but the exact statistical decomposition of the effects of technological change, institutional change and of changes in public investment are difficult to obtain. This may form the research agenda for the future. For further details, one may refer to Chatterjee, Rao and Bhattacharya (1991).

To assess the extent of inter-district variations in the standard of living in West Bengal during the last two decades, the first important question that we address is the nature and extent of interdistrict disparities and the ranking of districts by direct and indirect indicators of the standard of living. Due to the absence of consumption expenditure data at the district level in rural areas, we have used such indirect indicators as agricultural productivity of rice per hectare, the money wage rate of agricultural labourers, and the per capita rural district domestic product to rank the districts. For the urban areas we rank the districts by the head count ratio and the Gini-coefficient, calculated from the Family Budget Survey data of 1976-77. Table 9 presents the ranking for rural and urban districts of West Bengal.

Certain interesting features emerge from Table 9. First, since average food productivity per hectare is closely correlated with poverty in rural West Bengal, the second column, which ranks the districts in descending order based on rice productivity per hectare, gives us an idea about the districts which are relatively poor, with the poorest five being Jalpaiguri, Darjeeling, Cooch Behar, West Dinajpur

Table 8: Decomposition of Total Change in Poverty into Growth and Distribution Effects

Period	Rural			Urban		
	Actual Change in HC Ratio	Growth Effect	Distribution Effect	Actual Change in HC Ratio	Growth Effect	Distribution Effect
1973-74 to 1977-78	-0.81	-0.80	-0.003	2.46	-0.32	2.82
1977-78 to 1983	-0.50	-1.52	-1.12	-3.95	-2.27	1.89
1983 to 1986-87	-6.43	-4.67	-2.04	-1.11	-6.06	5.12

Source: Computed from Tables 6 and 7.

and Purulia. Rice, which is the state's principal food crop, is used as a proxy for total food because of the unavailability of data on the latter. Second, since agricultural labourers constitute the single most important subclass of poor people, the third column ranks the districts by the agricultural money wage rate in descending order. Considerable variations exist in money wage rates across districts. Although no discernible trend in the coefficient of variation has been obtained over the years, the average value of this is no less than 17 per cent. This finding also complements the evidence provided by the data on the effect of food productivity on the existence of regional disparities. The rankings of the districts in second and third columns, however, do not match to any great degree, suggesting the existence of other major influences on the agricultural wage rate apart from food productivity. The rank correlation coefficient is only 0.51.

Neither of the rankings presented in the second and third columns of Table 9 match well with those of the fourth column, which is ranked on the basis of per capita district domestic product in descending order. The ranking of the fourth column is, however, closer to the second than to the third: The rank correlation coefficient between the former is about 0.61, whereas that between the latter is only 0.49. As we have argued in earlier sections, poverty in rural Bengal is primarily linked to low agricultural productivity, and thus the second and fourth columns should be given greater weightage in deciding which of the districts are relatively backward in rural areas. In the final analysis, Burdwan, Howrah and Hooghly appear to be among the most prosperous rural districts, while West Dinajpur, Cooch Behar and Jalpaiguri are among the poorest. In so far as urban poverty is concerned, the coefficient of variation of the HC ratio between the districts was as high as 31 per cent. The fifth and sixth columns of Table 9 are ranked in ascending order of magnitude, and the rank correlation coefficient between the two columns is quite significant at 0.66. Thus, those districts of West Bengal that suffer from higher levels of urban poverty were also the ones with higher levels of inequality. This corroborates the earlier result which indicates that in urban areas of the state, poverty and inequality go hand-in-hand and are more important from the point of public policy than rural deprivations.

The important point to note about poverty studies specific to West Bengal is that they reflect a much better and realistic picture about the poverty scenario in the state than can be derived from all-India or inter-state studies. The real difficulty in extending the various hypotheses about rural and urban poverty in West Bengal for subsequent periods is the lack of comparable time-series information on major economic variables, and their disaggregation across the districts. The official machinary on disaggregated data collection and their preservation in West Bengal is rather weak, and beset with conceptual difficulties in their estimations. As a result, state-level aggregative data on poverty and deprivations in West Bengal need to be supplemented by micro-level case studies which focus on not only income-based poverty and food deprivations, but also give valuable qualitative information about entitlement failures on a number of aspects like education, health, shelter, credit availability, wage-employment solutions, etc. In section IV we discuss the findings of some of the major micro-studies on poverty, deprivations and standard of living in West Bengal.

IV
Micro Views

The aggregative view as dicussed above basically gives average picture about the extent of poverty in the state, but the distribution of the facilities or deprivations across socio-economic groups or other dimensions of living standards could be gauged through micro-studies based on field surveys/resurveys such that panel comparisons could also be made. One may refer to two important studies in this connection. Maitra (1988) reports the results of a sample survey of households in rural areas of West Bengal conducted in 1976 to assess the actual performance of minimum needs programmes and the provision of health and education among the poor, classified according to alternative socio-economic strata. Bhattacharya et al (1987) have undertaken a resurvey of the three districts of West Bengal – Bardhaman, Birbhum and Purulia – to cover the villages and households which were covered by the NSS survey in its 27th round (1972-73) and 28th rounds. Both the studies point to the pathetic state of social infrastructure in the state of West Bengal with very little improvement over the years, except for Bardhaman district which shows some remarkable improvements. This calls for serious policy interventions as market forces and private initiative seem to have failed to distribute the gains of growth in an equitable and perceptible manner.

A recent study on the replicability of block based special public works schemes of ILO at Bundwan and Manbazar II blocks of the Purulia district in West Bengal by Bagchi, Chatterjee, Chattopadhyay and Moitra (BCCM, 1995) reveals some interesting lessons about poverty alleviation in West Bengal. Although inequality in landholding in rural areas is considered one of the main reasons for inequality in income distribution and abject poverty in rural areas, and the state government has initiated measures for effective redistribution of surplus land among the landless labourers, there was hardly much difference in the living standards of marginal farmers and landless labourers in the state, both of whom were extremely poor. But the successful completion of minor irrigation schemes of the ILO and effective distribution of water to the fields through

Table 9: Ranking of Districts by Indicators of Standard of Living and of Poverty

Districts	Agricultural Productivity (Rice) Per Hectare	Agricultural Money Wage	Per Capita District Domestic Product	Head Count Ratio	Gini Co-efficient
Bankura	7	4	5	10	1
Birbhum	2	12	2	5	5
Burdwan	1	5	1	6	13
Calcutta	na	na	na	1	7
Cooch Behar	13	13	14	12	15
Darjeeling	14	9	10	2	3
Hooghly	3	2	4	7	10
Howrah	5	1	3	9	6
Jalpaiguri	15	11	8	3	4
Malda	10	7	12	8	9
Midnapur	8	6	9	16	14
Murshidabad	6	10	13	4	2
Nadia	9	3	7	13	8
24-Parganas	11	15	6	15	16
Purulia	12	14	15	11	11
West Dinajpur	16	16	16	15	16

Notes: na - Not applicable as Calcutta has no rural area/activity.
Source: Family Budget Survey 1976-77 for urban estimates and State Statistical Abstract, 1977-89, for information on rural variables.

field channels have enhanced the income levels of even marginal farmers in Purulia district, who, with assured irrigation and better marketing networks, are now engaged in triple cropping and are diversifying their production base considerably so much so that they now willingly contribute for the maintenance and extension of irrigted water to distant fields within the command areas of the Jorebundhs created under the ILO schemes. The incomes of the landless labourers have however gone up only marginally with extra off-season labour demand on the field as a result of such irrigation extensions. Thus, public works and irrigation, even where they were effectively administered, have widened the inequality between the poorest of the poors, with landowners, however, marginal, gaining much more than the landless. Such a process of accentuation of inequality among the poor through poverty alleviation schemes poses a real challenge for the long-term sustainability of these schemes. Secondly, in order to sustain even a minimum consumption standard, the landless agricultural labourers are heavily dependent on off-season and off-farm jobs under the Jawahar Rojgar Yojana (JRY). Thus even after so many years, schemes like JRY continue to be essential in rural poverty alleviration in West Bengal. All these suggest that the beneficiaries of rural development and poverty alleviation programmes in the state must be tapped to finance the enormous expenditure required to uplift the bottom-most layers of rural population in the state, and the decentralised rural panchayats have to devise effective mechanisms for such resource mobilisation and their deployment towards alleviating the ultra-poor on a sustainable basis. The Budwan experiment in Purulia is a pointer to this.

According to the estimates of the department of rural development and panchayats, government of West Bengal, 70.70 per cent of the rural households in the district of Purulia are below the poverty line of Rs 11,000 per annum at curent prices during 1992-93. Thus Purulia is found to be the second poorest district in West Bengal behind Darjeeling. This is in sharp contrast to the West Bengal average head count ratio of 45.73 per cent, according to the same BPL (below the poverty line) survey. If one goes further down up to the village level, the picture becomes worse for some of the villages, whereas some other villages are found to be better off in terms of the incidence of poverty compared to the Purulia average. The ACRP Benchmark Survey for the pilot project area of the Kashipur block in the Purulia district spanning 27 mouzas (villages) was conducted by Chatterjee and Moitra (1995). Table 10 shows that in 7 out of the 27 mouzas under this survey, the poverty percentage exceeds the Purulia average, and in most of the mouzas, this percentage exceeds the West Bengal average arrived at through any method. This means that in some pockets of the backward districts of the state, the benefits of poverty alleviation expenditure have so far eluded most of the rural households, and West Bengal average figures are clearly underestimates of the extent of deprivation in these villages. A look at the percentages of households indebted either by current deficit status (Table 11) or by outstanding debt status (Table 12) in the pilot project areas of the Kashipur block of Purulia district as revealed in the ACRP Benchmark Survey by Chatterjee and Moitra (1995), clearly indicate that the incidence of indebtedness by either status is heaviest among households with zero operational holdings (ZOH) and with marginal operational holdings (MRG) in that area. Poverty and indebtedness are two interrelated phenomena, and such a high incidence of indebtedness among rural households clearly indicates that something is seriously wrong in the rural economy of West Bengal, despite claims to the contrary in official statistics about the aggregative scenario of poverty in rural areas of this state. Our review of the micro-level case

TABLE 10: POVERTY PROFILES OF HOUSEHOLDS, KASHIPUR BLOCK, PURULIA DISTRICT, (ACRP PILOT PROJECT AREA)

(Per cent)

Name of Mouzas	Head Count Measure
Agardih	36.04
Lakhipur	74.07
Chaka	50.00
Mekhyada	69.61
Shalaya	55.41
Pakhariathal	50.00
Pabrahari	71.61
Chitra	67.70
Seja	76.50
Bhatin	60.45
Mirgipahari	60.45
Kashidih	65.82
Saharbera	84.42
Isanda	66.28
Kaliyada	43.55
Ledagora	71.43
Ichamara	00.00
Mehi	78.95
Jiara	66.66
Kharikagora	67.96
Bhalukgazar	63.49
Panja	51.28
Telaboni	82.14
Lajhna	59.38
Kusumgora	70.52
Sonathali	50.63
Kushjuri	60.54

Note: The head count measure is the percentage of households with an annual income below Rs.11,000.00 which is the poverty line defined by the Planning Commission.

Source: Estimated from the Survey Data.

TABLE 11: PERCENTAGES OF INDEBTED HOUSEHOLDS BY CURRENT DEFICIT STATUS, PILOT PROJECT MOUZAS KASHIPUR BLOCK, PURULIA DISTRICT

Name of Mouzas	Operational Holdings				
	Zero	Marginal	Small	Small-Medium	Medium
Agardih	76.92	45.00	44.44	25.00	33.33
Lakhipur	00.00	25.00	00.00		
Chaka		21.74	00.00	00.00	
Mekhyada	78.00	68.00	61.53	33.33	00.00
Shalaya	33.33	41.18	18.18	00.00	
Pakhariathal		00.00	00.00	00.00	
Pabrapahari	70.00	75.00	54.00	14.00	00.00
Chitra	28.57	42.86	27.77	12.50	00.00
Seja	40.00	45.45	16.66	11.11	
Bhatin	25.00	26.92	36.66	10.00	00.00
Mirgipahari	28.57	48.00	46.15	14.29	00.00
Kashidih	00.00	55.26	39.29	10.00	00.00
Saharbera	100.00	80.57	63.64	50.00	
Isanda	60.00	48.78	25.00	50.00	
Kaliayada	22.22	42.86	16.66	66.66	
Ledagora		31.25	20.00	14.28	
Ichamara					66.66
Mehi	100.00	55.02	46.99	19.05	00.00
Jiara	25.00	26.32	11.11	00.00	00.00
Kharikagora	28.57	35.00	42.86	12.50	
Bhalukgazar	16.67	8.00	30.00	00.00	
Panja	40.00	41.66	55.55	20.00	
Telaboni	100.00	76.92	100.00	50.00	
Lajhna	60.00	38.09	50.00	33.33	
Kusumgora	76.92	85.18	71.43	72.72	100.00
Sonathali	24.00	12.12	13.33	11.11	00.00
Kushjuri	33.33	36.11	25.00	33.33	

Source: ACRP Benchmark Survey Report, CM (1995).

studies shows that the extent of deprivation in living standards in rural West Bengal are much more pronounced than can be comprehended through state level estimates. Unfortunately, there is hardly any serious micro-level studies for the urban areas of the state, but our presumption is that we shall get roughly similar pictures of acute deprivations for the urban areas of West Bengal as well.

V
Poverty Alleviation and Globalisation

The poverty alleviation programmes as are undertaken in the state of West Bengal are basically the same ones that are put to use throughout India, with the difference that perhaps these schemes are somewhat better managed in West Bengal than in other states. As a result, leakages and shortfalls from targets are kept at a minimum in West Bengal. But since most of these schemes are designed centrally, they often fail to take into account special features pertaining to local conditions in West Bengal. Moreover, the share of the state government in financing these schemes is low, and in many cases the state's share is only notionally shown in the official statistics without corresponding actual release of funds to the zilla parishads and panchayats. While the overall budget constraint of the state government may be the reason for actual non-disbursement of state's share (the states share is shown as the value of the land where the JRY operations are undertaken), the overall poverty of resources compared to the requirements in the state is ultimately responsible for the slow process of poverty alleviation in the state, particularly in urban areas, where the economic growth factor is considerably weak since the middle of 1980s. The only way out seems to be to make the rural panchayats much more powerful and accountable so that they are authorised to tax the beneficiaries of rural development and poverty alleviation expenditure in the state, and raise resources locally to finance locally designed low-cost and human resource-intensive projects to provide additional sources of both on-farm and off-farm employment for the poor landless workers. This would require a proper identification of the beneficiaries and an assessment of their resource and assets position, including acquisition of new land. Such a scheme, if designed, would make the elected panchayats more aligned to the poor rural people and would ensure decentralisation of power and decision-making at the grass roots level in the true sense of the term. Large-scale public investment schemes expecting to generate economics of scale in the long run may be financed with the help of central grants released under alternative heads of the poverty alleviation schemes.

The Indian economy has been set on the path of globalisation since July 1991, and whatever be its pace and character over the years, the agricultural sector is likely to be opened up sooner or later. This would offer higher price signals to farmers to increase and diversify their production base for exports. No doubt, such a process would increase the prices of foodgrains and adversely affect the incidence of rural poverty not only in India, but also in West Bengal. Subsidisation across all rural people in the state is not feasible economically, and whatever success has been achieved should not be allowed to be washed away through inflation induced by globalisation. The only alternative seems to be to orient the rural labourers' organisations in the state to ensure rise in money wages faster than the increment in food prices, and this seems possible because the scale of agricultural production and hence demand for labour are likely to increase. There is also likely to be on expansion of agro-based processing industries in rural areas of the state along with the expansion of horticulture and floriculture for which the state possesses required technical know-how. The state government, which has so long concentrated on populist redistribution, has to reorient its policies and take effective steps to strengthen the growth impulses in the rural areas of the state with the help of accumulated surplus in the rural areas (which are now being channelled gradually to trading and service sector activities) and take advantage of the positive aspects of globalisation towards mitigating the plight of the rural poor and underpriviledged in this state. Adherence to all-India norms, standards and strategies may not always bring the optimal results, at the same time, the state government cannot and should not ignore the possibilities thrown open in the national and international economies. Designing such an appropriate policy would be the real task of political economy of poverty.

VI
Concluding Observations

This critical review of the studies in rural and urban poverty in West Bengal reveals that the incidence of urban poverty and inequality in the state poses a more serious challenge to policy-makers than rural poverty as a whole, which has shown signs of sharper decline in the 1980s thanks to the upsurge in productivity growth in West Bengal agriculture. But industrial growth in the state has been showing signs of non-revival, and the service sector has not grown at a fast rate to absorb the

TABLE 12: PERCENTAGE OF INDEBTED HOUSEHOLDS BY OUTSTANDING DEFICIT STATUS, PILOT PROJECT MOUZAS KASHIPUR BLOCK, PURULIA DISTRICT

Name of Mouzas	Operational Holdings				
	Zero	Marginal	Small	Small-Medium	Medium
Agardih	76.92	45.00	44.44	12.50	66.66
Lakhipur	50.00	45.83	00.00		
Chaka		47.83	38.46	00.00	
Mekhyada	76.00	72.00	50.00	44.44	00.00
Shalaya	58.33	47.06	54.54	33.33	
Pakhariathal		00.00		00.00	
Pabrapahari	77.77	75.00	66.66	33.33	00.00
Chitra	28.57	44.90	50.00	37.50	00.00
Seja	40.00	47.73	58.33	55.55	
Bhatin	100.00	57.61	54.54	30.00	00.00
Mirgipahari	57.14	68.00	38.46	42.86	00.00
Kashidih	00.00	71.05	61.00	60.00	100.00
Saharbera	100.00	76.92	81.22	00.00	
Isanda	80.00	41.46	50.00	50.00	
Kaliayada	77.77	50.00	66.67	66.66	
Ledagora		59.37	20.00	28.57	
Ichamara					100.00
Mehi	100.00	55.02	66.27	42.86	00.00
Jiara	25.00	36.84	22.22	33.33	00.00
Kharikagora	71.43	40.00	100.00	87.50	
Bhalukgazar	54.17	52.00	80.00	75.00	
Panja	60.00	54.17	88.88	100.00	
Telaboni	00.000	61.54	87.50	50.00	
Lajhna	30.00	38.09	60.00	66.66	
Kusumgora	61.54	77.77	78.57	81.82	100.00
Sonathali	44.44	36.36	53.33	44.44	50.00
Kushjuri	50.00	58.33	33.33	66.66	

Source: ACRP Benchmark Survey Report, CM (1995).

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(14)

Minimum Needs of Poor and Priorities Attached to Them

V Sitaramam
S A Paranjpe
T Krishna Kumar
A P Gore
J G Sastry

From an examination of the NSS data covering 1951-1991 and taking the cereal consumption deprivation as a measure of poverty the authors present an estimate of poverty in India without using the dubious concept of the poverty line. They argue that there is no need to have a poverty line to measure the degree of poverty of any community or group of vulnerable households. The method developed here reveals that cereals constitute the commodity group that occupies the top position in the hierarchy of needs, both in rural and urban areas. Next item of priority, both for rural and urban areas, is fuel and light and not clothing partly because one cannot make a 'roti' out of wheat without the cooking fuel.

If the misery of our poor be caused not by the laws of nature, but by our institutions, great is our sin
– Charles Darwin, *Voyage of the Beagle*

I
Introduction

ALLEVIATION of poverty has become one of the most important items on the policy agenda of many a government, particularly in the developing countries. Economic research so far has concentrated on the issue of measuring and monitoring the extent of poverty, rather than on the issues of designing the appropriate poverty alleviation programmes. Designing such programmes requires some insights into who the poor are – for whom such programmes must be designed, and what their needs are. The view of a major segment of the economics profession on these two issues has been that all those who are below the poverty line are the poor who need poverty alleviation programmes, and that their needs are based on the common perception of hierarchy of needs, such as food, clothing, shelter, health, education, etc. There are two problems associated with these economists' views. First, the idea of identifying the poor by the poverty line is neither acceptable to the policy-makers nor is it feasible, as the poor do not have a regular and stable source of income. Also it is not based on good scientific and objective reasoning. Second, there is no clear-cut empirical evidence that the hierarchy of needs corresponds to the oft-repeated slogan 'food-shelter-clothing' or 'roti-kapada-aur makan'.

These priorities may vary from community to community, and from place to place. The ordering of needs depends on the circumstances facing the people. For example, for people living in colder climates and on forest slopes, clothing and shelter may be more important than for people who live on the plains with a more favourable climate. Similarly, the food habits may vary from place to place. Hence, what one needs is a measure of consumption deprivation that is commodity specific and community specific. The economists have, in our opinion, put undue emphasis in defining first who the poor are and then defining their poverty. It is our view that it is more meaningful and useful to define poverty as consumption deprivation, which is the opposite of welfare, and then to decide, on a case by case basis, who ought to be the beneficiaries of any poverty alleviation scheme.[1] The choice of the beneficiaries should depend on social, economic, political, and administrative considerations. The targeting of the poverty alleviation schemes, in terms of the commodities for which subsidies are needed and the people who ought to receive those subsidies, should be region-specific. From this perspective, and given that the notion of poverty is basically relative, it is even preferable to call such schemes as welfare-improving schemes rather than poverty alleviation schemes.

The new United Front government announced its commitment to a 'Common Minimum Programme'. What the UDF and the prime minister seem to imply by this term is a minimum needs programme, as there can be a consensus (and hence the word 'common') on such minimum needs. This concept of minimum programme raises several interesting economic policy issues. It is suggestive, from the attitude of the new government, that the new government's focus has shifted from poverty alleviation to providing the minimum needs. This change in policy focus is quite consistent with the line of research we have been engaged in for the past few years on poverty measurement. We have been arguing that poverty has to be measured as commodity-specific consumption deprivation of a community, without any reference to an arbitrarily and subjectively chosen poverty line. The identification of the poor has to be based, we argue, not on a difficult to measure income, but on socially, politically, and administratively, and unambiguously determined criteria. This suggestion of ours is also quite consistent with the actual practice. It may be noted that the really poor have very irregular employment and income, and hence it is difficult to measure their incomes to check the eligibility for a poverty alleviation programme.[2]

This is the line of work we have been doing. In this connection we needed to identify those commodities, called necessities, in terms of which we need to assess the consumption deprivation. The identification of the most essential commodity, whose consumption saturates at the lowest income posed no problem, and it turned out to be cereals. The budget share of this commodity at the limiting income is the highest. Hence, we measured poverty through cereal consumption deprivation. But as the economy develops and the welfare of people in general improves, people move on to consume the next item on the hierarchical ladder of commodities, often by even lowering the consumption of cereals. One way of monitoring the course of economic development is to see how the consumption pattern has changed over the years in terms of bringing into consumption commodities which were on a higher rung of the ladder of commodity hierarchy. Providing to the poor only cereals at affordable prices is not enough if such cereals have to be cooked in order to consume, and if the poor have difficulty in procuring the cooking fuel. These comments suggest that there is a need to have a detailed investigation into commodity groups other than cereals that enter into the priority list of consumers.

In order to get some empirical insights into the hierarchy of needs among the households, and how this pattern has altered over years, we had examined the consumption pattern from the National Sample Survey data for various rounds, starting from the 3rd round

to the 46th round, covering the period 1951-1991. It is the purpose of this article to share our findings with the readers and to suggest some policy implications of our findings in designing the 'minimum needs programmes' for the vulnerable sections of the household sector.

The plan of the paper is as follows. Section II presents very briefly the method we use to examine the consumption expenditure data of the NSSO employing a new form of Engel curve. In Section III we present the levels of cereal-based consumption deprivation for rural and urban India for various rounds of NSS. These are our alternate measures of poverty, based on cereal consumption deprivation. In Section IV we develop a method for determining the hierarchy of consumption needs and apply this method to the NSSO data. Finally, in Section V we present the important policy implications suggested by our method and our findings.

II
Relation between Quantity Consumed of a Commodity and Income: Engel Curve

As income is difficult to measure, and as there are no reliable estimates of household income levels, we proxy income of a household by the total expenditure of that household. In this section we are therefore concerned about the relationship between expenditure on a specific commodity or commodity group and the total expenditure. Such a relationship is known as the Engel curve. This relationship can assume different forms. Three very commonly assumed forms are depicted in Figure. Type I relation shows that the consumption of that type of commodity increases with income but at a decreasing rate. Type II curve shows that the consumption of this type of commodity increases with income, but at a constant rate. Type III curve shows that the consumption of this type of commodity increases with income, but at an increasing rate.

Per cent change in the consumption of a commodity for a 1 per cent change in income is called the income elasticity of demand for that commodity. For Type I commodities the income elasticity is less than one. One very commonly used mathematical form for the Engel curves of all the three types is:

$$\text{Log } c_i = \gamma + \eta \text{ log } y_i \qquad ...(2.1)$$

where c_i is the mean consumption in expenditure class i and y_i is the mean income in the same expenditure class. In this form the income elasticity of demand for the commodity defined above turns out to be η, which is assumed to be constant. It is quite likely that for necessities such as food, the income elasticity of demand is not only less than unity but it may also decrease with increase in income, i e, the per cent increase in consumption of food per 1 per cent increase in income may decrease as income increases. The above functional form cannot take care of this possibility.

It is the analogy between the equilibrium relations in kinetic models of catalysis in biochemistry and the above Type I Engel curve of economics that had provided the major impetus for our research on consumption analysis and poverty by an inter-disciplinary team consisting of a biochemist, an economist, and three applied statisticians. In fact the Engel curve is an equilibrium relation between the two flow variables, expenditure on a specific commodity and the total expenditure, and hence this analogy is quite appropriate. The saturation kinetic models in biochemistry use a hyperbolic relation of the following type to represent the kinetic equilibrium:

$$c_i = Vy_i/\{K+y_i\} \qquad ... (2.2)$$

When we fitted equations (2.1) and (2.2) to the NSSO data we found that (2.2) always gave a better fit than (2.1). When we say better fit, the criteria we used to compare the two models are: (i) coefficient of determination, R^2, and (ii) randomness of errors with a Gaussian distribution. It is also interesting to note that the income elasticity of demand for specification given by (2.2) does vary with income and decrease with an increase in y, a desirable property cited above.

In this study we used model (2.2) for determining the hierarchical basic minimum needs. We used the same model in our studies on poverty through consumption deprivation. Some properties of this Engel curve are worth noting, and these are given below:

(1) Dividing both the numerator and the denominator of the right hand side of (2.2) by yi we get:

$$c_i = V/\{K/y_i + 1\} \qquad ... (2.3)$$

From equation (2.3) we note that as y_i tends to infinity c_i tends to V. Thus, V can be interpreted as the saturation level of consumption. $(V-c_i)/V$ is the proportional shortfall in consumption from the saturation level, and it lies between 0 and 1. We had proposed that, for any community, the mean proportional shortfall of consumption of a basic necessity such as cereals from its saturation level be taken as a poverty index of that community [see Gore, Kumar, Paranjpe, Sastry, and Sitaramam 1994, 1996 and Kumar, Gore, and Sitaramam 1996].

(2) Dividing both the right and the left hand sides of (2.2) by y_i we get:

$$c_i/y_i = V/\{K + y_i\} \qquad ... (2.4)$$

Since income and consumption move together we can assume that ci/yi tends to a constant as yi tends to zero. From equation (2.4) it follows that this limit is V/K. Thus, V/K can be interpreted as the proportion spent on the commodity, or the budget share of the commodity, at limiting (or low levels of) income.

(3) From equation (2.3) we get:

$$V/c_i = K/y_i + 1 \text{ or } (V-c_i)/c_i = K/y_i \qquad ... (2.5)$$

From equation (2.5) it follows that $y_i = K$ when $c_i = V/2$.

Thus, the parameter K may be interpreted as that level of income at which consumption is at half-saturation level. Hence, parameter K

TABLE 1: NON-LINEAR LEAST SQUARES ESTIMATES OF ENGEL CURVE PARAMETERS (V AND K) FOR CEREAL CONSUMPTION: INDIA 1960-61 TO 1990-91

NSS Round	Period	Rural			Urban		
		V	K	R^2	V	K	R^2
16th	1960-61	19.207	23.030	0.9916	9.645	9.11	0.9569
17th	1961-62	24.267	41.157	0.9265	9.363	9.87	0.9519
18th	1963-64	16.598	21.417	0.9878	8.628	8.95	0.9520
20th	1965-66	23.338	31.157	0.9955	7.6371	8.00	0.8333
21st	1966-67	19.863	24.584	0.8481	8.844	10.87	0.8992
22nd	1967-68	18.704	27.398	0.9953	9.225	12.25	0.9404
24th	1969-70	16.165	21.397	0.9925	9.413	12.06	0.9399
27th	1972-73	18.053	24.404	0.9903	8.733	9.46	0.8910
28th	1973-74	19.122	25.492	0.9854	10.794	14.97	0.9302
32nd	1977-78	12.340	16.217	0.9872	7.968	11.05	0.9463
38th	1983	11.830	16.120	0.9840	8.044	11.98	0.9668
42nd	1986-87	10.584	15.989	0.9757	6.767	11.54	0.9401
43rd	1987-88	10.043	13.898	0.9693	6.406	9.29	0.9339
44th	1988-89	9.701	12.470	0.9767	6.038	7.48	0.9524
45th	1989-90	8.114	9.718	0.9432	5.968	7.87	0.9356
46th	1990-91	9.033	13.216	0.9242	5.998	9.74	0.9575

Note: The V and K estimates are in rupees per capita per month (in 1960-61 prices). V and K are first estimated separately for each NSS Round. The tabulated values above are V and K adjusted for price changes between rounds.

Source: Estimated using NSSO data.

is often called the half-saturation constant.

(4) The equilibrium quantity consumed depends directly on the forward rate constant V (need) and inversely on the backward rate constant K (cost). The proportion of income spent on a necessity(commodity) decreases with increasing income.

The hyperbolic Engel curve was fitted to the Indian data on household consumption published by the NSSO. The model was fitted using non-linear least squares method of estimation. This method requires an initial guess of the unknown parameters. Although the programme usually has certain default-values for the initial guesses, the convergence to the final estimates would be faster, and we can also be reasonably sure of a global minimisation of the error sum of squares, if the initial guesses are chosen carefully. Hence, we provided, as initial guesses estimates derived from the following linearised version of the model:

$$1/c_i = 1/V + (K/V)(1/y_i) \qquad \ldots (2.6)$$

$1/c_i$ was regressed on $1/y_i$, and the reciprocal of the intercept estimate is taken as the initial guess of V, while the ratio of the slope estimate to the intercept estimate is taken as the initial guess of K.

III
Poverty without Poverty Line: Measure of Poverty Based on Cereal-Based Consumption Deprivation

The concept of poverty line has been a very controversial and subjective concept, which had placed economic research on poverty in a very shaky and vulnerable position. We had argued elsewhere [Gore, Kumar, Paranjpe, Sastry, and Sitaramam 1994, 1996 and Kumar, Gore and Sitaramam 1996] that the identification of the poor can be made on the basis of commodity-specific consumption deprivation among different vulnerable groups of people, those groups having been identified by a priori criteria such as rural landless labourers, unemployed or seasonally employed persons, female headed households with dependent children, etc. Our method did not require a poverty line level of income for either identifying the poor or for measuring poverty.

The beneficiaries of poverty alleviation programmes are also normally and actually chosen by criteria other than a poverty line level income. If the poor are so identified for the poverty alleviation programmes, by criteria other than poverty level income, then it makes no sense to measure their degree of poverty through a measure that depends on an arbitrarily chosen poverty line. Such a procedure of applying the traditional measure of poverty (based on a poverty line), when used to monitor the poverty alleviation programmes, would give erroneous conclusions as the measured poverty could exclude some of the actual beneficiaries whose incomes could be above the poverty line. Hence what is needed in this connection is an insight into the commodity-specific consumption deprivation among a variety of vulnerable groups of people, identified by some policy relevant criteria. If it is desired to choose between alternate groups so as to exclude the creamy layers from the benefits of the poverty alleviation programmes one can measure the commodity-specific consumption deprivation for such alternate groups and choose, for implementing the poverty alleviation programmes, that group which has more consumption deprivation than others.

We used the NSS data for the computation of the new poverty index that does not use the poverty line. The consumer expenditure data for cereal expenditure, and total expenditures by various total expenditure classes for various NSS rounds starting from 16th round (1960-61) to the 46th round (July 1990-June 1991) were used. The commodity-specific poverty indices for India for the period 1960-61 to 1990-91 were computed using the method described in Section II. Engel curves of type (2.2) were fitted separately for each year (round), and separately for rural and urban India using non-linear least squares method of estimation employing RATS computer software.

The estimates of saturation consumption (V) for cereals, were deflated with the food component of consumer price index (CPI) while the estimates of K were deflated by the overall consumer price index. For rural households the CPI for agricultural labourers was used whereas for urban households a weighted average of CPI for non-manual workers and industrial workers was used along the lines suggested by Minhas et al (1987), by giving them weights of 0.625 and 0.375, respectively. This deflation was carried out to make the parameters V and K comparable over time.

There is a hierarchy of needs, the cereals being the first and most essential commodity. The estimates of V and K (adjusted for changes in food prices and overall prices), for cereal consumption are presented in Table 1. Trend lines fitted to the estimates of V and K show that there is a secular decline in both. This could imply that over time households started substituting non-cereal and non-food items for cereals. This could be due to increased availability over time of non-cereal and non-food items. The estimates of V in Table 1 are almost uniformly larger for the rural data compared to the urban. The explanation given above, viz, an increase in availability of non-cereal options (in urban areas) possibly explains this pattern as well.

Table 2: Proportion of Total Expenditure Spent on Cereals at Limiting Income (V and K), India: 1960-61 to 1990-91

Year	Cereal	
	Rural	Urban
1960-61	0.8340	1.0586
1961-62	0.5896	0.9490
1963-64	0.7750	0.9639
1965-66	0.7491	0.9542
1966-67	0.6949	0.8135
1967-68	0.6827	0.7529
1969-70	0.7555	0.7804
1972-73	0.7398	0.9233
1973-74	0.7501	0.7209
1977-78	0.7609	0.7212
1983	0.7339	0.6715
1986-87	0.6620	0.5861
1987-88	0.7226	0.6889
1988-89	0.7779	0.8075
1989-90	0.8350	0.7586
1990-91	0.6835	0.6158

Note: V and K are first adjusted for price changes between rounds and then V and K was calculated.

Source: Estimated from Engel Curves using NSSO data.

Table 3: Estimates of Poverty Measured through Cereal Consumption Deprivation: With Separate Engel Curves for Each Round

Year	Rural	Urban
1961-62	0.6838	0.3015
1963-64	0.5918	0.2816
1965-66	0.6459	0.2734
1966-67	0.5998	0.3202
1967-68	0.6460	0.3577
1969-70	0.5519	0.3188
1972-73	0.5749	0.2744
1973-74	0.5641	0.3638
1977-78	0.4757	0.3118
1983	0.4541	0.3123
1986-87	0.4260	0.2875
1987-88	0.3768	0.2533
1988-89	0.3628	0.2122
1989-90	0.3007	0.2142
1990-91	0.4428	0.3133

Table 4: Estimates of Poverty through Cereal Consumption Deprivation: With Pooled or Common Engel Curve for All Rounds

Year	Rural	Urban
1960-61	0.5766	0.3195
1961-62	0.5759	0.3132
1963-64	0.5981	0.3119
1965-66	0.5980	0.3261
1966-67	0.6045	0.3124
1967-68	0.6269	0.3244
1969-70	0.5875	0.2907
1972-73	0.5814	0.2938
1973-74	0.5567	0.2890
1977-78	0.5769	0.2954
1983	0.5577	0.2801
1986-87	0.4238	0.2873
1987-88	0.3768	0.2442
1988-89	0.3628	0.2122
1989-90	0.3007	0.2142

As mentioned earlier (refer to equation (2.4) and the comment below that equation) the proportion of expenditure on the specific commodity (cereals) turns out to be V/(K+y) and this becomes V/K as income tends to zero. Thus V/K is the limiting proportion of expenditure on cereals. Table 2 presents estimates of V/K for cereals.

An interesting aspect to note is that this V/K ratio for cereals or "proportion spent on cereals at limiting income" has been higher in the urban India up to 1970 than in rural India. But from 1970 onwards (except for 1972-73) this proportion is less in urban India than in rural India. This seems to be partly due to the green revolution. This may also be partly due to the PDS being more urban-oriented as V/K showed a declining secular trend in urban area only. The overall constancy of V/K for cereal consumption in rural India also justifies using cereal consumption deprivation for measuring poverty, as most of the commonly understood poor (agricultural labourers and marginal farmers) live in rural areas and the proportion of total expenditure that they spend on cereal consumption expenditure is very high being 0.75 on an average and stable.

Table 3 presents the poverty indices based on the cereal-based consumption deprivation.[3] The poverty estimates of Table 3 show a time trend in this poverty index. The cereal-based poverty index clearly demonstrates that there is a higher incidence of poverty in rural India and that the difference between rural and urban poverty has reduced between 1960-61 and 1990-91. It must be mentioned that the urban and rural poverty indices given here are based on different saturation norms (Vs). Hence we cannot strictly compare the rural and urban poverty indices. The maximum cereal consumption differs between rural and urban areas, partly because the commodity spectra available are different in rural and urban areas. We can, however, talk about the rate of decrease in poverty between urban and rural poverty and note that this decrease is much more in rural areas than in urban areas.

The poverty index presented here is based on deprivation from saturation norm that is specific to each data set. Since this saturation norm (i e, estimated V) is different for each year as well as for urban and rural samples, comparison of the poverty indices needs a careful explanation. If our concern is about consumers' feeling of consumption deprivations from their own saturation point (this may be termed 'felt-deprivation' derived from the concept of felt need) then the comparisons of above indices are alright. Our measure of poverty is a relative measure relative to the maximum expenditure on cereals, which differs between rural and urban areas. While we may, under certain circumstances, be

TABLE 5A: SEQUENCE IN WHICH COMMODITY GROUPS APPEAR, ALONG WITH THEIR BUDGET SHARES AT LIMITING INCOMES (ADJUSTED V/K, PRESENTED IN PARENTHESES): RURAL

Years	Round No	C1	C2	C3	C4
Apr 1951-Mar 1954	3	CE(.71)	FL(.0567)	CL(.0435)	EO(.0197)
Apr 1952-Sep 1952	4	CE(.68)	CL(.0512)	FL(.051)	EO(.0109)
Dec 1952-Mar 1953	5	CE(.65)	FL(.0717)	CL(.0595)	EO(.0145)
May 1953-Sep 1953	6	CE(.75)	FL(.0404)	CL(.0375)	
Oct 1953-Mar 1954	7	CE(.99)	FL(.0018)	MEF(.00074)	
Jul 1954-Mar 1955	8	CE(.89)	FL(.0253)	EO(.0085)	MEF(.0076)
May 1955-Nov 1955	9	CE(.82)	FL(.044)	EO(.0108)	
Dec 1955-May 1956	10	CE(.58)	FL(.042)	MEF(.034)	
Aug 1956-Feb 1957	11	CE(.87)	FL(.0234)	EO(.009)	MEF(.0234)
Mar 1957-Aug 1957	12	CE(.89)	FL(.0233)	MEF(.0073)	EO(.0055)
Sep 1957-May 1958	13	CE(.78)	FL(.0346)	MEF(.0167)	EO(.011)
Jul 1958-Jun 1959	14	CE(.83)	FL(.0345)	MEF(.0113)	EO(.0085)
Jul 1959-Jun 1960	15	CE(.79)	FL(.042)	MEF(.0134)	EO(.0077)
Jul 1960-Aug 1961	16	CE(.83)	FL(.0442)	MEF(.0128)	EO(.0105)
Sep 1961-Jul 1962	17	CE(.63)	FL(.071)	MEF(.017)	EO(.0148)
Feb 1963-Jan 1964	18	CE(.77)	FL(.0445	P and P(.0276)	
Jul 1964-Jun 1965	19	CE(.75)	FL(.0525)	SU(.03)	P and P(.0245)
Jul 1965-Jun 1966	20	CE(.75)	FL(.0518)	S and S(.0229)	VEG(.02)
Jul 1966-Jun 1967	21	CE(.72)	FL(.0568)	S and S(.0334)	VEG(.0252)
Jul 1967-Jun 1968	22	CE(.76)	FL(.053)	S and S(.0264)	VEG(.0216)
Jul 1969-Jun 1970	24	CE(.82)	FL(.0356)	SPI(.0194)	VEG(.018)
Jul 1970-Jun 1971	25	CE(.84)	FL(.0333)	VEG(.016)	SPI(.0158)
Oct 1972-Sep 1973	27	CE(.8)	FL(.0398)	VEG(.0144)	SPI(.014)
Oct 1973-Jun 1974	28	CE(.83)	FL(.0322)	VEG(.0157)	EO(.125)
Jan 1983-Dec 1983	38	CE(.81)	FL(.0435)	VEG(.0232)	P and P(.0131)
Jul 1986-Jun 1987	42	CE(.72)	FL(.0632)	VEG(.036)	EO(.0308)
Jul 1987-Jun 1988	43	CE(.78)	FL(.0459)	VEG(.0286)	P and P(.0182)
Jul 1988-Jun 1989	44	CE(.82)	FL(.0392)	VEG(.0243)	P and P(.018)
	45	CE(.91)	FL(.0175)	VEG(.0126)	EO(.008)

TABLE 5B: SEQUENCE IN WHICH COMMODITY GROUPS APPEAR, ALONG WITH THEIR BUDGET SHARES AT LIMITING INCOMES (ADJUSTED V/K, PRESENTED IN PARENTHESES): URBAN

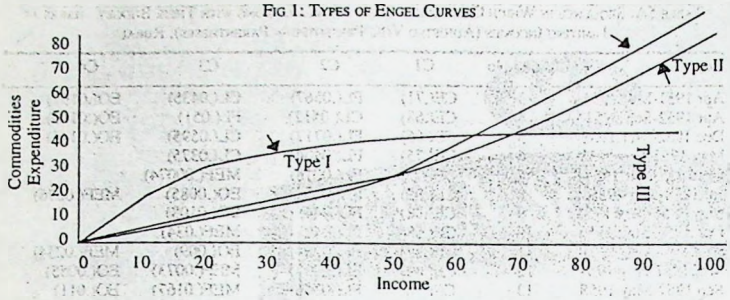
Years	Round No	C1	C2	C3	C4
Apr 1951-Mar 1954	3	CE(.83)	FL(.1263)	CL(.0187)	EO(.0151)
Apr 1952-Sep 1952	4	CE(.77)	CL(.0303)	FL(.026)	EO(.0138)
Dec 1952-Mar 1953	5	CE(.68)	FL(.0478)	CL(.033)	MEF(.0204)
May 1953-Sep 1953	6	CE(.98)	FL(.0028)	CL(.0024)	RE(.0009)
Oct 1953-Mar 1954	7				
Jul 1954-Mar 1955	8	CE(.9)	FL(.0139)	EO(.007)	MEF(.0063)
May 1955-Nov 1955	9	CE(.78)	FL(.0304)	EO(.0154)	SU(.0143)
Dec 1955-May 1956	10	CE(.87)	FL(.0174)	EO(.0089)	SU(.0074)
Aug 1956-Feb 1957	11				
Mar 1957-Aug 1957	12				
Sep 1957-May 1958	13				
Jul 1958-Jun 1959	14				
Jul 1959-Jun 1960	15	CE(.83)	FL(.0273)	EO(.0142)	SU(.0119)
Jul 1960-Aug 1961	16				
Sep 1961-Jul 1962	17				
Feb 1963-Jan 1964	18				
Jul 1964-Jun 1965	19	CE(.86)	SU(.0252)	FL(.0197)	P and P(.0161)
Jul 1965-Jun 1966	20				
Jul 1966-Jun 1967	21	CE(.92)	FL(.0122)	S and S(.0112)	SU(.0061)
Jul 1967-Jun 1968	22	CE(.87)	FL(.0204)	S and S(.0161)	PAN(.0065)
Jul 1969-Jun 1970	24	CE(.88)	FL(.0182)	SPI(.0156)	EO(.0109)
Jul 1970-Jun 1971	25	CE(.86)	FL(.0208)	SPI(.0168)	VEG(.0133)
Oct 1972-Sep 1973	27				
Oct 1973-Jun 1974	28	CE(.84)	FL(.0224)	PAN(.0055)	SALT(.0013)
Jan 1983-Dec 1983	38	CE(.75)	FL(.0442)	VEG(.0228)	SPI(.0175)
Jul 1987-Jun 1988	43	CE(.73)	FL(.0389)	EO(.0297)	M and P(.0272)
Jul 1988-Jun 1989	44	CE(.92)	FL(.0103)	VEG(.0088)	M and P(.0082)
	45	CE(.87)	FL(.0199)	VEG(.0143)	EO(.0127)

Abbreviations used :-

CE	: Cereals	MEF	: Meat, Egg and Fish
FL	: Fuel and Light	S&S	: Salt and Spices
EO	: Edible Oil	P&P	: Pulses and Products
CL	: Clothing	M&P	: Milk and Products
SU	: Sugar	F&N	: Fruits and Nuts
VEG	: Vegetables	SPI	: Spices
PAN	: Pan, Tobacco and Int	RE	: Rents

Note: For some rounds when V/K estimate is outside the plausible range they are omitted.

FIG 1: TYPES OF ENGEL CURVES



justified in making temporal comparisons within rural and urban areas separately, it is not quite proper to make comparisons between urban and rural poverty indices.[4]

To shed more light on this problem we deflated the expenditure data of each NSS Round with the appropriate price index and examined to see if there is a long-run stable Engel curve that fits the data with a single V that can be used in computing the poverty index for each round. It was felt that urban and rural consumption patterns are not comparable anyway. Hence two separate long-run Engel curves were estimated, one for the rural areas and another for the urban areas.

Table 4 presents the poverty indices based on the assumption that there is a common Engel curve for all the rounds of NSS after adjusting the data for price level changes from year to year. These estimates seem to suggest that rural poverty had increased in India from 1960-61 to 1967-68 and then recorded a secular decline until 1989-90. There is again a sharp increase in rural poverty in 1990-91. An examination of urban poverty indices of Table 4 suggests that the urban poverty more or less remained stable until 1967-68 and then registered a slight decline and thereafter remained stable until 1989-90. Like rural poverty urban poverty also registered a sharp increase in 1990-91.

IV
Prioritisation of Household Needs

When the above Engel curve was fitted to the various groups of commodities for which NSSO presents its expenditures we observed that only for some of them, particularly cereals, the fit was good. In some cases Type II and Type III curves of the Figure seemed more appropriate. If the Engel curve for cereals has a Type I shape it follows that the expenditure on a commodity group consisting of all other commodities should have an Engel curve of Type III. Noting that the expenditure on cereals forms a major portion of total expenditure by a household we felt that the slope of the curve in some cases could be imperceptible if the curve is drawn against total expenditure, and that it may be perceptible if it is plotted against budget available after deducting the expenditure on cereals. This in fact turned out to be the case.

The above observation suggested that there could be a hierarchy of household needs among the poor, the intensity of need being the greatest for cereals. Once the cereals need is fulfilled the household may spend a part of the remaining income on a commodity, expenditure on which saturates next. Having met the expenditures on the two most important items the household may move on to spend on the third item, from the remaining income, and so on.

We tested this model of needs-hierarchy using the NSSO data from 1951-1991, viz, from the third round to the 45th round. After fitting the Engel curve of model (2.2) for cereals we asked the question which of the remaining groups of items takes the second position in terms of saturating next, with the best fitting hyperbolic relation plotted against the remaining part of the total expenditure. Having thus chosen the second most needed item, separately for each round and separately for rural and urban samples, we asked the question likewise – what item, out of the remaining items, would qualify to take the third position, and so on.

Our findings are reported in Tables 5A, 5B, and 6. In Tables 5A and 5B we present the sequence in which commodity groups appear along with their budget shares at limiting income (V/K values). In Table 6 we present the frequency with which a commodity is selected (out of a total of 29 rounds) as one of the top five priority items. From these results it appears that next to cereals comes the category 'fuel and light', the major component of that being possibly the cooking fuel. After fuel and light comes 'edible oil'. After edible oil comes 'meat, egg, and fish' in rural areas and 'sugar' in urban areas.

The parameters 'V' and 'K' estimated at each stage refer to the situation where the independent variable of the non-linear Engel curve is the 'remaining total expenditure', after the expenditures on commodities of earlier stages are subtracted from the total expenditure. The V/K at each stage needs to be adjusted to express expenditure on that commodity as proportion of the total expenditure at the limiting income. The adjusted V/K are presented in the parentheses in Tables 5A and 5B. From these adjusted V/K figures it becomes quite clear that fuel and light occupies a high position next to cereals in terms of budget share at limiting incomes.

V
Policy Implications of Our Results

It is our view that as a part of its common minimum programme the present UDF government must design programmes aimed at improving the welfare of the vulnerable sections of the community (households). Such programmes must not be looked upon as poverty alleviation programmes of the traditional variety with questionable, dubious and outdated methods of defining and measuring poverty. Instead, we propose that a new thrust be given to poverty alleviation through minimum needs programmes. In designing these programmes the vulnerable groups may be chosen from a set of alternative groups through criteria other than the poverty line, criteria based on social, political, and administrative considerations aided by our measure of consumption deprivation. What we mean by this is that among a set of alternate groups chosen a priori according to sociological, economic, political and administrative criteria one group may be chosen as the beneficiary group for the government's programme on the basis of the criterion of having the highest level of commodity-specific consumption deprivation.

From the findings reported in the previous section on the hierarchy of needs it becomes quite apparent that after cereals the next most important commodity group is fuel and light, which includes cooking fuel. After these two comes the group edible oils. In view of these results it can be suggested that in revamping the PDS the new government should omit the creamy layer from the PDS beneficiary list and spend more on providing cooking

TABLE 6: FREQUENCY WITH WHICH A COMMODITY WAS SELECTED IN FIRST FOUR PRIORITY ITEMS ACCORDING TO ADJUSTED V/K

Items	Rural	Urban
Cereals	29	18
Fuel and Light	29	18
Edible Oil	15	9
Clothing	4	4
Sugar	1	5
Vegetables	12	4
Pan, Tobacco	0	2
Meat, Egg and Fish	10	2
Salt and Spices	3	2
Pulses and Products	5	1
Milk and Products	0	2
Spices	3	2
Rents	0	1
Salt	0	1

fuel and edible oil to the vulnerable groups through PDS.

We also feel that more detailed analysis needs to be done along the lines proposed here to assess the commodity-specific consumption deprivation among different vulnerable groups in order to design proper welfare-improving government programmes based on the minimum needs approach. The poverty line and the traditional poverty measures based on the poverty line can be dispensed with altogether.

While fuel and light have been clubbed together in this analysis of NSSO data there are other studies that have examined the role of cooking fuel (fuel wood, charcoal and kerosene) in household consumption. In particular we may refer to the work of Reddy and Reddy (1985) that examined cooking fuel consumption by a sample of households in Bangalore city. A similar survey of cooking fuel consumption in rural North India was undertaken by NCAER (1978). The study of Reddy and Reddy clearly shows the importance of consumption of cooking fuel among low-income households even in highly urbanised areas such as Bangalore. The long lines of the urban poor to get kerosene is a pathetic sight we confront today, even after the government permitted the import and sale of kerosene by private parties. One strong implication of our study is to highlight the importance of cooking fuel for the poor households.

Another major policy implication of our study is that in the currently prevailing attitude of giving primacy to local bodies in designing and monitoring the poverty alleviation programmes the targeting of the programmes in terms of the choice of the beneficiaries and the choice of commodities must be specific to each local community. Our research emphasises this point and also provides a method of choosing these targets for each local community.

Although we used the NSS data and presented our results for the country as a whole we emphasise that this sort of exercise has to be done at disaggregated levels, possibly at the district, taluk, and village or (urban) block levels. The NSS type of data which has very few observations at such levels of disaggregation are not suitable for this purpose. We hope our study will drive home the need to generate data bases at grass roots level to design and monitor social welfare programmes. We also hope that the various NGOs whih are actively engaged in social welfare schemes all over the country will come together to develop standardised data bases at the village and block levels.

In short, we hope that this study of ours will convince both the researchers and the policy makers that the concept of poverty line can be dispensed with. We also hope that our study will form the beginning of worthwhile social science policy research through research studies on consumption deprivation at the village and block levels.

Notes

[This work is based on an ongoing research by these authors on measurement of poverty without using a poverty line. The authors' new method for measuring poverty is based on commodity-specific consumption deprivation, the commodities chosen being the most essential basic needs. This is a radically different method, compared to the highly discredited traditional methods that employ a questionable and subjective poverty line. The interested reader may refer to Gore, Kumar, Paranjpe, Sastry, and Sitaramam (1994 and 1996) and Kumar, Gore and Sitaramam (1996). This research was initiated by V Sitaramam at the National Institute of Nutrition several years ago in collaboration with J G Sastry. It is now being continued by Sitaramam, during the last two and a half years, in association with Gore, Krishna Kumar and Paranjpe. The authors thank S Subramanian and Vinod Vyasulu for their comments on an earlier draft of this paper. Krishna Kumar thanks Sushant Mallick, G Nagaraju, and N S Manjula for their research assistance.]

1 It is our view that an attention to semantics and linguistics is quite useful here. The economists' focus so far has been on the 'focus axiom' that requires the noun 'poverty' to be associated with the substantivised adjective 'poor', or the associated noun 'the poor'. The English language, however, gives the nown 'poverty' a position that does not necessarily depend on the identification of 'the poor'. In other words the English language does not say that poverty is only what 'the poor' possess. The Webster's New Collegiate Dictionary gives three different meanings to the word poverty. (1) the state of one who lacks a usual or socially acceptable amount of money or material possessions; (2) scarcity or dearth; (3) debility due to malnutrition. The second meaning refers to deprivation, and that is what we wish to emphasise.

2 It is trivial that there should be a direct relation between unemployment and poverty. This relationship is vividly brought out in terms of published official statistics for urban areas in selected Indian States by Vyasulu and Vani (1996).

3 We have shown in another paper that the poverty index we propose satisfies all the major axioms that such an index should satisfy (axioms such as those proposed by Sen (1976), and Kakwani (1980)) except the focus axiom. We argued that there is no need to have the focus axiom if we define poverty first without defining who the poor are [see Gore, Kumar, Paranjpe, Sastry, and Sitaramam 1994 and 1996]. The proofs that the poverty index satisfies all the major axioms were based on the observation that the index is the mean of deprivation, which is expressed as a function of income, the mean being taken with respect to the income distribution [Kumar 1993].

4 The problem here is quite similar to the problem of real income comparisons posed by Samuelson. One can make Scitovsky type of comparisons between rural and urban poverty measures by substituting urban saturation levels of consumption for rural households and rural saturation levels for urban households, and then comparing them as transferable public expenditure equivalents.

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India's Checkered History in Fight Against Poverty

Are There Lessons for the Future?

Martin Ravallion
Gaurav Datt

Looking back 40 years or so, progress against poverty in India has been highly uneven over time and space. It took 20 years for the national poverty rate to fall below – and stay below – its value in the early 1950s. And trend rates of poverty reduction have differed appreciably between states. This paper provides an overview of results from a research project which has been trying to understand what influence economywide and sectoral factors have played in the evolution of poverty measures for India since the 1950s. There are some clear lessons for the future.

THERE has been much debate about how best to fight absolute poverty. Total numbers of poor people in the world – by almost any accepted standard – are continuing to rise.[1] The urgency of resolving the debate, and taking effective action, is greater than ever.

The extent to which poor people share in economic growth has been one of the most contested issues. Some observers have argued that "distribution must get worse before it gets better" in developing countries, and that this puts a severe brake on the prospects for pro-poor economic growth. There have also been debates about the effects of growth in specific sectors. For example, some have argued that the benefits of the 'green revolution' (which resulted in substantial gains in agricultural yields through new seed varieties and irrigation) were captured by relatively well-off farmers, and brought little or no gain to the rural poor. Others have pointed to farm-output growth as the key to poverty reduction, both directly and via its effects on rural wage rates.[2]

There would be little risk of exaggeration in saying that the position one takes in such debates has great bearing on long-standing issues of development strategy and policy reform. The link between growth and poverty, and the interaction with other factors (including human resource development), has also taken on new urgency in the wake of recent macroeconomic difficulties and adjustment efforts in many developing countries.[3]

However, these are difficult issues to resolve empirically, not least because of the paucity of representative and reliable data over time on the living standards of poor people. Amongst developing countries, India has relatively good data for addressing these issues. At the time of writing, one could compile a time series of consumption data from 34 National Sample Surveys spanning 1951-92. This is one of the longest series of national household surveys suitable for tracking living conditions of the poor. Most of the surveys are large enough to be considered representative at the urban and rural levels for most states, and they appear to be reasonably comparable over time since the basic survey method has changed relatively little. Other data (on price indices and explanatory variables) are also available on a reasonably consistent basis. Although there are data problems (some of which we can make corrections for), they are modest by the standards of cross-country comparative studies. The existence of a time series of consumption distributions spanning 40 years represents a unique opportunity to study the link between living conditions of the poor and the key macro-economic and sectoral variables which are thought to have important influences on progress in reducing poverty.

We have used these data to study the past evolution of living standards in India. We have asked: How have comparable measures of poverty in India evolved since the 1950s? Has the experience been different between urban and rural areas and between different states? How have measures of poverty responded to changes in economy-wide and sectoral variables? What has been the relative importance of economic growth versus changes in distribution? What role has been played by the sectoral composition of economic growth? How important have changing wages and prices been? Why have some states of India done so much better than others in the fight against poverty? What role have differences in the initial levels of human development played, versus other factors such as physical infrastructure endowments? This paper provides an overview of the results of this research. We avoid details on data and methods, which are described more fully in a series of papers from the project.[4]

Data on Poor People

To address the questions posed above, we constructed a new set of consistent estimates of various poverty measures for India over the period 1951 to 1992 from the National Sample Survey (NSS) data. We aimed to measure 'absolute poverty', by which we mean that the extent of any household's poverty depends solely on its own absolute standard of living (for example, a household does not switch from being poor to non-poor when it moves across sectors unless its standard of living has changed).[5] Following now well-established and defensible practice for India and elsewhere, the standard of living was measured by consumption expenditure (including imputed values for consumption from own production). We only studied 'poverty' in the narrow (though unquestionably important) sense of "command over commodities"; we do not deny that there are aspects of a broader concept of 'well-being' which are not captured by our poverty measures.[6]

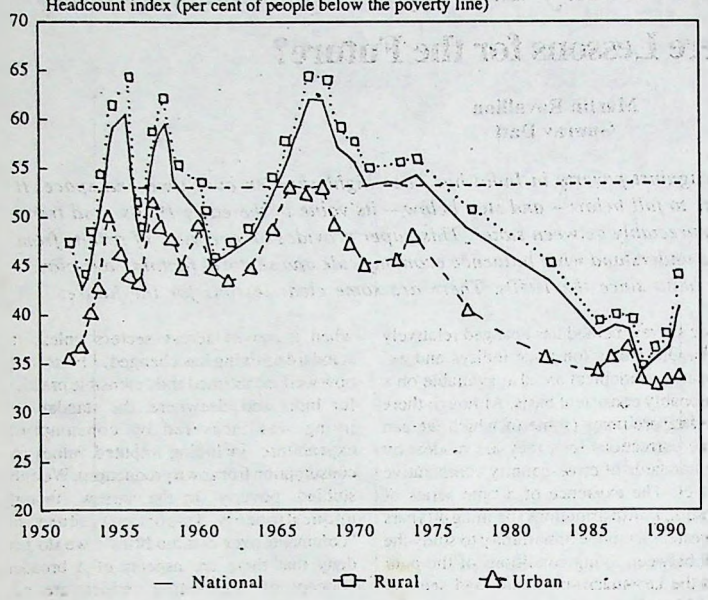
The poverty lines used were those defined by India's planning commission.[7] The rural poverty line is Rs 49 per month and the urban line is Rs 57 per month at October 1973-June 1974 all-India rural and urban prices respectively.[8] The nominal consumption distributions for each survey data were then converted to constant prices using consumer price indices for urban and rural areas which were anchored to the consumption patterns of low-income workers.[9 10]

Three different poverty measures were used: (i) The headcount index, given by the percentage of the population who live in households with a consumption per capita less than the poverty line. This measures the *incidence* of poverty; (ii) The poverty gap index, defined by the mean distance below the poverty line expressed as a proportion of that line (where the mean is formed over the entire population, counting the non-poor as having zero poverty gap). This reflects the *depth* of poverty, as well as its incidence; (iii) The squared poverty gap index, defined as the mean of the squared proportionate poverty gaps. Unlike the poverty gap index, this measure reflects the *severity* of poverty, in that it will be sensitive to inequality amongst the poor.[11, 12] The estimated poverty measures were then collated with a variety of macro-economic and sectoral variables.[13]

How Much Progress Has India Made in Fighting Poverty Since the 1950s?

Table 1 gives our estimates of the three poverty measures for eight periods formed by aggregating NSS rounds; Figure 1 gives

FIGURE 1: POVERTY IN INDIA 1951-92



the estimates of the headcount index for each survey round. (The pattern of change was very similar for the other two poverty measures.) Several points emerge:

The period from the early 1950s up to the mid-1970s was characterised by fluctuations in poverty without a real trend in either direction.[14] The average headcount index was 53 per cent in 1951-55 (marked in Figure 1), about the same as its average value in 1970-74.[15] After that there was a significant decline in poverty incidence (and the depth and severity of poverty fell too),[16] though this was not a continuous decline. It thus took over 20 years for the poverty measures to finally fall below – and stay below – their values in the early 1950s.

Changes in rural poverty closely follow those at the national level, which is not surprising given that a large proportion of India's population lives in rural areas (about 74 per cent even at the end of the period). It is more notable that a similar pattern over time also holds for urban poverty (Figure 1). Common causative factors appear to be at work.

The reduction in poverty since the early 1970s has been sizeable; between 1969-70 and 1992, the national headcount index declined from 56 to 41 per cent. Yet India's progress against poverty has been modest when compared to the standards set by some countries in east Asia. For example, Indonesia's headcount index was 58 per cent in 1970—very close to our estimate for India at that time. But by 1993 (keeping the same real poverty line over time), we estimate that the headcount index for Indonesia had fallen to 8 per cent, about one fifth of India's headcount index in 1992.[17]

HOW IMPORTANT TO INDIA'S POOR WAS ECONOMIC GROWTH AND CONTRACTION?

We look first at the effect of *aggregate* economic growth and contraction on poverty. Comparing successive survey rounds, we regressed the percentage change in each of the three poverty measures on various measures of the rate of aggregate economic growth between the same rounds. Based on the regression coefficients, Table 2 gives our estimates of the percentage change in each poverty measure to be expected from a 10 per cent growth rate for (i) the mean consumption per person as estimated from the NSS; (ii) mean consumption per person estimated from the national accounts and population census; and (iii) mean net domestic product per person, also from the national accounts and census.[18]

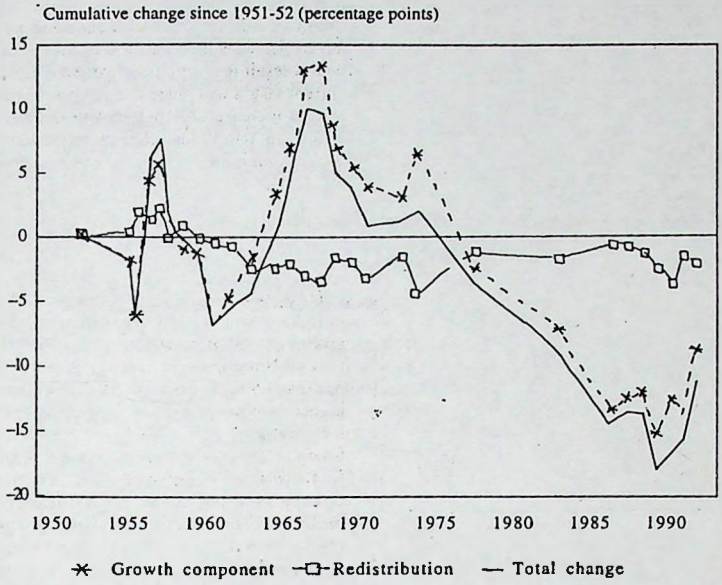
The national poverty measures responded significantly to all three measures of economic growth. For example, a 10 per cent increase in mean consumption resulted in a 12-13 per cent drop in the proportion of people who are poor, representing a 10-11 per cent drop in the number of poor, at India's rate of population growth. The responses are higher if one uses the NSS estimate of mean consumption, rather than the national accounts estimate, though the difference is small for a given poverty measure. The responses are lowest for net domestic product. This may be due to inter-temporal consumption smoothing which may make poverty (in terms of consumption) less responsive in the short-term to income growth than to consumption growth.

Notice too that the responses tend to be greater if one uses the poverty gap index rather than the headcount index, and the response is largest for the squared poverty gap, which is sensitive to both the depth and

TABLE 1: POVERTY IN INDIA 1951-1992

NSS Rounds	Period	Rural	Urban	National
Headcount index				
3-8	1951-55	54.77	42.70	52.66
9-15	1956-60	53.96	47.06	52.74
16-19	1961-65	48.59	45.46	48.02
20-24	1966-70	60.44	50.90	58.60
25, 27, 28	1971-75	55.27	46.04	53.39
32, 38	1976-83	47.96	38.08	45.68
42-45	1984-90	37.94	34.99	37.20
46-48	1991-92	39.44	33.24	37.84
Poverty gap index				
3-8	1951-55	19.69	14.04	18.70
9-15	1956-60	17.91	15.36	17.46
16-19	1961-65	14.28	14.04	14.23
20-24	1966-70	19.80	16.08	19.08
25, 27, 28	1971-75	17.01	13.46	16.28
32, 38	1976-83	13.84	10.60	13.09
42-45	1984-90	9.26	9.11	9.22
46-48	1991-92	9.47	8.58	9.24
Squared poverty gap index				
3-8	1951-55	9.42	6.20	8.86
9-15	1956-60	7.94	6.69	7.72
16-19	1961-65	5.73	5.85	5.76
20-24	1966-70	8.67	6.76	8.30
25, 27, 28	1971-75	7.08	5.28	6.71
32, 38	1976-83	5.45	4.04	5.13
42-45	1984-90	3.24	3.24	3.24
46-48	1991-92	3.23	3.11	3.20

FIGURE 2: CUMULATIVE CHANGE IN HEADCOUNT INDEX
(Total of Growth and Redistribution Components)



severity of poverty. This means that the impacts of growth and contraction in India were not confined to those near the poverty line, but reached deeper.

Redistribution played a role in the long run changes in poverty in India. Any change in a poverty measure can be decomposed into a growth component and a redistribution component.[19] Roughly speaking, the growth component is the change in the poverty measure which would have occurred if inequalities had not changed, while the redistribution component is the change in the poverty measure that one would have found if there had been no change in the mean. By adding each component over time we can assess the cumulative total impact of growth or redistribution. Figure 2 gives the results.[20]

It can be seen that the redistribution component did help over the whole period. Thus, for India, our results reject the old view (still held in some quarters) that distribution must get worse as a low-income country grows. Nonetheless, the overall contribution of redistribution to change in the headcount index has not been large in the long run. The growth in mean consumption has been more important, accounting for about 80 per cent of the cumulative decline by the end of the period.

Redistribution mattered more to the other two poverty measures. For the poverty gap index, the redistribution component accounted for about 40 per cent of the cumulative decline by the end of the period; its contribution was 47 per cent for the squared poverty gap index. Favourable redistribution has thus been quite important for changes in the depth and severity of poverty.

Most of the pro-poor impact of redistribution was realised early on, during the early to mid-1960s, well before the onset of the sustained decline in the national poverty measures. Since the mid-1960s, the redistribution component fluctuated without making a further addition to its total long-run impact on national poverty. (This holds for all three poverty measures.) The gains to the poor since about 1970 have been almost entirely due to growth.

The latter finding might be taken to imply that public efforts at pro-poor redistribution in the 1970s and 1980s failed. However, one should be wary of drawing that conclusion since we do not know the counter-factual of what would have happened without those efforts. Possibly distribution would have got worse.

DID THE PATTERN OF GROWTH MATTER?

Turning next to the sectoral composition of growth, we found that the changes in national poverty have been for the most part driven by changes in rural poverty. Figure 3 gives the cumulative (population-share weighted) contributions of both the urban and rural sectors to the national headcount index. The rural sector accounted for more than three-quarters of the total decline in national poverty measures over the whole period.[21] Nonetheless – despite the substantial sectoral shifts in national output that have occurred over the last 40 years or so – poverty in India is still overwhelmingly rural. In 1992, three-quarters of India's poor lived in rural areas.

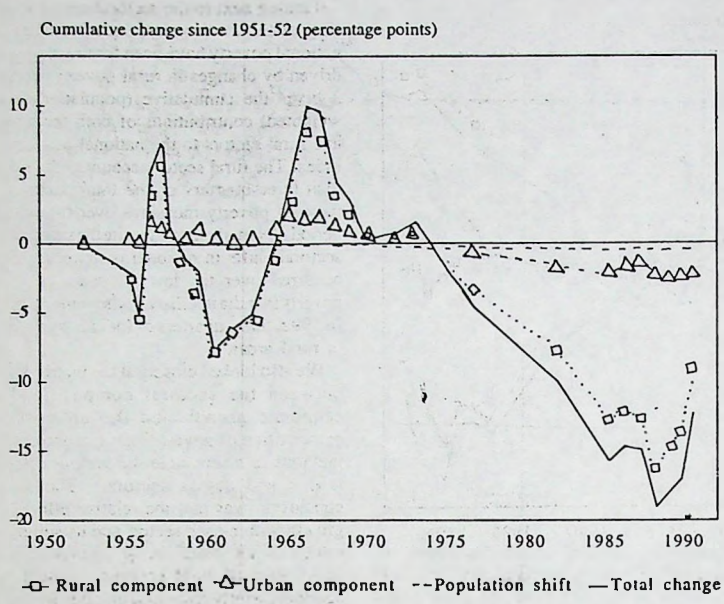
We also looked closely at the interlinkage between the sectoral composition of economic growth and the urban-rural composition of poverty, using econometric methods to disentangle the various effects within and across sectors.[22] The main conclusion was that the relative effects of growth within each sector, and its spillover effects to the other sector, reinforced the importance of rural economic growth to national poverty reduction in India. Both the urban and rural poor gained from growth within the rural sector. By contrast, while urban growth reduced urban poverty, it also had adverse distribution effects within urban areas which militated against potentially higher gains to the urban poor. And urban growth had no discernible impact on rural poverty. The process of growth through rural-to-urban migration contributed very little to poverty reduction in India.

When the growth in national income was broken down by output-based sectors, we found that there were marked sectoral differences in the poverty impacts. Both primary (mainly agriculture) and tertiary (trade, services, transport et al) sector growth reduced poverty nationally, and they also did so within both urban and rural areas. By contrast, secondary (mainly manufacturing) sector growth brought no discernible gains to the poor in either sector. In the historical shift from primary to secondary and tertiary sectors it was the latter sector which delivered the bulk of the gains to India's poor.

TABLE 2: HOW RESPONSIVE WERE NATIONAL POVERTY MEASURES TO ECONOMIC GROWTH IN INDIA?

	Percentage Change in the Poverty Measure Attributable to a 10 Per Cent Increase in		
	Mean Consumption from National Sample Surveys	Mean Private Consumption from National Accounts	Mean Net Domestic Product
Headcount index	-13.3	-12.1	-9.9
Poverty gap index	-18.8	-17.9	-14.9
Squared poverty gap index	-22.6	-21.8	-18.5

FIGURE 3: URBAN-RURAL COMPOSITION OF CHANGE IN THE HEADCOUNT INDEX
(Cumulative Changes in the Urban and Rural Components and Population Shift Effects)



The relative lack of an impact of secondary sector growth on poverty reflects the type of development strategy India pursued since the second plan in the late 1950s, which emphasised capital-intensive industrialisation within a largely closed-economy regime. It is not surprising that such industrialisation brought negligible direct gains to the nation's poor, who depend heavily on the demand for relatively unskilled labour.[23]

DID THE RURAL POOR BENEFIT FROM AGRICULTURAL GROWTH?

Since rural poverty has been so important, we turned our attention to this sector. Here we examined how much India's rural poor benefited from agricultural growth, what role the labour market played, whether the impacts were distributionally biased one way or another, and how important macroeconomic stability was to the rural poor.

We collated the household survey data with data on agricultural wages, prices and output, and estimated a dynamic econometric model jointly determining rural poverty measures and real wages.[24] The model had a triangular structure in which the rural poverty measure was hypothesised to be a function of both the real agricultural wage rate and the average farm yield per unit area (as well as other variables), and the real wage rate was also a function of the farm yield and other variables.

The results indicated that all three poverty measures responded significantly in the short run to changes in agricultural wages as well as to average farm yields. And wages also responded significantly to farm yields, presumably through effects on labour demand, such as due to multiple cropping. Higher yields thus helped reduce absolute poverty through induced wage effects, as well as the more direct channels, including effects on both employment and own-farm productivity.

Neither the poverty measures nor real wage rates adjusted instantaneously to changes in farm yields. The combined effect of this stickiness in both variables was that the short-run gains to poor people of agricultural productivity growth were far lower than the long-run impacts. Also, the short-run effects on rural poverty operating via the real wage rate were minor compared to the direct effects of higher own-farm yields. But in the long run, the wage effects did matter, accounting for about one-third of the long run response of absolute poverty (for all three measures) to a yield increase. The process through which India's rural poor participated in the gains from agricultural growth did take time, though about half of the long-run impact occurred within three years of an initial gain in farm yield.

DID INFLATION MATTER?

We found evidence of an adverse short-run impact of inflation on real agricultural wages and (hence) absolute poverty in rural areas. The effect of inflation was to reduce real wages in the short term, because nominal agricultural wages responded sluggishly to inflation. Nominal wages catch up eventually. But we found that the adverse short-term impact on the rural poor was sizeable. For example, we estimate that a once-and-for-all 20 per cent increase in the price level would result in a drop of 13 per cent in the current year's real wage rate in agriculture, and an increase of 5 per cent in the rural headcount index. The impacts on the other poverty measures would be even higher; the squared poverty gap would rise by 9 per cent.

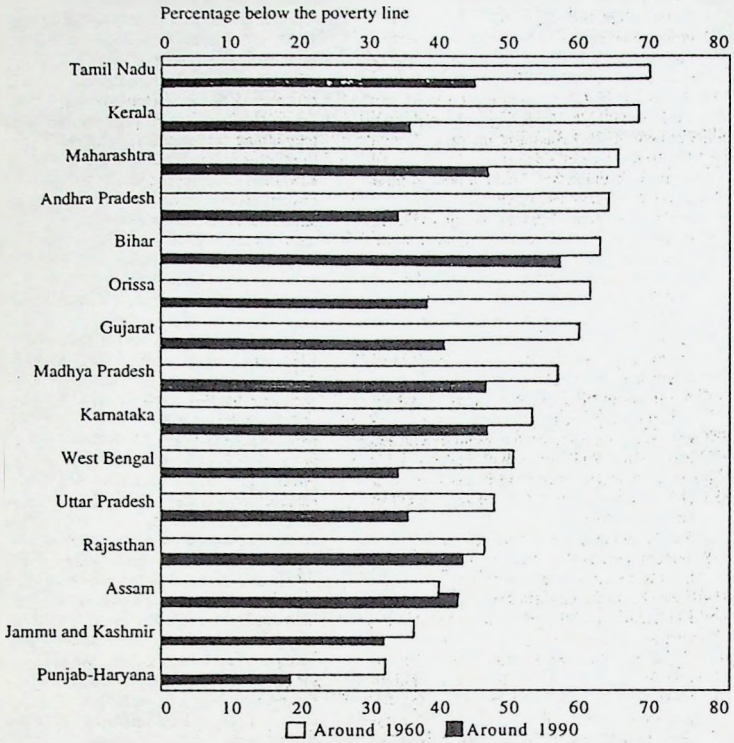
DID SOME STATES PERFORM BETTER THAN OTHERS IN REDUCING RURAL POVERTY?

The regional disparities in levels of living in India have been large. For instance, the proportion of the rural population of the state of Bihar living in poverty in 1990-91 was about 58 per cent, more than three times higher than the proportion (18 per cent) in the (combined) states of Punjab and Haryana. Some of these differences appear to have persisted historically, though there were also differential trends across regions. Looking back over time, the more striking – though often ignored – feature of the Indian experience has been the markedly different rates of progress between states; indeed the ranking of states around 1990 looks quite different to that 30 years earlier, as can be seen in Figure 4 which compares headcount indices around 1960 with those around 1990. (The picture looks very similar for the other two poverty measures.[25]) For example, the southern state of Kerala moved from having the second highest rural poverty rate around 1960 to having the fifth lowest around 1990.[26]

Regressing the log of each poverty measure against time, there was a trend decrease (significant at the 5 per cent level or better) in all three measures in 9 of the 15 states, viz, Andhra Pradesh, Gujarat, Kerala, Maharashtra, Orissa, Punjab and Haryana, Tamil Nadu, Uttar Pradesh and West Bengal. The trend was not significantly different from zero at the 5 per cent level in the other six states of Assam, Bihar, Jammu and Kashmir, Karnataka, Madhya Pradesh, and Rajasthan; there was not a significant positive trend for any state for any poverty measure. There is a tendency for the absolute size of the trend to be higher for the poverty gap than the headcount index, and it was highest for the squared poverty gap.

In terms of progress in both raising average household consumption and reducing rural poverty, the state of Kerala turns out to be the best performer over this period. The second, third and fourth highest trend rates of consumption growth were Andhra Pradesh, Tamil Nadu, and Maharashtra respectively. In terms of the rates of poverty reduction, the second, third and fourth states were Andhra Pradesh, Punjab and Haryana, and Gujarat; the ranking is invariant to the

FIGURE 4: POVERTY BY STATE, 1960-90



Averages for first three survey rounds and last three

choice of poverty measure though differences in their rates of poverty reduction are not large. The worst performer was Assam by all measures. The other poor performers were Bihar, Jammu and Kashmir, Karnataka, Madhya Pradesh and Rajasthan; the exact ranking varies by the measure used.

The states which had the highest trend rates of growth in mean consumption tended to have the highest trend rates of poverty reduction, and the correlation is very strong (the correlation co-efficient between the trend rate of reduction in the headcount index and the trend rate of consumption growth is 0.85; the correlation is about the same for the other two poverty measures). Both these variables may well have been influenced by similar factors. Next we look at what those factors might be.

WHAT ACCOUNTS FOR THE DIFFERING RATES OF PROGRESS IN REDUCING POVERTY?

Every state has its own story, with a mixture of both successes and failures at public action against poverty in different periods.[27] There were differences between states in the impacts of (ostensibly similar) interventions, as well as differences between states in the package of interventions pursued; and in both respects experiences in a given state changed over time. We cannot hope to capture all this variance in experience – for one thing we would quickly run out of degrees of freedom. Here our aim is solely to look for any empirical regularities that can account for at least a reasonable share of that variance.

The inter-state differences in progress at fighting poverty allowed the project to study the impact on the trend rate of poverty reduction of a range of variables, including regional differences in human and physical resource development. A pooled model was estimated, giving 310 observations (15 states over 21 NSS rounds, though with some missing observations, or inadequate sample sizes). A model was estimated for each poverty measure, with both time varying and static explanatory variables. The key explanatory variables were current and lagged real agricultural output per hectare, current plus lagged real non-agricultural output per capita, the rate of inflation, lagged real state development spending per capita, and the state's initial (around 1960) irrigation rate, infant mortality rate, and female literacy rate; the latter three variables were allowed to influence the rate of change in the poverty measures (thus entering the model interacted with time).[28] The estimated models could account for about 90 per cent of the variance over time and across states in the poverty measures.[29]

The results indicate that higher growth rates in agricultural yields and real non-agricultural output per capita, lower rates of inflation and higher growth in state development expenditure all led to higher rates of progress in both raising average consumption and reducing all three measures of absolute poverty.

The results also suggest that inter-state differences in initial conditions of human and physical resource development played an important role; higher initial irrigation intensity, higher literacy rates and lower initial infant mortality rates all contributed to higher rates of consumption growth and poverty reduction. Initial inequalities in access to physical and human infrastructure appear to have been an important factor in longer-term rates of poverty reduction.[30] Consider Bihar, one of the worst performers in poverty reduction (Figure 4). The poor in Bihar suffered from the state's slow growth in agricultural yields. But the state's poor initial conditions were also an important factor. The incidence of poverty in Bihar declined at a trend rate of only 0.1 per cent per year. We estimate that this would have risen to 1.2 per cent if Bihar had started off with Kerala's level of human resource development in the 1960s.

By and large, the same variables determining growth in average consumption mattered to rates of progress in reducing poverty. Most of the effects on absolute poverty were transmitted through growth in average consumption rather than redistribution, though none of the factors which reduced absolute poverty had adverse effects on distribution. Thus, there was no sign of a trade-off between growth and pro-poor distributional outcomes.

LESSONS FOR THE FUTURE

Our investigation suggests that economy-wide variables do matter to India's poor; they have generally gained from economic growth, and lost from contraction; they have also been hurt by inflation. The net gains to the poor since the early 1970s can be attributed in large part to economic growth – distribution changed little from the point of view of the poor, though it appears to have been more important in the 1950s and 1960s, when there was rather less growth.

The experience of the past 40 years offers support for the view that a stable macro-policy environment, combined with micro-policy reforms conducive to economic growth, can help greatly in reducing absolute poverty in India. However, our results also reveal important nuances concerning the pattern of growth, and the importance of other contingent factors, including human and physical infrastructure.

Our results point clearly to the quantitative importance of the sectoral composition of economic growth to poverty reduction in India. Fostering the conditions for growth in the rural economy – both primary and tertiary sectors – must be considered central to an effective strategy for poverty reduction in India. At the same time, the relative failure of India's past industrialisation strategy from the perspective of the poor points to the importance of successful transition to a strategy capable of absorbing more labour, particularly from rural areas.

But our results also point to the longer-term importance of investing in human and physical infrastructure as a complement to pro-growth reforms in India. Controlling for growth in farm and non-farm sectors, we find significant effects on trends in absolute poverty reduction of the differences between states in initial conditions related to infrastructure.

A final lesson concerns the importance of being able to credibly assess an economy's performance in reducing poverty. Though less than ideal in some respects, the data base available for poverty analysis in India is good by international standards. Many other countries have had far fewer objective socio-economic surveys on which poverty monitoring can be based, or their surveys have been severely wanting in terms of coverage (lacking, for example, a sound consumption module) or comparability over time. The very fact that for India we can obtain the data needed to address the questions posed above carries an important message for other countries today, and India in the future.

Notes

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1 See Ravallion and Chen (1996) for aggregate poverty measures for the developing world over the period 1987-93. They estimate that the percentage of the population consuming less than $1/day at 1985 international prices (with currency conversions at purchasing power parity) decreased only slightly over this period, from 30.7 per cent in 1987 to 29.4 per cent in 1993 implying that the numbers of people living under $1/day rose from 1.23 billion to 1.32 billion over this period. ($1/day is about equal to India's urban poverty line.) The gains to the poor in east and (less so) south Asia were roughly counter-balanced by the losses in other regions, notably Sub-Saharan Africa, Latin America and Eastern Europe and Central Asia.

2 Contrast, for example, Ahluwalia's (1978:320) conclusion that "there is evidence of some trickle down associated with agricultural growth" with Saith's (1981:205) claim that "there can be little doubt that current growth processs have served as generators of poverty"; both were using data for India over roughly the same period (1957-73). The debate continues; in recent literature on India one can find claims that "rapid agricultural growth has benefited all classes of the poor" [Singh 1990] and "acceleration in agricultural growth by itself is unlikely to make a dent in rural poverty" [Gaiha 1995:285].

3 For an overview of the theory and evidence on the effects of adjustment on the poor see Lipton and Ravallion (1995, section 5.3). In the Indian setting, see Ravallion and Subbarao (1992).

4 See Datt (1996), Ozler et al (1996), Ravallion and Datt (1995, 1996), and Datt and Ravallion (1996). Later we identify which paper is most relevant to each topic covered here.

5 A number of the popular methods of making poverty comparisons over time and space do not satisfy this consistency requirement; see Ravallion (1994) for further discussion.

6 For further discussion of this point see Sen (1987); in the context of India also see Dreze and Sen (1995).

7 See Planning Commission (1993).

8 We compared this difference in the poverty lines to independent estimates of the urban-rural cost of living differential. For 1973-74, Bhattacharya et al (1980) estimated that the cost-of-living for the poor was 16 per cent higher in urban areas, exactly the same (to the nearest integer) as the differential in poverty lines. So it can be en argued that the planning commission's urban and rural poverty lines represent the same standard of living, and (hence) that we are making consistent comparisons of absolute poverty between urban and rural areas. For further discussion see Ravallion and Datt (1996).

9 For the urban sector after August 1968, the all-India consumer price index for industrial workers (CPIIW) is used as the deflator. For the earlier period, the Labour Bureau's consumer price index for the working class is used, which is an earlier incarnation of the CPIIW albeit with a smaller coverage of urban centres (27 against 50). The rural cost of living index series was constructed in three parts. For the period since September 1964, the rural cost of living index is the all-India consumer price index for agricultural labourers (CPIAL) published by the Labour Bureau. For the period September 1956 to August 1964 (for which an all-India CPIAL does not exist), a monthly series of the all-India CPIAL was constructed as a weighted average of the state-level CPIALs, using the same state-level weights as those used in the all-India CPIAL published since September 1964. For the initial period August 1951 to August 1956, forecasts were obtained from a dynamic model of the CPIAL as a function of the CPIIW and the wholesale price index. Our new CPIAL series also dealt with another problem which has to do with the fact that the Labour Bureau has used the same price of firewood in its published series since 1960-61. Firewood is typically a common property resource for agricultural labourers, but it is also a market good, and so the Labour Bureau's practice is questionable. Our CPIAL series corrects this by replacing the firewood sub-series in the CPIAL by one based on mean rural firewood prices (only available from 1970) and a series derived by assuming that firewood prices increased at the same rate as all other items in the fuel and light category (prior to 1970). For details see Datt (1996).

10 These are fixed weight price indices. Thus, they ignore substitution in response to shifts in relative prices. To test sensitivity to this, Ravallion and Subramanian (1996) compare poverty measures for India with and without an allowance for substitution effects consistent with demand behaviour, as modelled by a set of full rank Gorman Engel curves. Ignoring substitution matters far more for some measures and applications than others. It leads to overestimation of inequality, but level effects on poverty measures are generally small and turning point errors are rare.

11 These are members of a class of measures proposed by Foster, Greer and Thorbecke (1984). A transfer of income from a poor person to a poorer person (for example) will not alter either the head-count index or the poverty gap index, but it will decrease the squared poverty gap index. Furthermore, the squared poverty gap index satisfies the subgroup consistency' property, namely that if poverty increases in any subgroup (say the urban sector), and it does not decrease elsewhere then aggregate poverty must also increase [Foster and Shorrocks 1991].

12 The poverty measures are calculated using parameterised Lorenz curves. We use either the beta Lorenz curve of Kakwani (1980) or the general quadratic model of the Lorenz curve of Villasenor and Arnold (1989), depending on which fits the data best (both satisfied the theoretical conditions needed for a valid Lorenz curve in all survey rounds for both sectors). Using the formulae derived in Datt and Ravallion (1992), the poverty measures are calculated from the estimated parameters of the Lorenz curve and the mean per capita consumption expenditure. A number of checks are made on the results, including both the theoretical conditions for a valid Lorenz curve, and consistency checks, such as that the estimated value of the head-count index must lie within the relevant class interval of the published distribution. The estimation technique has been set-up in a user-friendly computer programme 'POVCAL' [Chen, Datt and Ravallion 1991] which is available on request, so interested readers can readily check our calculations and their sensitivity to our assumptions.

13 A complete descriptions of the data set and all sources can be found in Ozler, Datt and Ravallion (1996) with an accompanying set of diskettes.

14 The first subperiod is marked by three significant peaks in poverty around the years 1953-55 (rounds 7,8), 1956-58 (rounds 11, 12, 13), and 1966-68 (rounds 21, 22), the last of these coinciding with the worst drought in the post-independence period.

15 Based on poverty measures averaged over NSS rounds, weighted by the duration of the survey.

16 The absence of fluctuations in poverty over the period 1975-85 may be somewhat illusory as we have only two NSS surveys in the intervening period, viz, those for 1977-78 and

1983. In particular, we do not have poverty estimates for the two drought years 1979 and 1982.

17 The Indonesia estimates are from the national-socio-economic surveys (SUSENAS) done by Indonesia's central bureau of statistics. The 1970 number is from World Bank (1990, Table 3.2); the 1993 number is our estimate from the 1993 SUSENAS using the same real poverty line. The consumer price index was used to convert to constant prices.

18 The estimates in Table 2 are based on regression of the percentage change in the poverty measures against the percentage change in consumption or net product per person using 33 household surveys spanning 1951-1991 for the surveys-based mean consumption, and 23 surveys spanning 1958-91 for consumption or income from the national accounts. All regression coefficients were statistically significant at the 1 per cent level or better, and all regression comfortably passed all the standard specifications tests. For full details see Ravallion and Datt (1996).

19 Using the methodology outlined in Datt and Ravallion (1992).

20 The observed poverty measures are subject to large fluctuations from one NSS round to another; this is particularly true of some of the shorter initial NSS rounds. The cumulative series can thus be somewhat misleading for arbitrary choice of the starting point. To deal with this problem, we selected NSS round 6 (May-September 1953) as the reference date for the first decomposition; the poverty measures for this round reasonably approximate the average poverty measures for 1951-55 (weighted average for rounds 3-8, with weights proportional to the number of months in the survey period of each round). The graphs of the decompositions for NSS round 9 onwards in Figures 2 and 3 can thus be interpreted as referring to the cumulative change in poverty (and its components) since the mid-1950s.

21 See Datt (1996) for details.

22 See Ravallion and Datt (1996) for details on the methods used.

23 This has long been recognised in discussions of poverty in India, and the Second Plan was criticised for this reason at the time (see, for example, Vakil and Brahmanand's (1956) comments on the Second Plan). For a recent discussion in the Indian context see Dev et al (1992). Recent affirmations of the importance of labour-demanding growth to poverty reduction in developing countries include World Bank (1990), Eswaran and Kotwal (1994) and Lipton and Ravallion (1995).

24 For details on methodology see Ravallion and Datt (1995). On the link between real wages in agriculture and rural poverty measures for India also see van de Walle (1985).

25 See Datt and Ravallion (1996) for more detail.

26 Some of national samples, particularly in the 1950s, were too small to allow reliable estimation at the state level, so this part of the analysis focused on the period from about 1960 onwards.

27 For discussion of the range of experiences in direct interventions for poverty reduction see Kakwani and Subbarao (1993), Dreze and Sen (1995), and Vyas and Bhargava (1995) and other papers in the October 14-21, 1995 issue of the *Economic and Political Weekly*. Progress does not appear to have been even *within* states either, though our data do not allow us to disaggregate further. For evidence on changes between 1972-73 and 1987-88 at the level of the NSS regions see Dreze and Srinivasan (1996).

28 The estimated model also included a correction for serial correlation in the residuals (allowing for the uneven spacing of the NSS rounds, requiring non-linear estimation methods); see Datt and Ravallion (1996) for details.

29 For full details on the estimated models and various specification tests see Datt and Ravallion (1996).

30 Kerala stands out as an unusual case in India, given its high level of human resource development, including at the beginning of the period under study. [For further discussion of Kerala's achievements in this respect see Dreze and Sen 1995.] However, even if we drop Kerala from the regressions, the initial conditions in human resource development (and indeed all other variables in our model) remain significant [Datt and Ravallion 1996]. Their effect is not just due to Kerala.

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Economic Reforms, Employment and Poverty

Trends and Options

Abhijit Sen

If poverty reduction is to be a serious part of the agenda of economic reforms, the reforms will have to have an explicitly redistributive content. This will require cuts in subsidies to the rich and also higher taxes to maintain and increase the expenditure relevant for the poor. In addition, the old issues of land distribution and provision of universal primary education and health must be put back on the agenda.

But, more than anything else, it must be recognised that a reforms strategy which aims to withdraw the state from investment, liberalise finance and thus divert finances from the state to the private sector, liberalise agricultural trade and thus enrich the rich at the direct cost of the poor and seeks to control inflation and balance of payments problems through deflation and devaluation is at its root a fundamentally inequitous adventure.

THIS paper is concerned with the possible impact of the economic reforms undertaken by the government of India in the 1990s on the nature and incidence of poverty in India. The point of departure is the observation from NSS data that poverty, which had not showed any time trend at all till the mid-1970s, declined significantly between the mid-1970s and the end-1980 but appears to have increased again in the 1990s. In other words, poverty appears to have declined only in the decade and a half beginning the mid-1970s during which there was an explosion in public expenditure leading up to the fiscal crisis which, among other things, precipitated the economic reforms in 1991. This suggests that there might be a much stronger link between public expenditure and poverty reduction than is usually appreciated, and this in turn has the implication that the reforms process may actually impinge adversely on the poor if its focus continues to be on the reduction of [illegible] expenditure.

For this reason it is important to identify the direct and indirect effects of public expenditure, and of other aspects of the economic reform policies, on poverty alleviation. This paper is a very preliminary effort in this direction. In the first section, a brief outline of the trends in and structure of poverty in India is presented, with a view to identifying the important characteristics of the poor population. This allows for an estimation of the likely effects of such policies on the material condition of the poor and those close to the poverty line. Since poverty is found to be closely related to employment and occupational characteristics, a discussion on past employment trends and poverty trends is included in the next section. In the following section, there is a more detailed consideration of the recent trends in poverty; and this is followed by a section which deals specifically with the statistical determinants of poverty as well as the relationship between this and economic growth. Finally, the last section sets out some brief conclusions in terms of different policy options for economic reform which make poverty reduction an explicit objective.

I
Long-term Trends and Profile of Poverty

The *Economic Survey 1995-96* has claimed that "the percentage of India's population below the poverty line has declined from 25.94 per cent in 1987-88 to 18.96 per cent in 1993-94". This claim is based on estimates made by the Planning Commission using a methodology whereby the consumption distribution obtained from the National Sample Survey (NSS) are applied to total estimates of consumption expenditure as obtained from the Central Statistical Organisation's (CSO) compilation of National Accounts. On this basis, the rural poverty ratio declined from 28.37 per cent in 1987-88 to 21.68 per cent in 1993-94 while the urban poverty ratio fell from 16.82 per cent to 11.55 per cent. These figures, which have been used to claim that there has been no increase in poverty following the economic reforms initiated in 1991, have in turn been challenged by independent analysts.[1] The criticism takes two forms. First, that even using the Planning Commission method, poverty in 1993-94 was higher than in 1990-91 just before reforms began and so the comparison with 1987-88, a drought year, gives a misleading trend. Second, and much more importantly, that the Planning Commission method is itself flawed as was pointed out in 1993 by the high-level Expert Group on Estimation of Proportion and Number of Poor. Using the methodology suggested by this expert group, not only are the poverty figures much higher, these show that there is no real trend decline in poverty since around 1986, that poverty increased massively between 1989-90 and 1992, and that although poverty fell in 1993-94 this was still higher than in the immediate pre-reform years 1989-90 or 1990-91.

Some of the issues which arise from these different estimates are discussed in a later section. Here, we need to outline the long-term trends in poverty, and for this we present in Table 1, estimates from a third source altogether – that compiled by the Poverty and Human Resources Division of the World Bank,[2] also using NSS data. This source gives a long series from 1951 onwards, and the main message which emerges is important. This is that there was no long-term time trend in poverty from 1950-51 to 1973-74 but that there was thereafter a sharp decline in poverty till 1986-87. After 1986-87, the decline continued at a slower pace till 1989-90 when it was reversed, with a particularly sharp increase in poverty in 1992. Poverty declined again in 1993-94 so that rural poverty in 1993-94 although higher than in 1989-90 or 1990-91 just before the reforms, was at about the same level as in 1986-87. Urban poverty, which had not increased particularly in 1992, was, however, lower in 1993-94 than in any pre-reform year.

These trends are important for a number of reasons. First, the trend in rural poverty shows a very close similarity with trends in agricultural wages. Estimates of real agricultural wages from a number of sources also show stagnation till the mid-1970s with sharp increases thereafter till the end-1980s when there is a slow-down again. Second, the period of declining poverty (mid-1970 to end-1980) was relatively short, and one which was marked by increasing government expenditure leading to severe fiscal imbalances by 1990. Third, that this period of declining poverty was infact one when rural poverty declined faster than urban poverty. Fourth, that rural poverty stopped falling, and indeed increased, as soon as fiscal stabilisation was attempted after 1991, and during this latest period the gap between

and urban poverty has again tended to crease. These trends require explanation d analysis, and this is the main focus of is paper. In the remaining part of this ction, we provide a brief outline of the ofile of Indian poverty.[3]

The most comprehensive data on the ructure of poverty remains the information at can be gleaned from the NSS large mple survey of 1987-88, since details of e more recent large sample survey nducted in 1993-94 are not yet available. seems reasonable to assume that in broad ntours the picture that emerges for 1987-8 remains valid for the early 1990s.

Some of the evidence on the structure of poverty in India in 1987-88 is provided in Table 2. The first and most obvious point o be made relates to the dominantly rural nature of the poor population. The poor in ural areas constituted around three-fourths f the total poor population. This has to be uxtaposed with the fact that subsequently urban poverty has declined at a faster rate, so that poverty has become even more rural n nature. Within the rural areas, there is also evidence of greater regional concentration of poverty, with some backward regions displaying a very high incidence of poverty discussed below.

In the rural areas at an all-India level, the worst off economic group is that of rural labour, both agricultural and non-agricultural. This is true both in terms of depth of poverty and its severity in terms of distance of average incomes from the tual poverty line. Within this broad ategory of rural labour, casual labour on non-permanent contracts is the most susceptible to absolute poverty. There is no discernible difference in poverty ratios between agricultural and non-agricultural casual labourers, which is not surprising, since the casual labour populations tends to move between agricultural and non-agricultural occupations as they become available. The self-employed rural households, whether agricultural or non-agricultural, tend to experience much lower levels of economic deprivation than other rural groups.

Female-headed rural households recorded a higher than average incidence of poverty, both in terms of prevalence and severity. Those rural households classified as poor tended to have higher than average representation of adult females and lower than average representation of adult males. Also, poor households in general tended to have higher dependency ratios, so that children dominated in the number of poor persons, and were over-represented in the poor population relative to the total population. Also, there are definite social dimensions to material deprivation, with the category of scheduled castes and scheduled tribes recording higher extent and severity of poverty than the general rural population. In fact, scheduled tribe groups are even worse off than scheduled castes on average, and tend to be the most economically destitute of all the rural population.

The urban areas present a slightly different picture. Firstly, the poor are more economically and socially heterogenous. Thus, the most important occupational groups among the poor urban population are those employed in casual labour, as well as a section of the self-employed. The self-employed category is highly heterogenous in urban areas, comprising both highly paid professional occupations as well as informal sector low paying activities. The latter constitutes among the poorest of the urban population, along with workers employed in insecure casual contracts. Clearly, the irregular and insecure nature of such incomes, which are also typically low, is the major source of poverty in urban households. Scheduled castes and tribes were less significant among the poor in urban areas than in rural ones, and there was no real [illegible] of regional disparities in urban poverty. However, the problem of poverty among female-headed households was far more serious in the urban areas. Despite this, the dependency ratio among poor urban households was slightly lower than among their urban counterparts.

In terms of regional concentration of poverty, only two states – Bihar and Uttar Pradesh – together accounted for 34 per cent of the total poor population in 1987-88. In Bihar in particular, there was a large over-representation of poor people, and there is no reason to believe that this has altered dramatically. Another six states – Andhra Pradesh, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu and West Bengal – accounted for a further 43 per cent of the poor. For rural poverty in particular, there was over-representation of the poor in Madhya Pradesh, Maharashtra, Orissa and Tamil Nadu. In the states of Gujarat, Rajasthan and Orissa, scheduled castes and tribes accounted for more than half of the poor – well above their share in total population. Scheduled tribes, especially in these states,

Table 1: Poverty Estimates 1951-94

NSS Round	Period	Rural			Urban		
		H	PG	SPG	H	PG	SPG
3	Aug 51-Nov 51	47.37	16.05	7.53	35.46	11.14	4.82
4	Apr 52-Sep 52	43.87	14.64	6.71	36.71	10.91	4.41
5	Dec 52-Mar 53	48.21	16.29	7.56	40.14	13.25	5.96
6	May 53-Sep 53	54.13	19.03	9.12	42.77	13.83	6.29
7	Oct 53-Mar 54	61.29	21.95	10.26	49.92	17.24	7.74
8	Jul 54-Mar 55	64.24	25.04	12.50	46.19	15.76	7.02
9	May 55-Nov 55	51.83	18.44	8.80	43.92	14.65	6.40
10	Dec 55-May 56	48.34	15.65	6.71	43.15	13.34	5.41
11	Aug 56-Feb 57	58.86	19.45	8.50	51.45	18.16	8.51
12	Mar 57-Aug 57	62.11	21.69	10.01	48.88	16.31	7.25
13	Sep 57-May 58	55.16	19.01	8.78	47.75	15.95	7.00
14	Jul 58-Jun 59	53.26	17.74	7.88	44.76	13.75	5.87
15	Jul 59-Jun 60	50.89	15.29	6.13	49.17	15.83	6.75
16	Jul 60-Aug 61	45.40	13.60	5.53	44.65	13.84	5.83
17	Sep 61-Jul 62	47.20	13.60	5.31	43.55	13.79	6.05
18	Feb 63-Jan 64	48.53	13.88	5.49	44.83	13.29	5.17
19	Jul 64-Jun 65	53.66	16.08	6.60	48.78	15.24	6.38
20	Jul 65-Jun 66	57.60	17.97	7.60	52.90	16.82	6.98
21	Jul 66-Jun 67	64.30	22.01	10.01	52.24	16.81	7.19
22	Jul 67-Jun 68	63.67	21.80	9.85	52.91	16.93	7.22
23	Jul 68-Jun 69	59.00	18.96	8.17	49.29	15.54	6.54
24	Jul 69-Jun 70	57.61	18.24	7.73	47.16	14.32	5.86
25	Jul 70-Jun 71	54.84	16.55	6.80	44.98	13.35	5.35
27	Oct 72-Sep 73	55.36	17.35	7.33	45.67	13.46	5.26
28	Oct 73-Jun 74	55.72	17.18	7.13	47.96	13.60	5.22
32	Jul 77-Jun 78	50.60	15.03	6.06	40.50	11.69	4.53
38	Jan 83-Dec 83	45.31	12.65	4.84	35.65	9.52	3.56
42	Jul 86-Jun 87	38.81	10.01	3.70	34.29	9.10	3.40
43	Jul 87-Jun 88	39.60	9.70	3.40	35.65	9.31	3.25
44	Jul 88-Jun 89	39.06	9.50	3.29	36.60	9.54	3.29
45	Jul 89-Jun 90	34.30	7.80	2.58	33.40	8.51	3.04
46	Jul 90-Jun 91	36.43	8.64	2.93	32.76	8.51	3.12
47	Jul 91-Dec 91	37.42	8.29	2.68	33.23	8.24	2.90
48	Jan 92-Dec 92	43.47	10.88	3.81	33.73	8.82	3.19
50	Jul 93-Jun 94	38.74	9.41	3.27	30.03	7.62	2.76

Notes: H: head count ratio of poverty; PG: poverty gap ratio; SPG: squared poverty gap.
Source: B Ozler, G Datt and M Ravallion, 'A Database on Poverty and Growth in India', The World Bank, January 1996, for estimates up to the 48th round; For 50th round, NSS data has been used to calculate the estimates using exactly the same methodology as in the rest of the series.

were found to be among the most absolutely deprived and destitute of all Indians.

There is a close relationship between the extent of poverty and patterns of employment and real wages. In the rural areas in particular – as argued in the section below – two factors are critical (in addition to food prices) in explaining the incidence of poverty both over time and across states and regions : the behaviour of employment including the degree of diversification away from purely agricultural employment, and movements in real wages. For this reason, trends in the growth and pattern of employment are very important indicators of the extent and severity of poverty.

II
Trends after Mid-1970s

The essential point which emerges from the previous section is that a sustained decline in poverty is observable only after 1973-74, and that this process was over by 1990-91. In fact, the decline was almost certainly a phenomenon which began after 1975-76. The years 1972-75 were difficult years with high inflation was low growth, and the drop in poverty in 1977-78 as compared to 1973-74 is to a large extent attributable to the comparison of an excellent agricultural year with a year when output was below trend. For this reason it is more reasonable to date the beginning of the poverty decline to around 1977-78.

As is well known by now, during the period 1977-91 (and particularly during the 1980s) the Indian economy underwent a consumption-led boom, spurred on by increasing revenue deficits of the government, and financed in large part by high deficits on the external current account. This is the boom which went bust in 1991, laying the basis for 'reforms'. But since this boom and bust cycle is paralleled fairly closely by what happened to rural poverty, it is worth recounting some of its more important features. First, the boom was possible at all because, with increased access to external debt and with agricultural growth higher than the long-term average, the Indian economy was much better placed on the supply side, with both of her two traditional supply constraints greatly eased.

Second, during this boom it was the organised sectors of the economy which grew fastest in terms of incomes and output, but this growth did not lead to much increase in organised sector employment. The rate of growth of organised sector employment decelerated significantly, and the 1980s growth of such employment was, at 1.5 per cent per annum, much less than the rate of population growth. Within this, employment in the private organised sector was the most sluggish, averaging a growth rate of only 0.2 per cent per annum, and there was slow growth also of employment provided by the Central government and its industrial undertakings. In fact, whatever employment growth occurred in the organised sector was provided mainly by state governments and certain quasi-government organisations, for example the nationalised banks. Moreover, during this period there was also a sharp drop in labour absorption by the agricultural sector, and agricultural employment also grew at a rate substantially below the rate of population growth, and below rates of growth achieved in the past at times of lower output growth. Thus, the rapid growth of output in agriculture and in the organised private sector failed to translate itself into higher direct employment in these important sectors.

Nonetheless, and this is the third important point, this decade was characterised by rising real wages and a fairly sharp drop in both the incidence and the severity of poverty, particularly in rural India. According to calculations made for this paper, using data from the National Sample Survey and following the methodology recommended by the Expert Group on Estimation of Propotion and Number of Poor, there was a steady decline in the head count measure of poverty for the rural population from 56.4 in 1973-74 to 53.1 per cent in 1977-78 to 45.6 in 1983, 38.3 in 1986-87 and to 37.9 per cent in 1989-90.[4] The urban poverty ratio similarly fell steadily from 49.2 per cent to 32.4 per cent during the same period. This meant that the incidence of poverty which had fluctuated, positively with inflation and negatively with agricultural output, with if anything a positive underlying trend up to the mid-1970s began to decline thereafter. The most important reason for this was the fact that real wages of unskilled labour increased significantly in both urban and rural areas. Several alternative sources of data are available for agricultural wages, and all of these suggest that real agricultural wages increased by around 50 per cent during the decade – an increase almost double the increase in labour productivity in agriculture during this period.

These observations indicate that there were important changes in the nature of inter-sectoral and other linkages in the economy. One important point is that, although agriculture continues to be the largest employer of the workforce and productivity increases here are of major weight in the economy, the rest of the Indian economy appears to have become progressively less dependent on the behaviour of agricultural output during the 1980s. This is evident from the fact that the period of relative stagnation in agricultural output 1983-87 was nevertheless marked by high growth rates in non-agriculture, and, more generally, econometric evidence suggests that the earlier dependence of aggregate economic growth on the behaviour of the monsoon seems to have diminished. There are three major reasons for this. First, the sharp decline in the employment elasticity of output of the organised sectors of the economy meant that increased output in industry and services today involves a much lower concomitant increase in the demand for wage goods.

TABLE 2: PROFILE OF POVERTY IN INDIA 1987-88

Groups	Rural			Urban		
	Population Share	Per Cent Poor	Per Cent of Total Poor	Population Share	Per Cent Poor	Per Cent of Total Poor
Self-emp agriculture	44.3	38.3	37.9			
Self-employed non-agriculture	12.5	39.0	10.8			
All self-employed	56.7	38.5	48.7	38.8	41.5	43.0
Agricultural labour	27.1	62.7	41.8	12.1	68.1	25.9
Other labour	8.1	48.7	9.2	43.7	25.9	27.3
Others	7.9	26.4	4.5	5.5	32.6	4.7
Scheduled castes	18.4	56.1	22.9	11.7	53.3	17.0
Scheduled tribes	10.5	62.7	14.7	3.8	48.3	5.0
Female-headed HH		47.0			43.4	
All households	100.0	44.9	100.0	100.0	36.5	100.0

TABLE 3: COMPOSITION OF RURAL EMPLOYMENT (NSS USUAL STATUS DATA)

	Males			Females		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
1977-78 (July-June)	80.6	8.8	10.5	88.1	6.7	5.1
1983 (Jan-Dec)	77.5	10.0	12.2	87.5	7.4	4.8
1987-88 (July-June)	74.5	12.1	13.4	84.7	10.0	5.3
1989-90 (July-June)	71.7	12.1	16.2	81.4	12.4	6.1
1990-91 (July-June)	71.0	12.1	16.9	84.9	8.1	7.0
1991 (July-Dec)	74.9	11.2	13.9	86.3	7.9	5.8
1992 (Jan-Dec)	75.7	10.4	13.9	86.2	7.8	6.0

Secondly, the share of the traditional agro-based industries fell sharply so that agricultural raw materials played a less significant role as industrial inputs than earlier. The boom sectors of the 1980s – chemicals, consumer durables and high-tech services – had very little linkage to agriculture. Thirdly, the combination of an easier import situation and an enhancement of government operations meant that government policy instruments were more effective in insulating the non-agricultural sector from the effects of monsoon fluctuations.

This last, i e, government policy, operated on both the supply and demand sides. Given its higher foodgrain stocks and easier access to foreign debt, the government could better ensure agricultural supplies to non-agriculture during periods of low agricultural output by running down its stocks and by resorting to higher imports of other agricultural commodities. And, the demand consequences on non-agriculture of lower agricultural incomes during such periods were also better mitigated because, at such times, the government stepped up its revenue expenditure in rural areas, by expanding employment programmes and by generating more self-employment opportunities either directly through its own rural development schemes and/or by instructing banks to extend more credit. Thus, although there were features in the nature of organised sector growth which tended to weaken agriculture-nonagriculture linkages, the extent of this weakening depended considerably on a particular type of government involvement. Because of this, the continuing importance of agriculture cannot be wished away easily, since a fall in agricultural output can still have severe negative implications for the economy, both in terms of output and inflation.

Indeed, what is striking about the experience of the 1980s is that despite the declining dependence of non-agricultural sectors on the performance of agriculture, the prices of agricultural goods rose faster than the general price level. This meant a reversal of the earlier terms of trade movement against agriculture, and this also went against the international trend of a worldwide movement of terms of trade against agriculture. That this increase in agricultural prices did not have unbearable inflationary implication was partly because of the tendency described above of weakened inter-sectoral linkages, and partly because of the way the food procurement and public distribution systems functioned. Government procurement of foodgrains was more than adequate and government stocks generally sufficient, the procurement prices were typically close to the market prices and domestic food prices were also not too far from world prices so that there were fewer speculative pressures, and the PDS, along with the government's free market operations, worked to some extent to keep the prices of essential foodgrains under control.

In fact, from the point of view of poverty, an important trend during this period was that while agricultural prices as a whole increased faster than the general price level, cereals prices increased slower, so that it was possible for real wages to rise without increasing product wages correspondingly. This was an important contributory factor behind the decline in poverty which occurred during the period. As will be discussed later, these equations appear to have changed in the post-reform period.

Moreover, there was another important development concerning linkages in the economy. This was the rapid growth of non-agricultural employment in rural areas. After a long period during which agriculture's share in the labour force had remained constant, there seems to have been a change somewhere in the mid-1970s when this share began to decline. Since the urban population has grown faster than total population, this is of course related to some extent with urbanisation. But it is important to note that during the 1980s, the pace of urbanisation was in fact less than in any decade since independence. For this reason it may be said that the really important development was the growth of the rural non-agricultural sector.

According to NSS surveys, the share of agricultural workers among all male rural workers declined steadily from 80.6 per cent in 1977-78 to 77.5 per cent in 1983 to 74.5 per cent in 1987-88 to 71.7 per cent in 1989-90. For rural females this share dropped from 88.1 per cent in 1977-78 to 87.5 per cent in 1983 to 84.7 per cent in 1987-88 to 81.4 per cent in 1989-90. The true significance of this shift is probably better understood in incremental terms: these figures imply that non-agriculture absorbed about 70 per cent of the total increase in the rural work-force between 1977-78 and 1989-90. And this rapid growth of rural non-agricultural employment provides the main explanation for what would otherwise be a puzzle: how did agricultural wages rise and rural poverty fall during a period when employment in both agriculture and the organised sector was growing slower than population? That this development, rather than the somewhat faster growth of agricultural output during the 1980s, was the major driving force behind rising wages and declining poverty becomes clearer when it is noted that while agricultural growth was regionally diverse (with agricultural output per capita decreasing in many states), the rapid growth of rural non-agricultural employment was a phenomenon which occurred in almost every state in the country and almost every state recorded rising rural real wages and falling rural poverty between 1977-78 and 1989-90. In other words, there is need to modify the conventional view among Indian economists that the main factors determining rural poverty are agricultural productivity and the rate of inflation. Although both these continue to be very important, the growth of rural non-agriculture has emerged as an additional crucial link from the mid-1970s onwards.

What then explained this growth of rural non-agricultural employment? The Indian literature on the subject has been dominated by two debates. First, whether the growth of rural non-agricultural employment is a positive development at all, or is it simply a reflection of the fact that agricultural employment has been sluggish and certain non-agricultural activities have emerged as 'residual sectors'. Second, to the extent that the growth of rural non-agricultural employment is not a 'residual', is it driven by developments in agriculture or are the growth impulses external ? The idea that non-agricultural employment is 'residual' is now somewhat discredited because not only are average wages seen to be higher in such employment than in agriculture, but, more importantly, because agricultural wages have increased as non-agricultural employment has grown suggesting that what is involved is a pull factor which tightens the agricultural labour market. Nonetheless, NSS data show that the actual picture is more complicated and suggests that 'distress' movement into non-agriculture has continued to be important for a significant section of rural workers, as well as that the main dynamic source of rural

Table 4: Composition of Urban Employment (NSS Usual Status Data)

	Males			Females		
	Self-Employment	Regular	Casual	Self-Employment	Regular	Casual
1977-78 (July-June)	40.4	46.4	13.2	49.5	24.9	25.6
1983 (Jan-Dec)	40.9	43.7	15.4	45.8	25.8	28.4
1987-88 (July-June)	41.7	43.7	14.6	47.1	27.5	25.4
1989-90 (July-June)	42.3	41.3	16.4	48.6	29.2	22.2
1990-91 (July-June)	40.7	44.2	15.1	49.0	25.9	25.1
1991 (July-Dec)	42.9	39.9	17.2	47.0	28.0	25.0
1992 (Jan-Dec)	41.2	39.4	19.4	42.5	28.8	28.7

employment generation over this period has been the external agency of the state rather than forces internal to the rural economy.[5]

There are several planks to this argument. Within agriculture, all the available evidence points to the decreasing ability of agriculture to absorb more labour, as the overall crude elasticities of employment to output are seen to be low in other major states and on an all-India basis. However, there are substantial variations across states, with the agriculturally less advanced regions showing much higher elasticities than the developed states like Punjab and Haryana. Since some of the less advanced states (such as West Bengal and Bihar) actually showed the highest rates of output growth over the period, there was less of a dampening effect on the overall elasticity as well as a pointer to the importance of regional spread of agricultural growth for employment generation. Moreover, an interesting observation relates to the flow of person-day employment in agriculture, which, after 1977-78, was seen to be increasing more than stock measures of usual or weekly status workers. In a very rough and approximate sense, this suggests that the supply of agricultural labour (as measured by the stock of agricultural workers) was actually increasing slower than the demand for agricultural labour measured in person-days. Simultaneously there appear to have been contractual changes under way in agriculture, with a greater emphasis on casual contracts.

The natural question consequent upon such a finding is what caused the slow growth in the stock measures of workers in agriculture. Here it was found that pull factors out of agriculture were significant. The relationship between agricultural prosperity and the growth of non-agricultural opportunities was found to be weak and non-linear, being significant only in states such as Punjab and Haryana where not only have agricultural incomes crossed a threshold but where further increases in agricultural output are accompanied by labour displacement rather than absorption. Outside this limited region, the pull is provided mainly by external stimuli. In certain regions, for example along the Bombay-New Delhi and the Bombay-Bangalore highways, there is clear evidence that industrial development, and the growth of services linked to this,have made deep inroads into rural society creating opportunities not only in the tertiary sector but also in small-scale industry. In addition, in the hinterland of industrially or commercially developed regions, there is growing incidence of workers who live in rural areas but commute to urban areas – a tendency which has been enhanced by the fact that the organised sector has tended to prefer casual workers to regular employees, and because rising urban rents and falling transport costs have influenced workers' choice of residence. However, given the limited geographical spread of such direct links to modern industry and commerce, in most areas the pivotal role in the expansion of rural non-agricultural employment appears to have been played by the expansion of government expenditure.

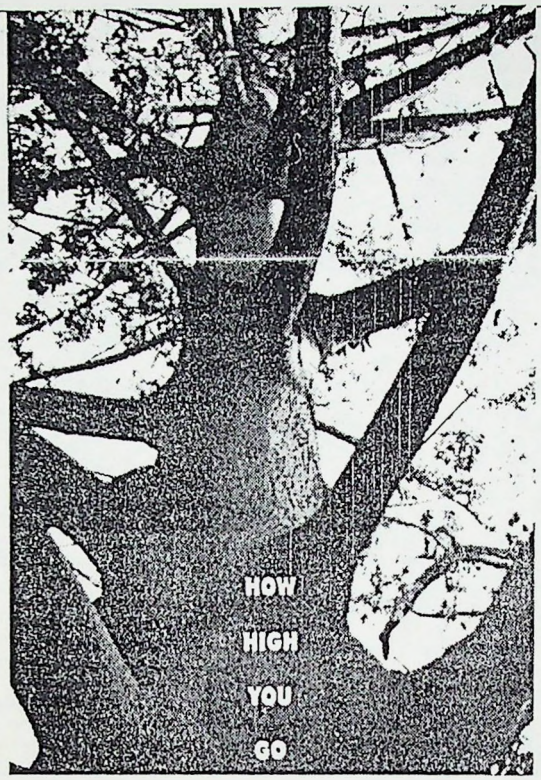
As noted earlier, the 1980s were a period when, along with a rapid increase in all sorts of subsidies and transfers to households from government, there was a very large increase in revenue (as opposed to capital) expenditure on agriculture by state and central governments, and this was also a period when the expenditure on Rural Development expanded manifold. More generally, throughout the period political developments tended to give rural interests greater power and they were able to command an improvement in the historically low share of government expenditure benefiting rural areas. Although this improvement in share should not be exaggerated, an indication may be had from the fact that nearly 60 per cent of all new government jobs created accrued to rural areas during the decade. Moreover, NSS data suggest that, despite a low average contribution of only around 5 per cent of total rural employment, the government's contribution was around a fifth when it comes to either total rural non-agricultural employment in 1987-88 or the increments in total rural employment between 1977-78 and 1987-88. Moreover, in 1987-88, about 60 per cent of the regular non-agricultural employees in rural areas were employed by the government which created almost 80 per cent of the increments in such regular jobs during the decade covered.

Thus, given the magnitude of what is now commonly accepted to have been a profligate growth of government expenditure, the total quantum of increased flow of public resources into rural areas must have been significant. Besides the large growth in agricultural subsidies already mentioned, this flow of resources took two predominant forms. There was, first, a fairly large expansion of 'rural development' schemes with an explicit redistributive concern.[6] This included not only the various rural employment and IRDP programmes but also a plethora of special schemes for a variety of identifiable 'target' groups. Motivated by the realisation that income growth by itself would not 'trickle down' in adequate amounts, these programmes were however less than entirely successful. They spawned a large bureaucracy and they became a focal point for the politics of 'distributive coalitions'. Yet, though the intended beneficiaries often got short-changed because of such leakages, these programmes represented a fairly massive net transfer to rural areas. The second avenue by which resources flowed from government to rural areas was through the greater accessibility of the rural elites to the government's normal gravy train. In part this was a result of greater mobility due to better infrastructure, but to a large extent it was also the outcome of the fact that with governments changing frequently (particularly at the state level) more new favours, not just jobs, but also various types of agencies and contracts, had to be distributed more often and the rural areas got a greater share in such electorally motivated largesse than they get at other times. The resulting flow of resources and the resulting generation of rural demand led to growing opportunities for diversification of the self-employed from agriculture to non-agriculture.

To a very large extent, the direct access to government permanent employment and also to many of the other resources was confined to the better-off and more powerful groups in rural society, to whom such incomes were more lucrative than agriculture. Associated with this was a large and significant increase in the proportion of the 15 to 29 age cohort which continued in education rather than join the work force. In part this must have been a result of the expansion of educational facilities as part of the general expansion of government in rural and semi-urban areas, but to a sub-

TABLE 5. CHANGES IN EMPLOYMENT 1989-90 TO 1992 (NSS USUAL STATUS UNADJUSTED)
(Million persons)

	Rural		Urban		Total	
	1989-90	1992	1989-90	1992	1989-90	1992
Self-emp agriculture	122.2	132.3	4.6	5.3	126.8	137.6
Regular-emp agriculture	5.6	3.8	0.3	0.3	5.9	4.1
Casual-emp agriculture	70.5	74.9	2.8	3.3	73.3	78.2
Self-emp secondary	17.7	11.3	6.8	7.0	24.5	18.3
Regular emp secondary	3.3	4.1	7.3	8.8	10.6	12.9
Casual-emp secondary	11.2	9.9	4.6	6.9	15.8	16.8
Self-emp tertiary	18.9	16.9	14.5	15.6	33.4	32.5
Regular-emp tertiary	10.6	9.1	15.4	16.0	26.0	25.1
Casual-emp tertiary	4.1	3.6	3.1	4.2	7.2	7.8
Unemployed	2.8	2.9	2.3	3.3	5.1	6.2
Total workforce	266.9	268.8	61.7	70.7	328.6	339.5
Total population	602.7	608.9	176.3	200.9	779.0	809.8



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stantial extent this must represent also a motivational change (to acquire necessary qualifications for a regular non-agricultural job) among the youth in the relatively well-off sections of rural society. There was thus a movement out of agricultural work at the margin by workers and potential workers from such better-off rural groups, which meant that sections of the relatively rich vacated agriculture either to obtain regular employment, mainly in the service sector, or to take up non-agricultural self-employment.

This increased the ability of members of the less well-off rural households to find agricultural work, and also created a demand for certain types of rural services and industry. The relative tightening in the agricultural labour market which resulted, helps to account for the increase in real wages observed from the late 1970s. However, although such increases in employment and wages did improve the condition of the poorest rural workers, their employment diversification into non-agriculture continued to have many characteristics of a 'distress' process, given the overall tendency of labour use in agriculture. Dictated by the need to ensure economic survival, they increasingly entered into casual work not only in agriculture but also in non-agriculture. The main sectors providing this type of non-agricultural employment were secondary sectors like construction, mining, and small-scale manufacturing, and there is evidence that over time the incidence of poverty among those employed in some of these sectors became larger than in agriculture. Moreover, the agency of the state was important in terms of the diversification of opportunities for the rural poor. Thus, 22.3 per cent of all casual labour days spent on non-agricultural activity in 1987-88 were on public works programmes of the government, this percentage having increased from 17.7 in 1977-78 and 14.9 in 1983. And, although there is little evidence of any increase in non-agricultural self-employment among the bottom 40 per cent of the rural population (such increase was largely among relatively richer households), income generation scheme such as the IRDP, must also have had some effect.

This is of course an extremely schematic presentation of what is a much more multifarious and regionally diverse scenario, and there were variations in the pattern across states and over time. However, the fact that the developments described above occurred in every state, irrespective of the rate of growth in agriculture or organised industry, does imply the increased importance of external stimuli to rural employment and, in particular, the crucial role of the state. More importantly, these trends mean that the rural labour demand is no longer determined only by what is happening within the agricultural sector, but is determined crucially also by macro-economic processes and policies which do not at first appear to have any direct link with rural well-being.

Moreover, because much of the government spending involved is project funded, because most of the private enterprises involved are small and lack staying power, and because most of the wage employment thus created are casual, the vulnerability of the rural non-agricultural sector to overall public expenditure cuts and to restrictive monetary policy is almost certainly greater than for its urban counterpart. This has very important ramifications in the current macro-economic context, in which the reform measures have particular implications for patterns of government expenditure as well as on internal and external trade.

It is important to note in this context that the pattern of structural adjustment and government economic strategy since 1991 has been one which has involved a continued stagnation in employment generation in the organised sector, both public and private. Moreover, this strategy involved:

(1) actual declines in Central government revenue expenditure on rural development (including agricultural programmes and rural employment and anti-poverty schemes), as well as on the fertiliser subsidy, in the budgets of 1991-92 and 1992-93. Some of these cuts were however reversed subsequently in 1993-94.
(2) declines in public infrastructural and energy investments which affect the rural areas.
(3) reduced transfers to state governments which have been facing a major financial crunch and have therefore been forced to cut back their own spending, particularly on social expenditure such as on education and on health and sanitation.
(4) reduced spread and rising prices of the public distribution system for food.
(5) financial liberalisation measures which have effectively reduced the availability of credit, especially to small borrowers particularly agriculturists.

Thus, in the early 1990s, there was a reversal of several of the public policies which contributed to more employment and less poverty in the rural areas in the earlier decade. It should, therefore, not be entirely surprising that rural non-agricultural employment appears to have declined fairly sharply as soon as the stabilisation and structural adjustment policies were put into place in 1991. According to NSS survey data, the non-agricultural proportion among rural male workers was 28.3 per cent in 1989-90 and 29 per cent in 1990-91, before the reforms, and this fell to 25.1 per cent in July-December 1991 and 24.3 per cent in 1992. For rural female workers, the corresponding figures were 18.6, 15.1, 13.7 and 13.8 per cent. This represents a decline of somewhere between 9 and 11 million in the number of workers in rural non-agriculture, or a drop of 13-15 percent in the first 18 months of the initiation of the reform process.[7]

This fall occurred almost all over India, with only Karnataka and Madhya Pradesh being significant exceptions. In terms of sectors, this decline in employment was divided roughly equally between manufacturing, construction and community and other services, along with a smaller drop in transport; while mining, electricity, trade and financial services were immune among the self-employed and casual workers that the decline was greatest, with regular employment being largely maintained, except for some drop among regular male employees in the tertiary sector. Thus, the pattern of the decline in rural non-agricultural work suggests that it occurred not because of any large-scale retrenchment of regular employees by the government or the organised private sector, but because of a cut back in activity in the unorganised sector and, possibly, some retrenchment of casual workers by the organised sector. In this context, it is significant that, according to the NSS, this drop in rural non-agricultural employment was not accompanied by a corresponding drop of such employment

Table 6: Tendulkar-Jain Estimates of Poverty

	Urban			Rural		
	H	PG	SPG	H	PG	SPG
1970-71	45.89	13.39	5.32	57.33	17.57	7.31
1972-73	47.00	13.57	5.32	57.21	17.93	7.54
1973-74	49.20	13.88	5.31	56.17	16.75	6.72
1977-78	42.98	12.16	4.81	54.47	16.59	6.88
1983	38.33	9.95	3.66	49.02	13.86	5.45
1986-87*	35.39	9.48	3.54	45.21	12.21	4.60
1987-88	36.52	9.34	3.38	44.88	11.26	4.04
1988-89*	36.98	9.61	3.49	42.23	10.20	3.54
1989-90*	32.41	8.03	2.84	37.94	8.80	2.95
1990-91*	32.43	8.03	2.88	36.55	8.81	3.03
1991 (July-Dec)*	32.02	7.90	2.84	42.06	10.02	3.39
1992*	33.87	8.43	2.97	48.07	12.59	4.58

Notes: * Denotes small sample; Poverty measures are same as in Table 1

among urban workers. Even among rural workers this did not lead to any large increase in open unemployment or to any large fall in the work participation rate. Rather, the self-employed and the casual workers displaced from non-agriculture appear to have reverted back to agriculture, leading to disguised (rather than open) unemployment. However, as a result, real agricultural value-added per agricultural worker dropped significantly, by over 8 per cent, even if comparison is restricted to the years 1989-90 and 1992-93 when monsoon conditions were very similar. Unfortunately, later data (particularly from the 1993-94 NSS large sample) is not yet available to verify whether this reversal of trend has continued, but clearly the early post-reform impact was adverse.

In the urban areas, regular employment has continued to stagnate, especially in the organised sector. During 1991-95, the growth rate of employment in the organised sector halved from its already low growth rate during the 1980s to only 0.8 per cent per annum, mainly because of a massive slowing down of employment growth in the public sector. The increases in employment that are discernible are essentially in casual employment, and this is evident for the secondary and tertiary sectors according to both usual and weekly status definitions. However, these increases in employment are still below the estimated increases in urban population over this period. The continued process of casualisation of work in urban areas has to be seen in relation to two other recent tendencies which are highlighted by several micro-level studies. First, there is the growth of subcontracting in manufacturing, which increasingly integrates formal and informal sector productive activities, and allows for a substantial part of the production to be undertaken by very small informal and unorganised units at the bottom of the production chain. These imply that a growing part of manufacturing production is undertaken by units in which there is no formal protection of any sort to labour. Second, and related to the first tendency, there is evidence of some 'feminisation' of employment, that is the growing share of female employment to the total, particularly in export-oriented activities, and with wages and working conditions that are typically inferior to those of male counterpart workers.

It is evident that these processes will have direct and indirect links to the spread of poverty, throughout India but especially in rural areas. These links, and the more general relation between economic growth and poverty, are considered below.

III
Post-reform Trend in Poverty

In earlier sections it has been observed that there was a declining trend in poverty after the mid-1970s but that this trend was reversed in the 1990s. However, while the earlier declining trend is officially accepted, the reversal during the 1990s is not. As discussed earlier, the main difference between the official view and those of independent observers arises because till now the official estimate is based not on the NSS data directly but on adjusted figures obtained by blowing up the NSS consumption estimates for every decile group by a common adjustment factor equal to the ratio between the CSO estimate of private consumption and the corresponding NSS estimate. Because this adjustment factor has increased sharply in recent years, the official estimate has diverged increasingly from any estimate based directly on NSS data. The Expert Group which recently went into this matter concluded quite categorically that the practice of 'adjusting' NSS data was arbitrary and was likely to give wrong results because as against the implicit assumption in the official method that any underestimation of consumption is distributed uniformly over the entire population, it is better to assume that the underestimation is only for those who are non-poor.

In fact, several alternative series which use the unadjusted NSS figures are available. In addition to the World Bank series given earlier, a series calculated by Tendulkar and Jain is available for the period 1970-92.[8] This uses the same reference poverty lines at 1973-74 prices as the official and World Bank series, but using a different deflator they obtain an even larger increase in poverty between 1990-91 and 1992 (Table 6). In addition, it has been possible to obtain measures of rural poverty for All India and the major states, based on the Expert Group Method using NSS data covering the years from 1972-73 to 1993-94[9] (Table 7). Unlike the other series this is not obtained from the national-level NSS data but is obtained by applying state-specific poverty lines to state-level NSS data. It must be noted that the figures given here for 1993-94 are preliminary, being based only on partial data (not yet officially released) from the 50th round of the NSS. Moreover, the data for 1986-87 and for 1989-90 to 1992 are based on the so-called 'thin' surveys by the NSS involving a much lower sample size than the other survey points. With only three survey points available for the post-reform period, and given the above qualifications for whatever data is available, any conclusion about post-reform trends must necessarily be rather tentative.

Nonetheless, using the mutually comparable thin samples alone, it is evident that poverty increased sharply during the first 18 months of the reform period (i e, the second half of 1991 and 1992), particularly in the rural areas. The partial data relating to 1993-94 suggests, however, that this upward trend was reversed thereafter. Taken together, these data suggest that there was a very large increase in rural poverty in the first 18 months of reform but that this trend has been moderated thereafter. Rural poverty in 1993-94 continued to be higher than in

Table 7: Estimates of Rural Headcount Poverty by the Expert Group Method

	1973-74	1977-78	1983	1986-87	1987-88	1989-90	1990-91	1992	1993-94
Andhra Pradesh	48.4	38.1	26.5	14.6	20.9	19.5	22.1	27.4	16.0
Assam	52.7	59.8	42.6	39.7	39.4	35.2	33.7	51.7	45.0
Bihar	63.0	63.3	64.4	50.1	52.6	52.4	46.3	61.1	58.0
Gujarat	46.4	41.8	29.8	30.3	28.7	14.8	21.6	33.7	22.2
Haryana	34.2	27.7	20.6	19.5	16.2	13.3	19.5	17.7	28.7
Karnataka	55.1	48.2	36.3	36.6	32.8	45.4	34.9	45.5	28.2
Kerala	59.2	51.5	39.0	33.5	29.1	34.4	30.3	26.0	25.9
Madhya Pradesh	62.7	62.5	48.9	47.8	41.9	39.5	42.4	47.9	40.8
Maharashtra	57.7	64.0	45.2	44.6	40.8	34.8	35.9	53.6	38.6
Orissa	67.3	72.4	67.5	55.2	57.6	52.9	36.5	49.0	49.9
Punjab	28.2	16.4	13.2	13.0	12.6	3.2	9.3	10.2	12.5
Rajasthan	44.8	35.9	33.5	29.2	33.2	26.1	25.9	31.7	27.5
Tamil Nadu	57.4	57.7	54.0	41.2	45.8	38.4	37.5	44.3	32.6
Uttar Pradesh	56.5	47.6	46.5	36.6	41.1	30.5	34.8	47.9	42.6
West Bengal	73.2	68.3	63.1	47.3	48.3	37.2	49.5	44.0	40.3
All India	56.4	53.1	45.6	38.3	39.1	34.4	35.0	44.0	37.5

1989-90 and 1990-91 but was less than in 1987-88. Urban poverty, on the other hand, appears not to have increased much during the first 18 months of the reform period and, indeed, appears to have declined significantly in 1993-94. Nonetheless, there were about 30 million more people in poverty in the latter year than before the reforms began.[10]

Thus, the post-reform trends in poverty do not suggest either an unambiguous improvement or an unambiguous worsening. They do suggest, however, that the initial impact of the stabilisation/structural adjustment package was adverse, that this impinged particularly on the rural sector, with less impact on the urban sector, and that there was some general reversal of the adverse trend subsequently. Nonetheless, it is important to note that the state-wise figures show that, as far as rural poverty is concerned, in most states the poverty ratios in 1993-94 were significantly larger than in the immediate pre-reform period. This is particularly true of the two largest Indian states, Uttar Pradesh and Bihar, and also of the hitherto successful 'green-revolution' states of Haryana and Punjab. The exceptions are the Southern states of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu in all of which the poverty ratio in 1993-94 was lower than in the immediate pre-reform period. However, it must be noted that in these states, and in Maharashtra and Gujarat, the year 1993-94 was exceptional in that the food prices actually fell in absolute terms as against rapid increases in both preceding and following years. For this reason, the calculated poverty ratios for 1993-94 are likely to be somewhat lower than the underlying trend.

More importantly, these trends in poverty need to be viewed in the general context, discussed earlier, that the stabilisation and structural adjustment policies carried out so far in India involved a fairly sharp contraction in fiscal and monetary policy in 1991-92 and 1992-93, followed by a return to high fiscal deficits from 1993-94 onwards. The revival of growth after an initial period of stagnation also followed a pattern broadly coincident with that of the government's fiscal stance, so that both the initial worsening of the poverty situation and the subsequent improvement seem to be broadly in line with the overall growth performance of the economy. Yet, there are a few surprises, the most important of which is that although the reform measures did not directly involve much changes in agriculture, it was rural poverty which appears to have been more sensitively affected by the post-reform developments.

This has led some analysts, for example Tendulkar and Jain (along with many other economists who are generally in support of the reform process), to argue that, although poverty did increase during the first 18 months of reform, the reforms were not the principal cause for this increase. This argument rests on the observation that "the rural sector in general and agriculture in particular were not the major focus of structural adjustment and were only indirectly affected by fiscal compression" and on the assumption that the reforms "would have adversely affected primarily the urban organised sector with second-order impact on the urban informal sector and weaker effect on the rural sector". Because, in fact, it was rural poverty which increased sharply, they attribute this increase not to reforms *per se* but to weather and to the higher post-reforms inflation for which, moreover, they hold the reforms only indirectly responsible. However, although the reform process has indeed neglected agriculture, there are two major difficulties with the argument that, therefore, it could not have increased rural poverty.

First, although there was a 2 per cent drop in agricultural production in 1991-92 compared to 1990-91, and although the inflation rate did increase sharply (particularly for foodgrains), these adverse factors were simply not large enough to explain the very large increase in the incidence of rural poverty. As discussed in the next section any econometric model fitted to the data prior to reforms linking the incidence of rural poverty only to some measure of agricultural production or productivity and to the inflation effect, breaks down as soon as the post-reform data is included. And, indeed, all such models are outperformed by models incorporating relative food price, rural non-agricultural employment and some measure of commercialisation, in addition to agricultural production. The latter not only fit the pre-reform data better, but when fitted to pre-reform data accurately track the post-reform increase in poverty, unlike models not including government expenditure and/or rural non-agricultural employment which predict much lower poverty increase than that which took place actually.

The important point to note is that this phenomenon of rural non-agricultural employment, which Tendulkar and Jain ignore, was almost certainly the major factor which drove rural real wages up, and caused poverty to decline, during the 1980s. And, in turn, this was based largely on increasing government expenditure and on the availability of cheap credit to the small-scale sectors. As has been pointed out in a previous section, the onset of stabilisation and structural adjustment appears to have led to a rather quick and large decline in such rural non-agricultural employment, pushing millions of self-employed and casual rural non-agricultural workers back to agriculture, thus reducing per-worker incomes in agriculture. It appears, therefore, that just as the expansion of the 1980s involved a rapid increase in rural non-agricultural employment without any concommitant increase in organised sector employment, the stagnation in the first 18 months of reform saw a cutback in rural non-agricultural employment with not much effect on either organised sector or urban employment. This suggests that, contrary to popular opinion, the employment multipliers associated with the government's fiscal stance are larger for rural non-agriculture than for the urban or organised sectors. If this is accepted, the trend in the magnitude of employment decline and poverty increase are not surprising, particularly because, as noted earlier, the contractionary tendencies generally impinged much more adversely on smaller enterprises than on the corporate sector.[11]

In addition, it is obvious that the effect on poverty of the rather small decline in agricultural output in 1991-92 could have been mitigated if rural employment policies had been used effectively, as they were during 1987-88 a year of much larger decline in agricultural and foodgrains output than

TABLE 8: BASIC REGRESSION RESULTS: ALL-INDIA DATA
(Dependent Variable Is Log of Headcount Poverty Ratio)

Constant	Per Capita Agriculture Income	Per Capita Non-Agri Income	Commerce	Public Dev Expenditure	Relative Price of Cereals	R Bar Squared
Rural						
11.34	−0.72 (1.2)	−0.36 (2.1)				0.73
9.56	−0.68 (1.1)	−0.78 (1.2)	1.11 (1.5)			0.77
8.83	−0.45 (1.9)	−2.38 (4.0)	3.20 (4.8)	−0.76 (9.4)		0.96
1.37	−0.49 (2.2)	−1.62 (3.3)	1.73 (3.1)		1.45 (9.8)	0.96
4.68	−0.45 (2.4)	−2.15 (4.3)	2.65 (4.6)	−0.39 (2.7)	0.80 (3.0)	0.97
Urban						
11.16	−0.75 (2.0)	−0.32 (3.0)				0.86
8.57	−0.69 (2.0)	1.35 (1.8)	−1.63 (2.3)			0.88
8.24	−0.58 (2.4)	−0.07 (0.1)	0.31 (0.4)	−0.34 (4.0)		0.94
4.61	−0.59 (2.7)	0.19 (0.4)	−0.26 (0.5)		0.70 (4.8)	0.95
5.23	−0.58 (2.8)			−0.08 (1.5)	0.60 (2.7)	0.95

Note: T values in parenthesis.

1991-92. Indeed, a state-wise analysis shows that between 1989-90 and 1992 rural poverty increased in every state except Kerala, i e, it increased even in those states (Haryana, Karnataka, Madhya Pradesh, Orissa, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal) where the 1991-92 foodgrains output was higher than in 1989-90, thus indicating a rather weak link between the fall in output and the increase in poverty. Moreover, it is interesting to note that the largest post-reform increases in poverty were registered in the two states, Gujarat and Maharashtra, which were most enthusiastic about the reforms process. Here, there was a fall in foodgrains output in 1991-92 as in 1987-88, but, unlike in 1987-88, the state governments neglected rural employment and drought relief schemes in 1991-92.

Secondly, although inflation is clearly important, Tendulkar and Jain are not entirely correct when they claim that the large rise in inflation (to over 25 per cent for the Consumer Price Index for Agricultural Labourers) during the first year of reforms was only indirectly related to the reform process. Their argument is that inflation occurred because crop output fell in a year when foodgrain stocks were low and the balance of payments position did not permit large imports; and because the government succumbed to rich farmer demands to increase procurement prices following the (necessary steps of) devaluation and cut in fertiliser subsidy.

In fact, because of a record harvest in 1990-91, public foodgrain stocks were high, over 21 million tonnes, when the government embarked on its reforms at the end of June 1991. And inflation accelerated principally because of the expectations set-off by devaluation and the impression given that all discrimination against exports of agricultural goods would be removed.[12] This led to an immediate speculative increase in private stocks, forcing the government to run down its own stocks faster, and also contemplate food imports. However, the decision on such imports was postponed till after the next harvest. And when this turned out to be somewhat less than expected, the government was faced not only with low stocks but also with low procurement because farmers withheld sales in the expectation that it would be politically and economically difficult for the government to justify imports at prices well above domestic free market prices which in turn were higher than the procurement prices. In the event, the government was forced to increase both its procurement prices massively (linking this with withdrawal of fertiliser subsidies) and also import wheat at prices higher than the increased procurement prices.

The entire problem was thus clearly driven by the fact that devaluation was linked explicitly with the idea of removing trade discrimination against agricultural goods and, therefore, with a central tenet of the liberalisation argument. If this had been followed through fully, food prices would have risen much more than they actually did and farmers would have received more than what they allegedly obtained as a result of their political clout. In fact, prices began stabilising only when the government made it clear that not only would some export restrictions continue on foodgrains but also that it would continue with its earlier policy of importing foodgrain to stabilise domestic prices, even if this meant making a commercial loss. For this reason, it can be surmised that the inflationary problem could have been avoided to a large extent had devaluation been accompanied at the outset by an explicit policy of increasing the wedge between world and domestic prices through higher export duties and a definite announcement that canalised imports would continue. That it was not, and led to an inflationary spurt which was contained only when the government backtracked, is one among a number of instances of how fidelity to the liberalisation world-view was extremely costly in the short-run without being sustainable in the longer run.

Thus, the massive increase in rural poverty, by over 60 million people, in the first 18 months of reform was to a very large extent a direct result of the stabilisation-cum-structural adjustment policies. The later data, for 1993-94, which shows a moderation in poverty does not necesarily contradict this conclusion because, after all, public expenditure cuts were to a large extent restored (and so rural non-agricultural employment might have risen somewhat) and stability was returned to foodgrains markets by removing the expectation that Indian agricultural prices were to soon reach international levels. Thus, although nothing firm can be said about employment trends till the full data from the 1993-94 survey is released, the decline in poverty appears only to confirm that changes in public expenditure levels and announcements regarding liberalisation of international trade in agricultural products have a large and quick impact on rural poverty.

IV
Determinants of Poverty

This brief review of trends in poverty bring us to the central issue of this paper: that is how liberalisation and structural adjustment may be expected to affect the incidence of poverty. Given the limited data and the somewhat conflicting empirical trends reviewed above, the remaining discussion will focus on past discussions of the determinants of poverty in India, and how the conventional logic needs to be modified in the light of subsequent developments. Since the Indian literature is mainly on rural poverty, this discussion will also focus largely on the rural sector.

Past literature has tended to focus on two types of variables: some measure of agricultural output or productivity and some price variable. And past writings have debated both the relative significance of these variables, and, more importantly, their proper specification.[13] Thus, although the level and growth of agricultural production per capita of rural population is obviously an important variable determining levels of welfare in a predominantly agricultural rural community, it is also obvious that such a relationship would be affected by whether agricultural growth is accompanied by increasing inequality and whether there are other sources of rural incomes. The link between poverty and prices is even more complex. For example, when Dharm Narain presented regression results showing that poverty was related positively with higher food prices, his specification was challenged because his use of the nominal food price as an explanatory variable ran counter to the prior, common to most economists, that what really matters are relative prices, and, that if absolute prices need to be incorporated this should be done by considering the rate of inflation rather than the price level.

As far as the importance of agricultural output as a determinant of rural poverty is concerned, it is obvious that, unless the

Table 9: All India Rural Poverty Equation

Variables	Ravallion-Dutt Model		Our Model	
	1960 to 1989	1960 to 1992	1960 to 1989	1960 to 1992
Constant	4.6(5.01)	3.3(2.79)	−0.6(0.67)	−0.1(0.10)
Ag Productivity	−0.3(2.69)	−0.1(0.56)	−0.4(4.21)	−0.4(3.36)
Real Wages	−0.5(3.26)	−0.7(3.53)	−0.3(3.29)	−0.4(2.79)
Relative price cereals			0.9(7.69)	0.9(6.25)
Non-ag employment			−0.5(3.97)	−0.4(3.65)
Commercialisation			1.0(6.45)	0.9(4.92)
Time Trend	0.0(3.85)	0.0(1.86)		
Lagged Dependent	0.5(4.74)	0.4(2.75)		
R Bar Squared	0.94	0.89	0.98	0.97
DW	1.63	1.28	2.27	2.37

manner in which higher agricultural output is brought about is sharply inequalising, any increase in agricultural output per capita would tend to benefit most rural people. It is precisely the fear of the possible inequalising impact of the 'green revolution' which had triggered off early work on this area. But, by now, it may safely be conceded that although relative inequalities may have increased, the 'green revolution' certainly reduced the incidence of absolute rural poverty in the regions where it was successful. But, although proponents of the *trickle down* hypothesis may have proved more correct than the detractors in this matter, the really striking feature of the post green revolution period is that, nonetheless, there is a rather weak link across states between the rate of agricultural growth per capita and reductions in rural poverty.

The simple fact is that, with the green revolution limited in geographical coverage, most states in India did not record any significant increase in agricultural value-added per head of rural population during the 1970s and 1980s, although almost all of them recorded significant declines in poverty.

With poverty reduced even where agricultural output did not increase, there has thus been a reversal of the earlier apprehension that agricultural growth could occur without reducing poverty. But this very disassociation between poverty reduction and agricultural growth is a feature which merits more attention than has been given so far. For example, it is significant that, while early work on the subject invariably chose some measure of agricultural output per capita, some recent research finds agricultural output per hectare to be the measure of agricultural performance better correlated with poverty decline.[14] This measure has the advantage, for those insistent in viewing agricultural growth as the main engine for the reduction of rural poverty, that on this basis almost every region in India recorded some agricultural growth during the period when poverty declined, and, in most cases, this growth was also larger than during the earlier period when rural poverty did not decline.

Yet, given the stagnation of agricultural output per head in most parts of rural India, this shift in the measure used surely serves to obfuscate matters rather than to clarify them, especially because in actual fact the underlying shift in Indian agriculture from expansion of cropped area to yield increases has been accompanied by a sharp decline in the output elasticity of agriculture's demand for labour. As a result, poverty has declined in most regions of rural India in a context not only of stagnant agricultural output per head of rural population but also one where agricultural employment has grown much slower than the growth of the rural labour force. This latter feature would normally be expected to depress agricultural wages and thus affect adversely the poorest among India's rural residents. But, in fact, real agricultural wages increased sharply in most parts of India between the mid-1970s and late 1980s, and this was, in fact, one of the main reasons why poverty declined.

Some researchers do note the rise in wages but chose to 'explain' this rise also by reference to the increase in output per acre. This, however, stretches credulity because by almost every measure the rise in real wages was at least twice as much as the increase in real output per worker, and cannot, therefore, be ascribed mainly to technical progress in agriculture. As has been argued already, the real explanation for the rise in agricultural wages lies in the rapid growth of rural non-agricultural employment and the dynamics behind this. The Indian literature on this has in the past toyed with two ideas: that rural non-agriculture is itself driven by agricultural growth through the operation of Engel's law; and the opposite idea that the process of commercialisation of agriculture leads to displacement of agricultural labour which finds distress employment in certain 'residual' sectors of non-agriculture. However, both these ideas are now somewhat discredited. The link between agricultural growth and that of rural non-agriculture has been found to be non-linear, and, with the exception of the limited prime 'green revolution' area there is little evidence that agricultural growth has provided the impetus to rural non-agriculture. Also, despite considerable evidence that commercialisation is inequalising and leads to casualisation of the rural labour force, the 'residual' sector hypothesis stands discredited because this does not square with rising real wages. The evidence overwhelmingly supports the thesis that the main impetus for the growth of rural non-agriculture has come from outside the rural areas, in considerable part from the expansion of government expenditure. This observation suggests that rural incomes are no longer derived only from agricultural production, and that the process by which rural areas have got integrated into the wider economy are important. One aspect of this has been commercialisation with its inequalising effects but the other is that external stimulii have provided employment opportunities and incomes which are related not so much with agriculture but with developments in the wider macro-economy.

However, many economists continue to view agricultural growth as the main solution to poverty. One reason for this is precisely because such an association fits neatly with the view that in countries like India, which protected industry in the past and therefore require 'structural adjustment' today, got it wrong not only on efficiency but also on equity. Indeed, during the 1970s, when the World Bank pushed its *growth with redistribution* slogan, the argument was that the pro-industry policies followed by countries such as India hampered agricultural growth and thus meant higher poverty than was necessary. Even today, some World Bank analysis tries to show that rural poverty is unaffected (or even worsened) by industrial growth while agricultural growth reduces not only rural but even urban poverty.[15] This view continues to be a central component of the structural adjustment policies, wherein it is argued that greater liberalisation of trade and industry would shift resources towards agriculture and this would not only be more in line with India's comparative advantage but would also reduce poverty much more than earlier policies. In other words, although no one will dispute that higher agricultural output is very likely to reduce rural poverty, it is no accident that in circles where 'structural adjustment is seen as a good thing there is also an almost single-minded obsession with this causation, to the point of excluding from consideration other possible determinants of the incidence of poverty.

However, given Dharm Narain's critique of earlier work which concentrated only on agricultural output, these more recent analysts of rural poverty in India do not entirely forget the price dimension as a possible determinant of poverty. But, interestingly, the focus in such recent analysis is almost entirely on how inflation is bad for the poor. Thus, either an inflation term is added to agricultural output in statistical models explaining poverty or real wages are added as an explanatory variable to the poverty equation and an inflation term is added to the equation explaining real wages. The argument is the entirely plausible one that

TABLE 10: POOLED TIME SERIES AND CROSS SECTION ACROSS STATES
(Dependent Variable: Head Count Poverty Ratio)

Constant	5.3(9.61)	5.8(16.59)
Ag output per rural person	−0.2(2.87)	−0.2(3.67)
Per capita state domestic product	0.1(0.89)	
State development expenditure	−0.2(5.42)	−0.2(7.61)
Relative food price	0.6(5.16)	0.6(5.45)
Inflation rate	0.1(1.42)	
R Bar Squared	0.87	0.88
DW	2.21	2.22

rural money wages (and possibly certain other components of rural income, such as the proceeds of the previous harvest) are not index-linked and therefore are not immediately protected against inflation, although these are likely to adjust in the longer-run .

But, although very plausible as an explanatory variable of short-run variations in poverty, the choice of inflation as the preferred price variable is again not entirely accidental. For reformers, this leads to the happy coincidence that *while structural adjustment is good for poverty because that is likely to shift resources towards agriculture, stabilisation is also good for poverty because this will reduce inflation.* Most importantly, this way of incorporating prices avoids facing the essential trade-off that Dharm Narain was pointing to: that between the possible beneficial effects of higher agricultural output on poverty and the possible losses involved if the preferred strategy for increasing agricultural output consists of higher agricultural prices.

This is a trade-off particularly relevant for the structural adjustment policy as it relates to agriculture. As has been pointed out by many, this policy seems to have given no serious consideration to agriculture in terms of new programmes or investment, although it purports to be a virtual overhaul of the entire economy. But this is no accident either. In the liberalising worldview, most economic problems can be resolved by a greater recourse to markets and allowing the price mechanism 'free' play. A similar position governs the attitude to agricultural growth, in that it is supposed that relative price movements and profitability ratios will be sufficient to ensure that supply responsiveness in agriculture will lead to higher rates of growth. And the critical variable here is the ratio of agricultural to other prices in the economy, which is sought to be increased by reducing trade protection to industry, through devaluation which makes non-traded goods cheaper relative to traded goods, and through removal of restriction on international trade in agricultural goods which would have the effect of increasing the domestic relative price of most agricultural products, including foodgrains.[16]

In other words, the very mechanism through which agricultural output is expected to increase under structural adjustment involves increasing the price of agricultural goods, notably food, relative to all other prices in the economy. This essential rise in the relative price of agricultural goods is thus not seen as a transient phenomenon like inflation, and it would leave the rural poor unaffected adversely only if the prices of goods and services they sell rises in line with the rise in price of food which makes up most of their consumption basket. The effect would certainly be adverse if money wages are sticky. But, even with flexible wages and full employment, wage workers would invariably lose if they got a substantial part of their income from non-agricultural activities in relation to which agricultural prices would require to rise. Unlike inflation whose control may be benign (if not accompanied by deflation), this essential relative price implication of structural adjustment is permanent by design and so also is its likely adverse effect on poverty. It is, therefore, noteworthy, and hardly accidental, that in the new set of poverty models, such a relative price variable is hardly ever included.

Moreover, deflationary policies designed to control overall inflation during a transition when domestic price relatives adjust to international levels may have a disproportionate adverse effect on the rural poor if the latter obtain sizeable parts of their income from non-agricultural activity. In Indian discussions on the subject, it is sometimes almost assumed that income and employment multipliers associated with fiscal and monetary policy never spill across municipal boundaries into rural areas. Nothing could actually be further from the truth. With agricultural output determined from the supply side, and agricultural prices made inflexible downwards by government support operations, it may indeed be the case that the income multipliers of a deflationary package are borne entirely by non-agriculture. But given that most organised sector workers still have secure employment at pre-determined wage rates, the entire burden of the employment multiplier falls on the unorganised non-agricultural sector. This sector does not respect rural-urban boundaries and cut-backs in employment demand here are likely to have knock-on effects on the incomes of the rural poor: through a combination of lower non-agricultural employment, falling real wages, and an increase in the extent of disguised unemployment in the agricultural sector.

That this latter effect might be important has already been indicated by the data so far presented on rural poverty and non-agricultural employment. Its plausibility is enhanced because much of the government [illegible] project or programme funded and thus more susceptible to expenditure cuts, because most rural non-agricultural enterprises are small and lack staying power, and because most of the wage employment thus created is casual. As a result, it would be no exaggeration to claim that the vulnerability of the rural non-agricultural sector to overall public expenditure cuts and to restrictive monetary policy is almost certainly greater than for its urban counterpart. This has very important ramifications in the current macro-economic context.

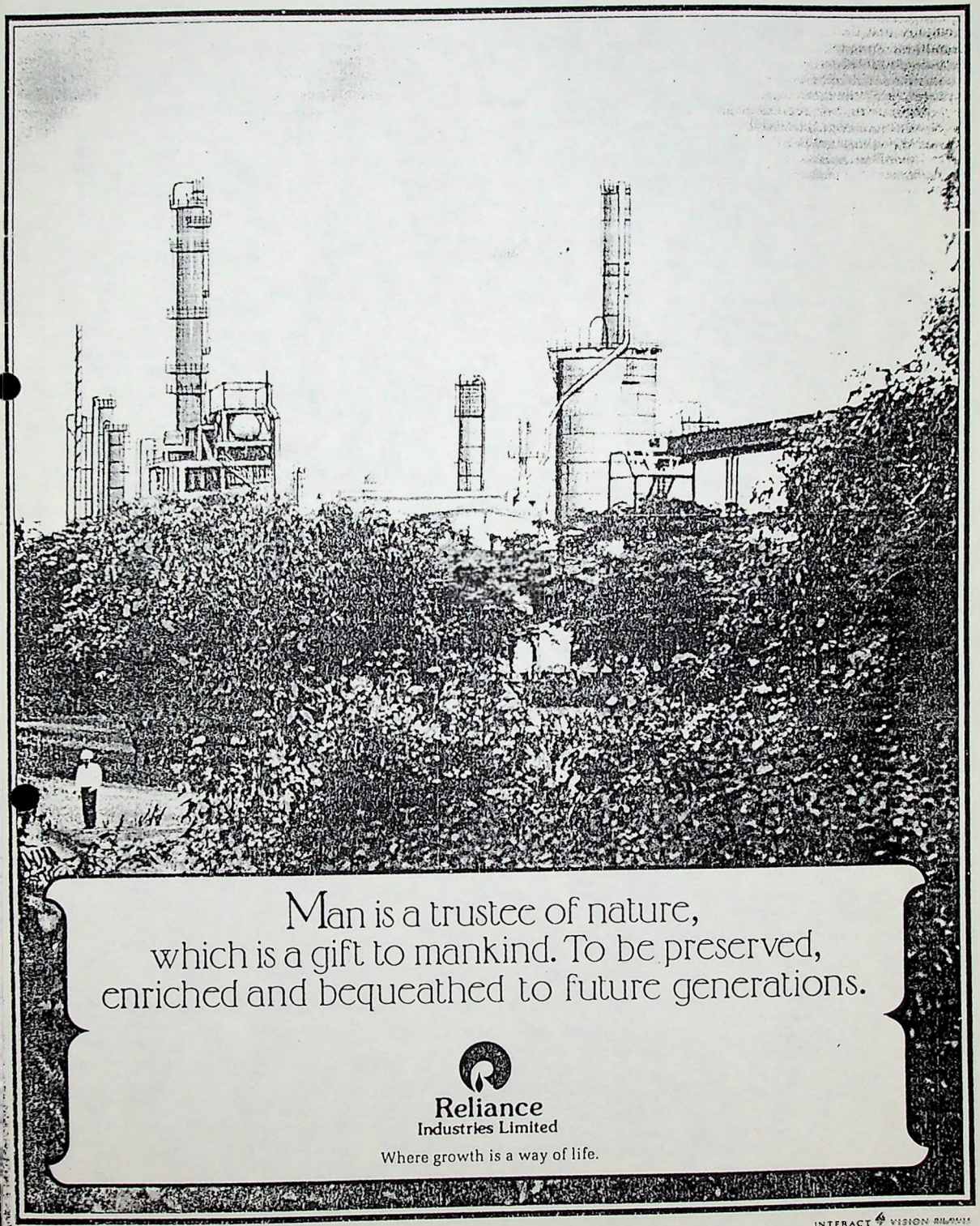
Thus, there are two possible stories which can be told about the impact of structural adjustment and stabilisation on rural poverty. The first is the benign one: that by increasing agricultural output and controlling inflation, these act to reduce poverty. Alternatively, there is the less optimistic but no less possible outcome that structural adjustment acts adversely on the poor because 'getting prices right' leads invariably to a rise in the relative price of food, because greater reliance on market forces spurs inequalities inherent in the commercialisation process, and because these adverse effects are compounded by contracting non-agricultural employment and falling wages in the unorganised sector if the government wishes to contain, through contractionary stabilisation policies, the inflationary fall-out of adjustment.

Which of these actually transpires is an empirical matter, and one would expect economists to have tested for which of these effects are more likely. But oddly, the benign agricultural output/ inflation story of rural poverty seems to hold the fort without being tested seriously against the alternative hypothesis involving relative price changes, commercialisation, rural non-agricultural employment and the government's fiscal and monetary stance.

On the other hand, the discussion of actual developments earlier in this paper suggests that the simple agricultural output/ inflation story about the determinants of rural poverty can be quite misleading. Thus, any explanation of falling rural poverty during the mid-1970s and 1980s would appear to be incomplete if it did not incorporate the fact of increasing rural non-agricultural

TABLE 11: DUTT-RAVALLION CROSS-SECTION AND TIME SERIES POOLED
(Dependent Variable: Head Count Poverty Ratio)

Time Varying Variables		
Mean consumption		-1.1(15.62)
Ag productivity	-0.1(2.58)	-0.0(0.79)
Rate of inflation	0.6(6.57)	0.2(2.35)
State dev expenditure	-0.3(5.12)	-0.1(3.33)
Initial Conditions		
Irrigation	-0.6(3.08)	-0.4(3.32)
Female literacy	-0.4(2.59)	-0.1(1.09)
Infant mortality	0.9(4.69)	0.4(3.18)
R Bar Squared	0.86	0.94



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employment and the role of government policy behind this. Similarly, our critique of the Tendulkar-Jain explanation of the increase in poverty post-reforms is also essentially that they fail to go beyond the agricultural output/ inflation story. In the remaining part of this section we attempt a statistical investigation.

To begin with, we regress head count measures of poverty for the period 1960-61 to 1993-94 at the all-India level in both urban and rural areas against per capita agricultural and non-agricultural incomes (with agricultural incomes defined per head of rural population and non-agricultural incomes defined per capita of total population). As the accompanying table 8 shows, both income variables are significantly negative in both rural and urban areas, and in both cases the agricultural income variable appears more important. Next, the per capita non-agricultural income variable is split into per capita income from trade and transport (an indicator of commercialisation) and other non-agricultural incomes. The rationale for this is that many commentators (e g, Vaidyanathan 1986) have argued commercialisation this tends to increase rural inequalities. In these respecified equations, agricultural incomes continue to be negatively related to poverty, but now there is a difference between the urban and rural equations. In urban areas, the commercialisation variable appears to reduce poverty while the remaining non-agricultural incomes have a positive effect. But exactly the opposite pattern appears in rural areas. Next, we include a public expenditure variable (development expenditure per capita, i e, government expenditure less interest payments and expenditure on defence and administration). This variable is strongly significant, reducing poverty in both rural and urban areas, with, interestingly, its coefficient almost double in rural as compared to urban areas. Moreover, on inclusion of this variable, the non-agricultural income variables become insignificant in urban areas, while in rural areas the earlier pattern is maintained.

These observations suggest a much more complex relationship between growth of non-agricultural incomes and poverty than usually appreciated. As expected, commercialisation does indeed seem to be associated with increased rural inequalities, but it seems also to be associated with some increased opportunities for the urban poor. On the other hand, the expansion of other non-agricultural incomes appears to have reduced rural poverty while doing nothing to reduce urban poverty. This suggests that to the extent that the benefits of such income growth do percolate down to the poor, this spills over disproportionately to the rural sector, either because of rural-urban migration or because, as suggested earlier, employment multipliers are higher for rural non-agricultural employment. This latter suggestion finds some confirmation from the coefficients on the government expenditure variable, whose significance suggests also that such expenditure has a much larger impact on poverty than a general increase in non-agricultural output.

Surprisingly, on including an inflation term in these equations, this is found to have an insignificant effect on poverty in both rural and urban areas. Replacing the inflation term with a relative price variable (the relative price of cereals to all commodities in the wholesale price index) does however make a difference. This variable turns out to be highly significant in both areas, and also serves to reduce the significance of the public expenditure variable, which however continues to be significant.

These results need to be interpreted with caution because the mutual correlation between these explanatory variables is often high. But three points emerge quite strongly. First, that agricultural incomes are important not only for rural but also urban poverty. Second, that non-agricultural impulses, particularly public expenditure, are not only important but that they are especially so in the determination of rural poverty. Third, that, as far as the price variable is concerned, the relative price effect is if anything much more important than the effect of inflation *per se*.

Taken together, these results suggest that we need to modify the view that the principal determinants of poverty are agricultural output and inflation, and that, therefore, both structural adjustment and stabilisation are good. To consider this matter further, we replicated the version of this story as it emerges from the World Bank publication *Growth and Poverty in India*.[17] This is more sophisticated than most other versions of the story in that it is a two-equation model whereby the incidence of rural poverty is 'explained' by the agricultural real wage and the lagged and current agricultural output per net sown acre. In addition the model includes the lagged dependent variable and a time trend. In turn, the level of the agricultural real wage is 'explained' in another equation by the inflation rate and the earlier agricultural output variable, in addition to a lagged wage term. In this model, therefore, higher agricultural output reduces the incidence of poverty both directly and through its positive effect on the wage rate; and inflation works on poverty only indirectly through the wage rate.

Table 9 gives the coefficients of the Ravallion-Dutt poverty equation obtained when fitted it to the periods 1960/61-1989/90 and 1960/61-1992 with all-India data. The first fit, which does not include the post-reform period, is almost the same as that [illegible] their original paper and appears to be a fairly good fit. However, the second fit, that of the same model fitted to data extended to the post-reform period shows that the model breaks down almost completely since the most important variable, agricultural output per acre, turns totally insignificant. Furthermore, the breakdown of the model occurs essentially because the magnitude of the actual increase in poverty is well beyond anything that this model can predict. In fact, when the model estimated with data up to 1987-88 is extrapolated, it is able to explain only a small part of the large actual increase in 1992, and also predicts an increase in poverty in 1993-94 as against an actual decline.[18]

This table also gives the details of an alternative model fitted to the same data incorporating our observations in the preceding discussion. Here in addition to the agricultural output and real wage variables we included the relative price of cereals, the proportion of non-agricultural workers in rural population and the commercialisation variable (the per capita GDP from trade and transport). An interesting observation is that on inclusion of these variables, the time trend and the lagged dependent variable used by Ravallion-Dutt turn insignificant, suggesting that in fact the adjustment of poverty to real factors is much faster than that suggested by the Ravallion-Dutt model. This alternative model not only fits past data much better than the Ravallion-Dutt version, but also, unlike theirs, remains robust when extended to the post-reform period. In parti-cular, the massive increase in rural poverty in 1992 is predicted with complete accuracy by the model fitted up to 1987-88.[19]

These results not only emphasise the importance of the relative price variable and of non-agricultural factors, they cast strong doubts on the simple agricultural output/ inflation paradigm. This paradigm is further compromised because it is seen that the wage equation in the Ravallion-Dutt model also collapses in the sense that inclusion of alternative variables, e g, real government expenditure per capita, renders the agricultural output variable insignificant. Indeed, the significance of the government expenditure variable here confirms the possible importance of government expenditure for non-agricultural employment, the rural real wage and, therefore, rural poverty. And, indeed, including a government expenditure variable along with lagging the employment variable yields our preferred equation. Interestingly, this equation fitted to data up to 1987-88 accurately tracks the subsequent movement in rural poverty, including both the sharp upward movement in 1991 and 1992 and the reversal in 1993-94.[20]

Nonetheless, these observations on the basis of All-India data, though indicative, cannot be conclusive given that the degrees of freedom are few and because a number of possible explanatory variables are mutually correlated. For this reason, the excercise was repeated using state level data, in the form of a pooled time-seris and cross-section analysis with data up to 1992. In this exercise, poverty was regressed against agricultural output per rural person, state per capita SDP, a relative food price index calculated by dividing the index of the food price in the CPIAL by the SDP deflator, an inflation index based on the SDP deflator, and per capita real state development expenditure. All variables except the per capita SDP were significant, but, in addition, the inflation term was small and just crossed the significance level. The relative food price variable was easily the most statistically significant variable and it also was the most important in terms of its impact. The next important variable was state development expenditure, followed by agricultural output.

These results with pooled cross-section and time series data at the state level are in many ways similar to results obtained recently by Dutt and Ravallion (1995) with more or less the same data set, but restricted to the period up to 1989-90.[21] In their model they regress poverty measures against agricultural output per hectare, state development expenditure and an inflation term, along with certain indicators of initial conditions (e g, irrigation, infant mortality and female literacy). All the variables had the expected sign, and, interestingly, they find that state development expenditure was the most significant variable and that, unlike agricultural output which reduced poverty only by increasing mean consumption, state expenditure reduced poverty by increasing both mean income and improving income distribution. They did not include any relative price variable but our experiments with the same data suggest that this would have swamped the inflation term had they done so. Hence, the importance of state expenditure and of the relative food price appears to be fairly robust as factors explaining poverty both across time and space.

However, perhaps the most important result of this Dutt-Ravallion exercise is that it shows that, quite apart from the contemporaneous effect of prices, output and government spending, the extent to which a particular state could reduce poverty over time depended also on the *initial conditions* with respect to physical and human infrastructure, in terms of irrigation, female literacy and infant mortality, with which that state began. Thus, of the difference of 1.8 per cent per annum between the rates of poverty reduction in Kerala and Madhya Pradesh, fully 1.6 per cent per annum could be attributed to the fact that Kerala began with higher female literacy (1 per cent) and lower infant mortality (0.6 per cent). Our own preliminary experiments with such *initial conditions* confirm the long-run importance for poverty reduction of health and education status, though much less so of irrigation, and suggest furthermore the importance of initial land distribution.

Clearly, this analysis suggests that both the benign agricultural output/inflation model and the relative price/state expenditure/rural non-agricultural employment models mentioned earlier are relevant for the determination of rural poverty. But the really important conclusion is that, of the two, the second is by far more important: agricultural output and inflation do matter, but as determinants of the incidence of poverty, the relative price of food and the level of government expenditure are even more important. In addition, the analysis points to an important and hitherto ignored long-run synergy between efforts at improving the health and education status of a society and its ability to bring down poverty over time.

V
Policy Conclusions

The results above do not lead to any very optimistic prognosis about the effect of structural adjustment or of further 'marketist reform' on poverty. It is true that *ceteris paribus* an increase in agricultural output would reduce poverty and that, therefore, there is a case for diverting more resources to this sector. It is also true that any expansion of employment in the unorganised sectors, say through the rapid growth of labour-intensive exports, would also reduce poverty. And it remains extremely plausible that any policy which can moderate inflation without leading to a cut-back in employment opportunities would in general benefit the poor. Nonetheless, there are trade-offs involved in achieving each of this goals in the structural adjustment package, and it is precisely these trade-offs which are cause for pessimism.

The basic thrust of the structural adjustment strategy is to allow greater play to market forces and to ensure that domestic relative prices reflect the opportunities available in international trade. In theory, domestic liberalisation would cause a greater degree of commercialisation, and liberalisation of international trade would cause shifts in relative prices in favour of agriculture and exportables. Taken together, these are expected to bring about the desirable shift of resources towards agriculture and labour-intensive exports. However, the problem with this is that not only do these very mechanisms, commercialisation and a rise in the relative price of agricultural products, act directly to increase poverty, but also that the magnitudes of the elasticity of poverty to these make it extremely unlikely that the direct loss on this account can be made up by the indirect benefits accruing from the better resource allocation that is expected to result thereby. For example, in almost every poverty equation reported above, the positive coefficient on the relative price variable is twice the absolute size of the negative coefficient on the agricultural output variable – implying that the elasticity of food production to the relative price of food would have to be greater than two if such a change in relative price is to reduce poverty through higher food production.

This cautions against any sudden opening up of the foodgrains sector to international trade; and, indeed, the caution here should be greater than simply one of managing a careful transition to world prices. The fact that the relative price specification is more important than the inflation specification suggests that the underlying problem is caused by more than a stickiness of money wages in the face of price increases. If such stickiness existed without any long-run impact of relative prices on poverty, the problem would have only been a transitional one which could be managed by keeping inflationary pressures in check either by a graduated movement to world prices or through a more effective stabilisation policy. However, since poverty is extremely sensitive to relative prices there is more than a transitory problem with opening up agriculture to international trade. Also, with government expenditure important for poverty, there is the further important trade off between this direct effect and the indirect effect, through inflationary pressures, of the fiscal policy stance. Given the relative importance of the government expenditure and inflation variables in the poverty equations, attempts to use contractionary expenditure policies to deal with inflation pressures, say as a result of a greater opening up to international trade, could prove to be a case of the medicine being worse than the desease.

In any case, there appears to be considerable evidence that the increased government spending during 1976-90 was among the principal reasons why India could record rather impressive declines in poverty during this period. However, it is also true that the sustainability of such expenditure increases in the future is more doubtful than ever before. During 1976-90, real per capita government development expenditure increased at an annual rate of 6 per cent per annum as against only a 3 per cent growth in per capita real GDP. Real government expenditure per capita fell 15 per cent during 1990-93, but increased again by 6 per cent

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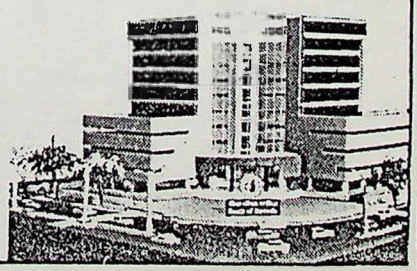

IMAGEADS

in 1993-94. The earlier expansion of government expenditure had led to large fiscal imbalances despite the fact that tax-GDP ratios had then grown quite significantly. On the other hand, both GDP growth rates have been lower and tax-GDP ratios have been falling in the post-reform period. It is therefore unlikely that the pace of growth of government expenditure can be sustained unless GDP grows at least 8 per cent per annum or there is a definite policy of increasing the tax-GDP ratio significantly.

Given this fiscal reality, and the fact that non-agricultural GDP does not appear to have much impact on poverty except through its effect on the sustainability of government expenditure, it is obvious that there will be problems with maintaining the pace of poverty reduction. Even if GDP growth increased, the current fiscal priorities make it unlikely that this would be reflected fully in public expenditure. One possibility discussed in this context is to alter the composition of government expenditure so that it is more directly focused on poverty alleviation. But, although this is possible and desirable, a note of caution must be sounded on this at the outset. In our regression exercises, we played around with different components of government expenditure, and the results suggested, somewhat surprisingly, that it was the broader measures of such expenditure which had a greater poverty alleviation effect, at least when poverty is measured by the head count ratio, than narrower and more focused measures such as that on agriculture and rural development.[22]

There are two possible reasons for this. First, it may well be the case that the existing poverty alleviation programmes are not particularly effective and that their impact on poverty is no greater than other government expenditure. If so, there is room for improvement in the design of expenditure focused towards poverty alleviation. And, indeed, a case can also be made out that it may be possible to transfer funds from such programmes to rural capital formation without endangering the poverty alleviation impact. But, secondly, it also appears that what is really at issue are much broader multiplier effects of overall government expenditure. Clearly much more work is required in this area to identify ways in which the impact of a given amount of expenditure can lead to more poverty alleviation, but, although there are certainly likely to be ways of achieving this, it should not be expected that it will be possible to cut-back overall government expenditure without any adverse effect on poverty. The real significance of government expenditure appears to be that it is this which imparts any 'trickle-down' characteristic to the growth process, something which appears quite weak if only GDP growth is considered.

Nonetheless, since this effect is likely to be greater if government expenditure is properly targeted, it is necessary to attempt a brief evaluation of the contribution of government anti-poverty schemes in the reduction of poverty. There have been numerous evaluations of these made by the government and by independent researchers, and no attempt will be made here to review this literature which attempts to measure the effectiveness with which particular schemes have been able to target the poor. Suffice it is to note that such evaluations have by and large found that asset-creation schemes, such as the Integrated Rural Development Scheme, have had less success in alleviating immediate poverty than rural employment programmes, although even the latter have leakages and are often criticised for being a palliative whose effectiveness at permanent poverty reduction are rather low. However, comparing the official figures on employment schemes with independent data from the NSS, four points are worth making. First, with the NSS reporting a quantum of employment in public works which matches official data well, fears about large leakages may be rather exaggerated. Secondly, the schemes appear to be reasonably well-targeted in that they are availed of most by casual labour households which have both the highest poverty and the highest person-day unemployment, but the regional distribution of employment through such programmes appears to be concentrated in a few western Indian states, and also public works appear to have been much more effective in 1987-88, a drought year, than in more normal years. Thirdly, it seems unlikely that the effective transfer through such schemes was much lower than the wage cost as a result of incomes foregone by the workers to take up such employment.[23]. Fourthly, possibly because they are well targeted, public works appear to have been more effective in moderating the severity of poverty rather than its head count incidence.[24]

Conceptually, if viewed primarily as an anti-poverty measure, a well targeted public works programmes should not provide incentives for the non-poor to participate and nor should there be impediments to participation by anyone who is poor. At least till 1987-88, Indian schemes seem broadly to have passed the first test but, except possibly in Maharashtra, failed the second both because of a paucity of funds and a lack of official commitment, except at times of natural disasters. Since then, confusion about the intention behind such schemes seem to have increased. First, wages offered have been increased to the statutory minimum wage rate which is often higher than locally prevailing wages, thus making participation more attractive. Second, despite this, funds available for such schemes have been cut in real terms, causing job availability to be even more rationed. Finally, as a result of a misplaced importance given to the head count poverty incidence measure there is a feeling that these schemes have failed to reduce poverty, and this, combined with a general presumption that investment rather than doles are what is really necessary, have led many to argue for an increase in the materials and expertise content of these schemes, at the cost of their unskilled labour content, so as to make them more viable instruments of rural investment.

These reactions are confused because the primary goal of an anti-poverty measure is not the creation of assets and nor is its purpose a general redistribution of income, say by increasing the general wage level. This is not to argue that these are not laudable objectives but simply to point out that attempts to chase too many objectives without substantially increasing the budget available risks diluting the primary goal of poverty alleviation. Both higher wage rates and a lower component for unskilled labour in these schemes reduce their transfer content. And, these objectives, by attracting richer workers and/or by directing employment to regions where viable investment projects, rather than the poor, exist are also likely to make for much less effective targeting. Possibly, the correct approach would be to make employment guarantee the primary concern of such programmes, setting the wages paid to levels where the demand for such employment would broadly match the funds available. Clearly, if more funds can be directed into such programmes the wage rate paid can be increased, and with sufficient expenditure even the general wage rate influenced within the employment guarantee framework. The employment guarantee aspect should, however, be the primary concern and higher wages the secondary concern because only this priority would keep out the relatively rich while allowing the poor unimpeded access.

Secondly, the best way to dovetail productive investment into such a programme would possibly be to give a wage subsidy equal to the employment guarantee wage rate for each unskilled worker working on a class of well-defined approved investment projects, delinking project choice from the agency implementing the guarantee scheme and treating the rest of the project cost and benefit on par with any other. With the employment guarantee scheme in place, this need not cost the exchequer any more and yet the linkage between poverty alleviation and productive investment through labour-intensive schemes could be decentralised. Needless to say, this means that other project costs would have to be met from outside the

employment guarantee budget. But this is the proper way of proceeding because while there is a case for subsidising employment if there is paid underemployment at the normatively chosen employment guarantee wage rate, there is no case to subsidise any particular investment more simply because it is selected by the agency implementing the employment guarantee scheme.

However, the main lesson from earlier sections is that the basic thrust towards permanent reduction of poverty must take the form either of increasing employment in agriculture, mainly through better irrigation and multiple cropping, or of increasing the stock of viable self-employment opportunities or regular jobs in non-agriculture. It is towards these objectives that rural investment should be encouraged while employment guarantee provides the framework within which this can be done without sacrificing the need to combat poverty immediately. Yet, because the reforms themselves have aspects which tend to increase poverty, and because fiscal considerations mean that it might be difficult to increase both agricultural investment and the expenditure on anti-poverty schemes, there will be difficulties in the future.

Under these circumstances, it is clear that if poverty reduction is to be a serious part of the agenda in the reform period, the reforms themselves should have an explicitly redistributive content. This would require cuts in subsidies to the rich and also higher taxes to maintain and increase the expenditure relevant for the poor. In addition, the old issues of land distribution and the provision of universal primary health and education must again be put back on the agenda. But, more than anything else, it must be recognised that a 'reform' strategy which aims to withdraw the state from investment, liberalise finance and thus divert finances from the state to the private sector, liberalise agricultural trade and thus enrich the rich at the direct cost of the poor, and seeks to control inflation and BOP problems through deflation and devaluation is at its root a fundamentally inequitous adventure.

Notes

[This is a slightly revised version of a paper delivered at the Workshop on Economic Reforms and Poverty Reduction organised jointly by the Institute of Development Studies, Sussex and the Lal Bahadur Shastri National Academy of Administration, Mussoorie, and held in Mussoorie in February 1996.]

1 [illegible] Chandrasekhar and Abhijit Sen, '[illegible] Poverty Declined with Reforms?', Macroscan, *Businessline*, January 23, 1996. See also Jaya Mehta, 'Poverty Figures and the People of India' in *Alternative Economic Survey 1995-96*, published by the Delhi Science Forum for the Alternative Survey Group.

2 Ozler, B, G Dutt and M Ravallion, 'A Database on Poverty and Growth in India', Poverty and Human Resources Division, Policy Research Development, The World Bank, January 1996. This data base which is available in diskette form contains data up to the 48th Round (January-December 1992) of the NSS. It also has compilations of the poverty line for the 50th Round (July 1993-June 1994), but does not contain poverty estimates for this round because the NSS data was not available. The poverty estimates for 1993-94 are ours, using the World Bank poverty lines (which use the Planning Commission benchmarks of Rs 49 and Rs 57 at 1973-74 prices for rural and urban India but use somewhat different deflators) and the World Bank computer programme POVCAL for poverty estimate calculations with the 50th Round NSS estimates.

3 This relies heavily on Tendulkar, S, D K Sundaram and L R Jain, 'Poverty in India 1970-71 to 1988-89', ILO-ARTEP, 1993.

4 See the next section, and particularly Table 7.

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India's Checkered History in Fight Against Poverty

Are There Lessons for the Future?

Martin Ravallion
Gaurav Datt

Looking back 40 years or so, progress against poverty in India has been highly uneven over time and space. It took 20 years for the national poverty rate to fall below – and stay below – its value in the early 1950s. And trend rates of poverty reduction have differed appreciably between states. This paper provides an overview of results from a research project which has been trying to understand what influence economywide and sectoral factors have played in the evolution of poverty measures for India since the 1950s. There are some clear lessons for the future.

THERE has been much debate about how best to fight absolute poverty. Total numbers of poor people in the world – by almost any accepted standard – are continuing to rise.[1] The urgency of resolving the debate, and taking effective action, is greater than ever. The extent to which poor people share in economic growth has been one of the most contested issues. Some observers have argued that "distribution must get worse before it gets better" in developing countries, and that this puts a severe brake on the prospects for pro-poor economic growth. There have also been debates about the effects of growth in specific sectors. For example, some have argued that the benefits of the 'green revolution' (which resulted in substantial gains in agricultural yields through new seed varieties and irrigation) were captured by relatively well-off farmers, and brought little or no gain to the rural poor. Others have pointed to farm-output growth as the key to poverty reduction, both directly and via its effects on rural wage rates.[2]

There would be little risk of exaggeration in saying that the position one takes in such debates has great bearing on long-standing issues of development strategy and policy reform. The link between growth and poverty, and the interaction with other factors (including human resource development), has also taken on new urgency in the wake of recent macroeconomic difficulties and adjustment efforts in many developing countries.[3]

However, these are difficult issues to resolve empirically, not least because of the paucity of representative and reliable data over time on the living standards of poor people. Amongst developing countries, India has relatively good data for addressing these issues. At the time of writing, one could compile a time series of consumption data from 34 National Sample Surveys spanning 1951-92. This is one of the longest series of national household surveys suitable for tracking living conditions of the poor. Most of the surveys are large enough to be considered representative at the urban and rural levels for most states, and they appear to be reasonably comparable over time since the basic survey method has changed relatively little. Other data (on price indices and explanatory variables) are also available on a reasonably consistent basis. Although there are data problems (some of which we can make corrections for), they are modest by the standards of cross-country comparative studies. The existence of a time series of consumption distributions spanning 40 years represents a unique opportunity to study the link between living conditions of the poor and the key macro-economic and sectoral variables which are thought to have important influences on progress in reducing poverty.

We have used these data to study the past evolution of living standards in India. We have asked: How have comparable measures of poverty in India evolved since the 1950s? Has the experience been different between urban and rural areas and between different states? How have measures of poverty responded to changes in economy-wide and sectoral variables? What has been the relative importance of economic growth versus changes in distribution? What role has been played by the sectoral composition of economic growth? How important have changing wages and prices been? Why have some states of India done so much better than others in the fight against poverty? What role have differences in the initial levels of human development played, versus other factors such as physical infrastructure endowments? This paper provides an overview of the results of this research. We avoid details on data and methods, which are described more fully in a series of papers from the project.[4]

Data on Poor People

To address the questions posed above, we constructed a new set of consistent estimates of various poverty measures for India over the period 1951 to 1992 from the National Sample Survey (NSS) data. We aimed to measure 'absolute poverty', by which we mean that the extent of any household's poverty depends solely on its own absolute standard of living (for example, a household does not switch from being poor to non-poor when it moves across sectors unless its standard of living has changed).[5] Following now well-established and defensible practice for India and elsewhere, the standard of living was measured by consumption expenditure (including imputed values for consumption from own production). We only studied 'poverty' in the narrow (though unquestionably important) sense of "command over commodities"; we do not deny that there are aspects of a broader concept of 'well-being' which are not captured by our poverty measures.[6]

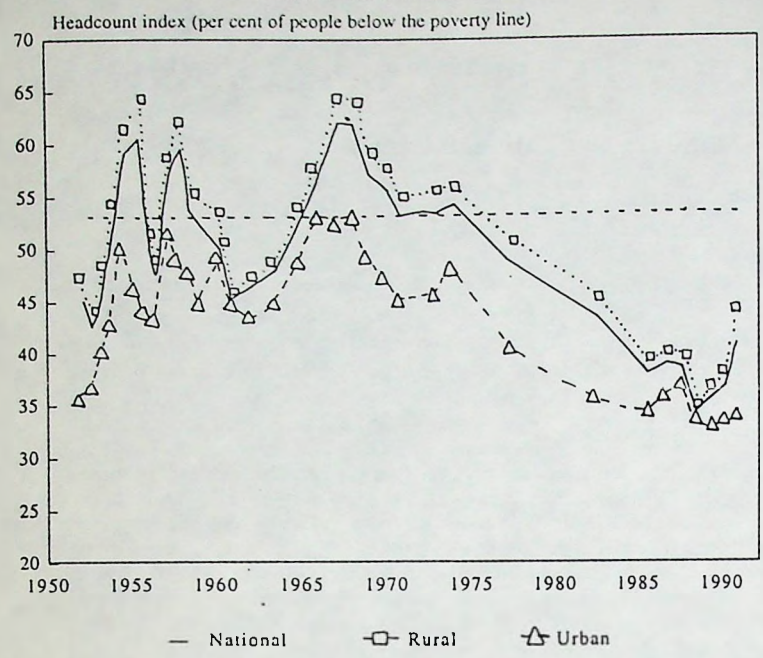
The poverty lines used were those defined by India's planning commission.[7] The rural poverty line is Rs 49 per month and the urban line is Rs 57 per month at October 1973-June 1974 all-India rural and urban prices respectively.[8] The nominal consumption distributions for each survey data were then converted to constant prices using consumer price indices for urban and rural areas which were anchored to the consumption patterns of low-income workers.[9,10]

Three different poverty measures were used: (i) The headcount index, given by the percentage of the population who live in households with a consumption per capita less than the poverty line. This measures the *incidence* of poverty; (ii) The poverty gap index, defined by the mean distance below the poverty line expressed as a proportion of that line (where the mean is formed over the entire population, counting the non-poor as having zero poverty gap). This reflects the *depth* of poverty, as well as its incidence; (iii) The squared poverty gap index, defined as the mean of the squared proportionate poverty gaps. Unlike the poverty gap index, this measure reflects the *severity* of poverty, in that it will be sensitive to inequality amongst the poor.[11,12] The estimated poverty measures were then collated with a variety of macro-economic and sectoral variables.[13]

How Much Progress Has India Made in Fighting Poverty Since the 1950s?

Table 1 gives our estimates of the three poverty measures for eight periods formed by aggregating NSS rounds; Figure 1 gives

FIGURE 1: POVERTY IN INDIA 1951-92



the estimates of the headcount index for each survey round. (The pattern of change was very similar for the other two poverty measures.) Several points emerge:

The period from the early 1950s up to the mid-1970s was characterised by fluctuations in poverty without a real trend in either direction.[14] The average headcount index was 53 per cent in 1951-55 (marked in Figure 1), about the same as its average value in 1970-74.[15] After that there was a significant decline in poverty incidence (and the depth and severity of poverty fell too),[16] though this was not a continuous decline. It thus took over 20 years for the poverty measures to finally fall below – and stay below – their values in the early 1950s.

Changes in rural poverty closely follow those at the national level, which is not surprising given that a large proportion of India's population lives in rural areas (about 74 per cent even at the end of the period). It is more notable that a similar pattern over time also holds for urban poverty (Figure 1). Common causative factors appear to be at work.

The reduction in poverty since the early 1970s has been sizeable; between 1969-70 and 1992, the national headcount index declined from 56 to 41 per cent. Yet India's progress against poverty has been modest when compared to the standards set by some countries in east Asia. For example, Indonesia's headcount index was 58 per cent in 1970—very close to our estimate for India at that time. But by 1993 (keeping the same real poverty line over time), we estimate that the headcount index for Indonesia had fallen to 8 per cent, about one fifth of India's headcount index in 1992.[17]

How Important to India's Poor was Economic Growth and Contraction?

We look first at the effect of *aggregate* economic growth and contraction on poverty. Comparing successive survey rounds, we regressed the percentage change in each of the three poverty measures on various measures of the rate of aggregate economic growth between the same rounds. Based on the regression coefficients, Table 2 gives our estimates of the percentage change in each poverty measure to be expected from a 10 per cent growth rate for (i) the mean consumption per person as estimated from the NSS; (ii) mean consumption per person estimated from the national accounts and population census; and (iii) mean net domestic product per person, also from the national accounts and census.[18]

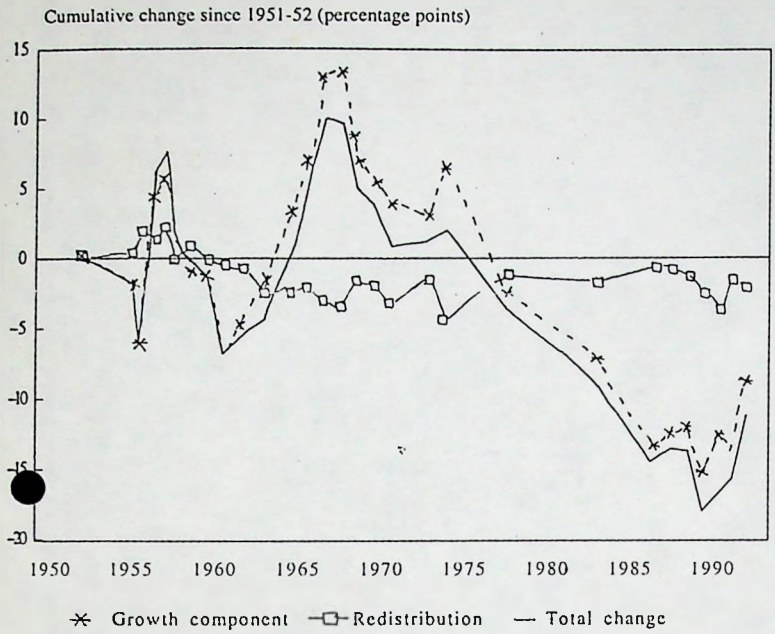
The national poverty measures responded significantly to all three measures of economic growth. For example, a 10 per cent increase in mean consumption resulted in a 12-13 per cent drop in the proportion of people who are poor, representing a 10-11 per cent drop in the number of poor, at India's rate of population growth. The responses are higher if one uses the NSS estimate of mean consumption, rather than the national accounts estimate, though the difference is small for a given poverty measure. The responses are lowest for net domestic product. This may be due to inter-temporal consumption smoothing which may make poverty (in terms of consumption) less responsive in the short-term to income growth than to consumption growth.

Notice too that the responses tend to be greater if one uses the poverty gap index rather than the headcount index, and the response is largest for the squared poverty gap, which is sensitive to both the depth and

TABLE 1: POVERTY IN INDIA 1951-1992

NSS Rounds	Period	Rural	Urban	National
Headcount index				
3-8	1951-55	54.77	42.70	52.66
9-15	1956-60	53.96	47.06	52.74
16-19	1961-65	48.59	45.46	48.02
20-24	1966-70	60.44	50.90	58.60
25, 27, 28	1971-75	55.27	46.04	53.39
32, 38	1976-83	47.96	38.08	45.68
42-45	1984-90	37.94	34.99	37.20
46-48	1991-92	39.44	33.24	37.84
Poverty gap index				
3-8	1951-55	19.69	14.04	18.70
9-15	1956-60	17.91	15.36	17.46
16-19	1961-65	14.28	14.04	14.23
20-24	1966-70	19.80	16.08	19.08
25, 27, 28	1971-75	17.01	13.46	16.28
32, 38	1976-83	13.84	10.60	13.09
42-45	1984-90	9.26	9.11	9.22
46-48	1991-92	9.47	8.58	9.24
Squared poverty gap index				
3-8	1951-55	9.42	6.20	8.86
9-15	1956-60	7.94	6.69	7.72
16-19	1961-65	5.73	5.85	5.76
20-24	1966-70	8.67	6.76	8.30
25, 27, 28	1971-75	7.08	5.28	6.71
32, 38	1976-83	5.45	4.04	5.13
42-45	1984-90	3.24	3.24	3.24
46-48	1991-92	3.23	3.11	3.20

Figure 2: Cumulative Change in Headcount Index
(Total of Growth and Redistribution Components)



severity of poverty. This means that the impacts of growth and contraction in India were not confined to those near the poverty line, but reached deeper.

Redistribution played a role in the long run changes in poverty in India. Any change in a poverty measure can be decomposed into a growth component and a redistribution component.[19] Roughly speaking, the growth component is the change in the poverty measure which would have occurred if inequalities had not changed, while the redistribution component is the change in the poverty measure that one would have found if there had been no change in the mean. By adding each component over time we can assess the cumulative total impact of growth or redistribution. Figure 2 gives the results.[20]

It can be seen that the redistribution component did help over the whole period. Thus, for India, our results reject the old view (still held in some quarters) that distribution must get worse as a low-income country grows. Nonetheless, the overall contribution of redistribution to change in the headcount index has not been large in the long run. The growth in mean consumption has been more important, accounting for about 80 per cent of the cumulative decline by the end of the period.

Redistribution mattered more to the other two poverty measures. For the poverty gap index, the redistribution component accounted for about 40 per cent of the cumulative decline by the end of the period; its contribution was 47 per cent for the squared poverty gap index. Favourable redistribution has thus been quite important for changes in the depth and severity of poverty.

Most of the pro-poor impact of redistribution was realised early on, during the early to mid-1960s, well before the onset of the sustained decline in the national poverty measures. Since the mid-1960s, the redistribution component fluctuated without making a further addition to its total long-run impact on national poverty. (This holds for all three poverty measures.) The gains to the poor since about 1970 have been almost entirely due to growth.

The latter finding might be taken to imply that public efforts at pro-poor redistribution in the 1970s and 1980s failed. However, one should be wary of drawing that conclusion since we do not know the counter-factual of what would have happened without those efforts. Possibly distribution would have got worse.

Did the Pattern of Growth Matter?

Turning next to the sectoral composition of growth, we found that the changes in national poverty have been for the most part driven by changes in rural poverty. Figure 3 gives the cumulative (population-share weighted) contributions of both the urban and rural sectors to the national headcount index. The rural sector accounted for more than three-quarters of the total decline in national poverty measures over the whole period.[21] Nonetheless – despite the substantial sectoral shifts in national output that have occurred over the last 40 years or so – poverty in India is still overwhelmingly rural. In 1992, three-quarters of India's poor lived in rural areas.

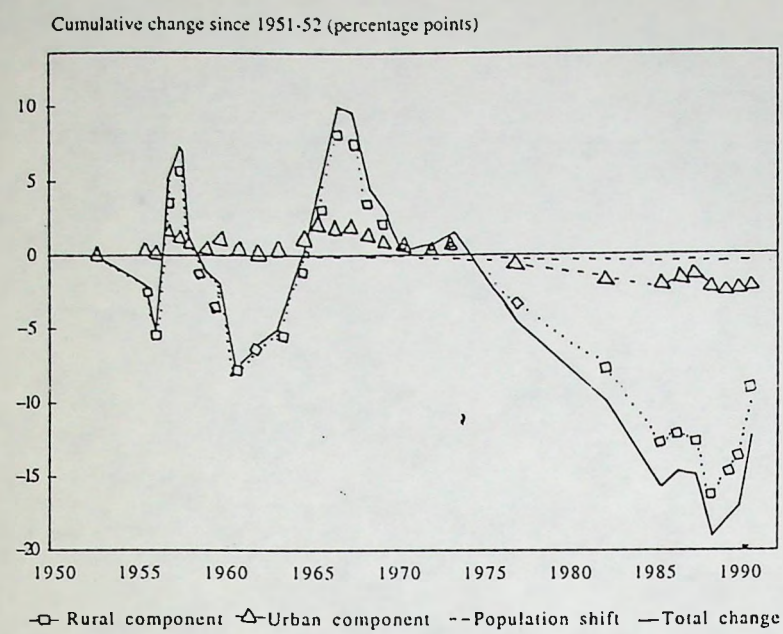
We also looked closely at the interlinkage between the sectoral composition of economic growth and the urban-rural composition of poverty, using econometric methods to disentangle the various effects within and across sectors.[22] The main conclusion was that the relative effects of growth within each sector, and its spillover effects to the other sector, reinforced the importance of rural economic growth to national poverty reduction in India. Both the urban and rural poor gained from growth within the rural sector. By contrast, while urban growth reduced urban poverty, it also had adverse distribution effects within urban areas which militated against potentially higher gains to the urban poor. And urban growth had no discernible impact on rural poverty. The process of growth through rural-to-urban migration contributed very little to poverty reduction in India.

When the growth in national income was broken down by output-based sectors, we found that there were marked sectoral differences in the poverty impacts. Both primary (mainly agriculture) and tertiary (trade, services, transport et al) sector growth reduced poverty nationally, and they also did so within both urban and rural areas. By contrast, secondary (mainly manufacturing) sector growth brought no discernible gains to the poor in either sector. In the historical shift from primary to secondary and tertiary sectors it was the latter sector which delivered the bulk of the gains to India's poor.

Table 2: How Responsive Were National Poverty Measures to Economic Growth in India?

	Percentage Change in the Poverty Measure Attributable to a 10 Per Cent Increase in		
	Mean Consumption from National Sample Surveys	Mean Private Consumption from National Accounts	Mean Net Domestic Product
Headcount index	-13.3	-12.1	-9.9
Poverty gap index	-18.8	-17.9	-14.9
Squared poverty gap index	-22.6	-21.8	-18.5

FIGURE 3: URBAN-RURAL COMPOSITION OF CHANGE IN THE HEADCOUNT INDEX
(Cumulative Changes in the Urban and Rural Components and Population Shift Effects)



The relative lack of an impact of secondary sector growth on poverty reflects the type of development strategy India pursued since the second plan in the late 1950s, which emphasised capital-intensive industrialisation within a largely closed-economy regime. It is not surprising that such industrialisation brought negligible direct gains to the nation's poor, who depend heavily on the demand for relatively unskilled labour.[23]

DID THE RURAL POOR BENEFIT FROM AGRICULTURAL GROWTH?

Since rural poverty has been so important, we turned our attention to this sector. Here we examined how much India's rural poor benefited from agricultural growth, what role the labour market played, whether the impacts were distributionally biased one way or another, and how important macro-economic stability was to the rural poor.

We collated the household survey data with data on agricultural wages, prices and output, and estimated a dynamic econometric model jointly determining rural poverty measures and real wages.[24] The model had a triangular structure in which the rural poverty measure was hypothesised to be a function of both the real agricultural wage rate and the average farm yield per unit area (as well as other variables), and the real wage rate was also a function of the farm yield and other variables.

The results indicated that all three poverty measures responded significantly in the short run to changes in agricultural wages as well as to average farm yields. And wages also responded significantly to farm yields, presumably through effects on labour demand, such as due to multiple cropping. Higher yields thus helped reduce absolute poverty through induced wage effects, as well as the more direct channels, including effects on both employment and own-farm productivity.

Neither the poverty measures nor real wage rates adjusted instantaneously to changes in farm yields. The combined effect of this stickiness in both variables was that the short-run gains to poor people of agricultural productivity growth were far lower than the long-run impacts. Also, the short-run effects on rural poverty operating via the real wage rate were minor compared to the direct effects of higher own-farm yields. But in the long run, the wage effects did matter, accounting for about one-third of the long run response of absolute poverty (for all three measures) to a yield increase. The process through which India's rural poor participated in the gains from agricultural growth did take time, though about half of the long-run impact occurred within three years of an initial gain in farm yield.

DID INFLATION MATTER?

We found evidence of an adverse short-run impact of inflation on real agricultural wages and (hence) absolute poverty in rural areas. The effect of inflation was to reduce real wages in the short term, because nominal agricultural wages responded sluggishly to inflation. Nominal wages catch up eventually, but we found that the adverse short-run impact on the rural poor was sizeable. For example, we estimate that a once-and-for-all 20 per cent increase in the price level would result in a drop of 13 per cent in the current year's real wage rate in agriculture, and an increase of 5 per cent in the rural headcount index. The impacts on the other poverty measures would be even higher; the squared poverty gap would rise by 9 per cent.

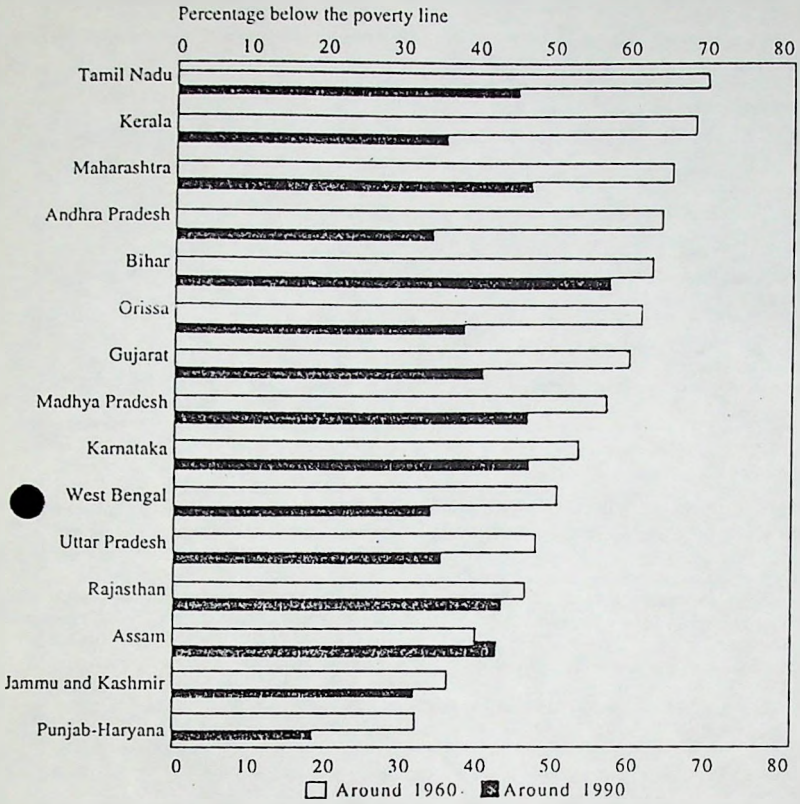
DID SOME STATES PERFORM BETTER THAN OTHERS IN REDUCING RURAL POVERTY?

The regional disparities in levels of living in India have been large. For instance, the proportion of the rural population of the state of Bihar living in poverty in 1990-91 was about 58 per cent, more than three times higher than the proportion (18 per cent) in the (combined) states of Punjab and Haryana. Some of these differences appear to have persisted historically, though there were also differential trends across regions. Looking back over time, the more striking – though often ignored – feature of the Indian experience has been the markedly different rates of progress between states; indeed the ranking of states around 1990 looks quite different to that 30 years earlier, as can be seen in Figure 4 which compares headcount indices around 1960 with those around 1990. (The picture looks very similar for the other two poverty measures.[25]) For example, the southern state of Kerala moved from having the second highest rural poverty rate around 1960 to having the fifth lowest around 1990.[26]

Regressing the log of each poverty measure against time, there was a trend decrease (significant at the 5 per cent level or better) in all three measures in 9 of the 15 states, viz, Andhra Pradesh, Gujarat, Kerala, Maharashtra, Orissa, Punjab and Haryana, Tamil Nadu, Uttar Pradesh and West Bengal. The trend was not significantly different from zero at the 5 per cent level in the other six states of Assam, Bihar, Jammu and Kashmir, Karnataka, Madhya Pradesh, and Rajasthan; there was not a significant positive trend for any state for any poverty measure. There is a tendency for the absolute size of the trend to be higher for the poverty gap than the headcount index, and it was highest for the squared poverty gap.

In terms of progress in both raising average household consumption and reducing rural poverty, the state of Kerala turns out to be the best performer over this period. The second, third and fourth highest trend rates of consumption growth were Andhra Pradesh, Tamil Nadu, and Maharashtra respectively. In terms of the rates of poverty reduction, the second, third and fourth states were Andhra Pradesh, Punjab and Haryana, and Gujarat; the ranking is invariant to the

FIGURE 4: POVERTY BY STATE, 1960-90



Averages for first three survey rounds and last three

choice of poverty measure though differences in their rates of poverty reduction are not large. The worst performer was Assam by all measures. The other poor performers were Bihar, Jammu and Kashmir, Karnataka, Madhya Pradesh and Rajasthan; the exact ranking varies by the measure used.

The states which had the highest trend rates of growth in mean consumption tended to have the highest trend rates of poverty reduction, and the correlation is very strong (the correlation co-efficient between the trend rate of reduction in the headcount index and the trend rate of consumption growth is 0.85; the correlation is about the same for the other two poverty measures). Both these variables may well have been influenced by similar factors. Next we look at what those factors might be.

WHAT ACCOUNTS FOR THE DIFFERING RATES OF PROGRESS IN REDUCING POVERTY?

Every state has its own story with a mixture of both successes and failures at public action against poverty in different periods.[27] There were differences between states in the impacts of (ostensibly similar) interventions, as well as differences between states in the package of interventions pursued; and in both respects experiences in a given state changed over time. We cannot hope to capture all this variance in experience – for one thing we would quickly run out of degrees of freedom. Here our aim is solely to look for any empirical regularities that can account for at least a reasonable share of that variance.

The inter-state differences in progress at fighting poverty allowed the project to study the impact on the trend rate of poverty reduction of a range of variables, including regional differences in human and physical resource development. A pooled model was estimated, giving 310 observations (15 states over 21 NSS rounds, though with some missing observations, or inadequate sample sizes). A model was estimated for each poverty measure, with both time varying and static explanatory variables. The key explanatory variables were current and lagged real agricultural output per hectare, current plus lagged real non-agricultural output per capita, the rate of inflation, lagged real state development spending per capita, and the state's initial (around 1960) irrigation rate, infant mortality rate, and female literacy rate; the latter three variables were allowed to influence the rate of change in the poverty measures (thus entering the model interacted with time).[28] The estimated models could account for about 90 per cent of the variance over time and across states in the poverty measures.[29]

The results indicate that higher growth rates in agricultural yields and real non-agricultural output per capita, lower rates of inflation and higher growth in state development expenditure all led to higher rates of progress in both raising average consumption and reducing all three measures of absolute poverty.

The results also suggest that inter-state differences in initial conditions of human and physical resource development played an important role: higher initial irrigation intensity, higher literacy rates and lower initial infant mortality rates all contributed to higher rates of consumption growth and poverty reduction. Initial inequalities in access to physical and human infrastructure appear to have been an important factor in longer-term rates of poverty reduction.[30] Consider Bihar, one of the worst performers in poverty reduction (Figure 4). The poor in Bihar suffered from the state's slow growth in agricultural yields. But the state's poor initial conditions were also an important factor. The incidence of poverty in Bihar declined at a trend rate of only 0.1 per cent per year. We estimate that this would have risen to 1.2 per cent if Bihar had started off with Kerala's level of human resource development in the 1960s.

By and large, the same variables determining growth in average consumption mattered to rates of progress in reducing poverty. Most of the effects on absolute poverty were transmitted through growth in average consumption rather than redistribution, though none of the factors which reduced absolute poverty had adverse effects on distribution. Thus, there was no sign of a trade-off between growth and pro-poor distributional outcomes.

LESSONS FOR THE FUTURE

Our investigation suggests that economy-wide variables do matter to India's poor; they have generally gained from economic growth, and lost from contraction; they have also been hurt by inflation. The net gains to the poor since the early 1970s can be attributed in large part to economic growth – distribution changed little from the point of view of the poor, though it appears to have been more important in the 1950s and 1960s, when there was rather less growth.

The experience of the past 40 years offers support for the view that a stable macro-policy environment, combined with micro-policy reforms conducive to economic growth, can help greatly in reducing absolute poverty in India. However, our results also reveal important nuances concerning the pattern of growth, and the importance of other contingent factors, including human and physical infrastructure.

Our results point clearly to the quantitative importance of the sectoral composition of economic growth to poverty reduction in India. Fostering the conditions for growth in the rural economy – both primary and tertiary sectors – must be considered central to an effective strategy for poverty reduction in India. At the same time, the relative failure of India's past industrialisation strategy from the perspective of the poor points to the importance of successful transition to a strategy capable of absorbing more labour, particularly from rural areas.

But our results also point to the longer-term importance of investing in human and physical infrastructure as a complement to pro-growth reforms in India. Controlling for growth in farm and non-farm sectors, we find significant effects on trends in absolute poverty reduction of the differences between states in initial conditions related to infrastructure.

A final lesson concerns the importance of being able to credibly assess an economy's performance in reducing poverty. Though less than ideal in some respects, the data base available for poverty analysis in India is good by international standards. Many other countries have had far fewer objective socio-economic surveys on which poverty monitoring can be based, or their surveys have been severely wanting in terms of coverage (lacking, for example, a sound consumption module) or comparability over time. The very fact that for India we can obtain the data needed to address the questions posed above carries an important message for other countries today, and India in the future.

Notes

[For their comments we are grateful to Jyotsna Jalan, Peter Lanjouw, Dominique van de Walle, Quentin Wodon, and the *EPW*'s referee. This paper summarises results of a research project, 'Poverty in India, 1951-92', supported by the World Bank's Research Committee, under RPO 677-82. However, these are the views of the authors, and should not be attributed to the World Bank, or any affiliated organisation.]

1 See Ravallion and Chen (1996) for aggregate poverty measures for the developing world over the period 1987-93. They estimate that the percentage of the population consuming less than $1/day at 1985 international prices (with currency conversions at purchasing power parity) decreased only slightly over this period, from 30.7 per cent in 1987 to 29.4 per cent in 1993 implying that the numbers of people living under $1/day rose from 1.23 billion to 1.32 billion over this period. ($1/day is about equal to India's urban poverty line.) The gains to the poor in east and (less so) south Asia were roughly counter-balanced by the losses in other regions, notably Sub-Saharan Africa, Latin America and Eastern Europe and Central Asia.

2 Contrast, for example, Ahluwalia's (1978:320) conclusion that "there is evidence of some trickle down associated with agricultural growth" with Saith's (1981:205) claim that "there can be little doubt that current growth processs have served as generators of poverty"; both were using data for India over roughly the same period (1957-73). The debate continues; in recent literature on India one can find claims that "rapid agricultural growth has benefited all classes of the poor" [Singh 1990] and "acceleration in agricultural growth by itself is unlikely to make a dent in rural poverty" [Gaiha 1995:285].

3 For an overview of the theory and evidence on the effects of adjustment on the poor see Lipton and Ravallion (1995, section 5.3). In the Indian setting, see Ravallion and Subbarao (1992).

4 See Datt (1996), Ozler et al (1996), Ravallion and Datt (1995, 1996), and Datt and Ravallion (1996). Later we identify which paper is most relevant to each topic covered here.

5 A number of the popular methods of making poverty comparisons over time and space do not satisfy this consistency requirement; see Ravallion (1994) for further discussion.

6 For further discussion of this point see Sen (1987); in the context of India also see Dreze and Sen (1995).

7 See Planning Commission (1993).

8 We compared this difference in the poverty lines to independent estimates of the urban-rural cost of living differential. For 1973-74, Bhattacharya et al (1980) estimated that the cost-of-living for the poor was 16 per cent higher in urban areas, exactly the same (to the nearest integer) as the differential in poverty lines. So it can be en argued that the planning commission's urban and rural poverty lines represent the same standard of living, and (hence) that we are making consistent comparisons of absolute poverty between urban and rural areas. For further discussion see Ravallion and Datt (1996).

9 For the urban sector after August 1968, the all-India consumer price index for industrial workers (CPIIW) is used as the deflator. For the earlier period, the Labour Bureau's consumer price index for the working class is used, which is an earlier incarnation of the CPIIW albeit with a smaller coverage of urban centres (27 against 50). The rural cost of living index series was constructed in three parts. For the period since September 1964, the rural cost of living index is the all India consumer price index for agricultural labourers (CPIAL) published by the Labour Bureau. For the period September 1956 to August 1964 (for which an all-India CPIAL does not exist), a monthly series of the all-India CPIAL was constructed as a weighted average of the state-level CPIALs, using the same state-level weights as those used in the all India CPIAL published since September 1964. For the initial period August 1951 to August 1956, forecasts were obtained from a dynamic model of the CPIAL as a function of the CPIIW and the wholesale price index. Our new CPIAL series also dealt with another problem which has to do with the fact that the Labour Bureau has used the same price of firewood in its published series since 1960-61. Firewood is typically a common property resource for agricultural labourers, but it is also a market good, and so the Labour Bureau's practice is questionable. Our CPIAL series corrects this by replacing the firewood sub-series in the CPIAL by one based on mean rural firewood prices (only available from 1970) and a series derived by assuming that firewood prices increased at the same rate as all other items in the fuel and light category (prior to 1970). For details see Datt (1996).

10 These are fixed weight price indices. Thus, they ignore substitution in response to shifts in relative prices. To test sensitivity to this, Ravallion and Subramanian (1996) compare poverty measures for India with and without an allowance for substitution effects consistent with demand behaviour, as modelled by a set of full rank Gorman Engel curves. Ignoring substitution matters far more for some measures and applications than others. It leads to overestimation of inequality, but level effects on poverty measures are generally small and turning point errors are rare.

11 These are members of a class of measures proposed by Foster, Greer and Thorbecke (1984). A transfer of income from a poor person to a poorer person (for example) will not alter either the head-count index or the poverty gap index, but it will decrease the squared poverty gap index. Furthermore, the squared poverty gap index satisfies the subgroup consistency' property, namely that if poverty increases in any subgroup (say the urban sector), and it does not decrease elsewhere then aggregate poverty must also increase [Foster and Shorrocks 1991].

12 The poverty measures are calculated using parameterised Lorenz curves. We use either the beta Lorenz curve of Kakwani (1980) or the general quadratic model of the Lorenz curve of Villasenor and Arnold (1989), depending on which fits the data best (both satisfied the theoretical conditions needed for a valid Lorenz curve in all survey rounds for both sectors). Using the formulae derived in Datt and Ravallion (1992), the poverty measures are calculated from the estimated parameters of the Lorenz curve and the mean per capita consumption expenditure. A number of checks are made on the results, including both the theoretical conditions for a valid Lorenz curve, and consistency checks, such as that the estimated value of the head-count index must lie within the relevant class interval of the published distribution. The estimation technique has been set-up in a user-friendly computer programme 'POVCAL' [Chen, Datt and Ravallion 1991] which is available on request, so interested readers can readily check our calculations and their sensitivity to our assumptions.

13 A complete descriptions of the data set and all sources can be found in Ozler, Datt and Ravallion (1996) with an accompanying set of diskettes.

14 The first subperiod is marked by three significant peaks in poverty around the years 1953-55 (rounds 7,8), 1956-58 (rounds 11, 12, 13), and 1966-68 (rounds 21, 22), the last of these coinciding with the worst drought in the post-independence period.

15 Based on poverty measures averaged over NSS rounds, weighted by the duration of the survey.

16 The absence of fluctuations in poverty over the period 1975-85 may be somewhat illusory as we have only two NSS surveys in the intervening period, viz, those for 1977-78 and

Com 14-70.20

DISCUSSION

Rural Poverty and Its Alleviation in India

N Kakwani
K Subbarao

WE are happy to see a critical scrutiny of our paper [Kakwani and Subbarao 1990] by S Tendulkar and L R Jain (TJ for short hereafter) [Tendulkar and Jain 1990].

The measurement of poverty involves a number of conceptual and practical difficulties. Many a time we need to settle for second best methods because of non-availability of appropriate information. For instance, like most other researchers on Indian poverty, we have used per capita household expenditure (PCHE) as a measure of household economic welfare. A better measure of household welfare will, of course, be the per adult equivalent consumption which corrects for the differing needs of adults and children. But this measure cannot be employed in Indian studies because the NSS data are available to researchers only in grouped form (the groups formed on the basis of per capita household expenditure), although the NSS organisation collects the expenditure data for each household. The grouping involves considerable loss of information which may lead to biased estimates of poverty. To estimate poverty from such data, one needs to employ some interpolation device. Most Indian studies have employed a two-parameter lognormal distribution [Minhas, Jain, Kansal and Saluja 1987], with the exception of Ahluwalia (1978) who employs Kakwani-Podder's [1976] Lorenz function. Since the NSS does not regularly correct the income ranges in order to take account of inflation, inappropriate interpolation devices may induce large estimation errors. These errors will be particularly serious when one uses a single density function such as lognormal to the entire consumption range. In our study we used a general interpolation device [Kakwani 1980] which uses a different density function within each consumption range. Although this procedure is an improvement over those employed by previous researchers, it is still the second best solution.

TJ do not seem to recognise these and many other problems associated with poverty research in India. Had they appreciated these, they would have been more constructive in their evaluation of our paper; instead they adopted the negative approach of attacking—wrongly and unfairly in most instances as we shall soon demonstrate—everything in the paper. In what follows, we respond to their criticisms not in the order chosen by them, but in order of the importance of the issues raised by them. These fall into five groups: (a) our choice of price deflators; (b) problems with the decomposition methodology; (c) growth elasticities; (d) regression results; and (e) other miscellaneous issues including validity of our conclusions.

Price Deflators

The central issues raised by TJ are (a) empirical inconsistency in using current prices for calculating Gini and Theil measures; (b) price deflators used by us for measuring poverty are inappropriate; (c) adoption of "conceptually more appropriate" deflators would vitiate our conclusions; and (d) data problems and alleged errors in our estimates of per capita household expenditure (PCHE) growth rates.

We first turn to the alleged empirical inconsistency in using current prices for calculating Gini and Theil's measures of inequality. We used the current prices because both these measures are relative measures of inequality and, therefore, will not be affected if per capita consumption of all households is multiplied by the same price deflator. These indices computed at the current and constant prices will differ only if we assume that households with different per capita consumption have different price indices. The households in the current period can have different price indices if the consumption patterns of households in the base period are different. If these differences are significant, we must compute the price index for each household. The price index of a household with PCHE x in the base period will be

$$I(x) = \sum_{i=1}^{m} \frac{P1_i}{P0_i} w_i(x) \qquad (1)$$

where $w_i(x)$ is the expenditure share of the ith commodity ($i = 1, 2, \ldots, m$), which will depend on x and $P0_i$ and $P1_i$ are the prices of the ith commodity in the base and current period respectively. Then the real income of that household in the current period, which we denote by x_R will be

$$x_R = \frac{x^*}{I(x)} \qquad (2)$$

where x^* is the current per capita consumption of that household. In our study we assumed that $w_i(x)$ is independent of x, which would imply $I(x)$ will be exactly the same as that of x^*.

Following TJ let us assume that households with different income have different consumption patterns or in other words $w_i(x)$ is not independent of x. Then poverty and inequality measures (and also per capita average consumption) must be derived from the distribution of x_R. To compute these measures, we must rank the households in the ascending order of their real income x_R but the available NSS data are ranked according to the current per capita consumption x^*. If these rankings are significantly different from each other, one cannot do any meaningful analysis of poverty and inequality. Even if the data were available for individual households, we could not construct fractile groups on the basis of the real household income because the households in the base period are not the same as those in the current period. Since we have no excess to Jain and Tendulkar's 1989 paper published in the *Journal of Indian School of Political Economy*, we can only wonder how they succeeded in measuring real levels of living for different fractiles. We conjecture, however, that they have constructed the fractile groups on the basis of the assumption that the ranking of households by x_R is exactly the same as by x^*. If so, it would be methodologically a wrong procedure.

Next, we turn to the issue of inappropriateness of our choice of price deflators. This is not a new issue; it was earlier debated by P Bardhan and B S Minhas in the early 1970s. TJ point out that we have used the well established consumer price index for agricultural labourers (CPIAL) for adjusting both the poverty line and the mean PCHE. Recently Minhas, Jain, Kansal and Saluja [1990] have worked out state-specific consumer price indices separately for the total rural population (CPITR) and Minhas and Jain (forthcoming) for the middle range of the rural population (CPIMR). They suggest that the conceptually appropriate deflator for the mean PCHE to be CPITR, and CPIMR for the poverty line. They argue that since we have not used these "conceptually more appropriate" deflators, our findings and hence conclusions are wrong.

At the outset we must point out that when we wrote our paper, the alternative deflators were not available. The Minhas, Jain, Kansal and Saluja paper was published in June 1990 whereas our paper appeared in March 1990. The Minhas and Jain (1990) is still forthcoming. Therefore, TJ criticism for our not using these alternative deflators is unwarranted and unfair. Be that as it may, let us assume that this set of deflators were available to us. How much do we gain (or lose) by using these deflators? Should one choose a set of deflators merely because they are the latest to arrive on the shelf?

While advocating use of two deflators, TJ have not comprehended the empirical and conceptual pitfalls. Their suggestion of course implies that there exist two homogeneous groups of households, which have different consumption patterns. Empirically, how should such groups be formed? One possible suggestion is to use CPIMR for the households which are below

the poverty line and CPITR for those above the poverty line. Minhas, Jain, Kansal and Saluja [1987] have correctly argued that "methodologically speaking this is not a sound suggestion. The proportion of the people below the poverty line is a variable entity which itself is the very object of poverty measurement."

There are conceptual problems as well. The correct procedure to compute the mean of real PCHE is to find the mean of x_R in (2). TJ suggest that the mean of real PCHE should be computed by deflating the mean of current PCHE (which we denote by $\bar{x}$) by CPITR, which is given by

$$\bar{x}_R = \frac{\bar{x}^*}{I}$$

where

$$I(x) = \sum_{i=1}^{m} \frac{P1_i}{P0_i} w_i,$$

is the CPITR, w_i being equal to the average expenditure share of the ith commodity for the entire rural population. It can be seen that mean of x_R in (2) will be equal to $\bar{x}_R$, only if we assume that $w_i(x)$ is equal to w_i for all i. Thus, TJ's suggestion to compute real PCHE by deflating by CPITR implies that the consumption patterns of *all* households must be the same, in which case one deflator is good enough direct contradiction to their suggestion to use two deflators.

We have so far examined whether or not it is *appropriate* to use the recently developed two price deflators. We now address the question whether it is at all *necessary* to use more than one price deflator. It depends on whether or not the consumption patterns differ significantly across the PCHE ranges. If they do not, the use of one price deflator is justified. It is desirable to test this hypothesis but it is a major undertaking beyond the scope of the present study. Fortunately, Minhas and Jain (forthcoming) have presented the price indices (CPIMR and CPITR) for the middle range and entire rural population, respectively, which throw some light on the issue. The two indices computed by them for the years 1972-73, 1973-74, 1977-78 and 1983 do not seem to differ much as can be seen from their following numerical results at the all-India level:

	CPIMR	CPITR	Per Cent Difference
1971-73	121.9	121.8	−0.08
1973-74	148.7	148.1	−0.40
1977-78	174.6	176.5	−1.09
1983	282.2	283.5	−0.46

Although the differences are somewhat larger at the State level, they are still not large enough to alter the direction of our results or the broad conclusions about poverty and inequality.

It would thus appear neither appropriate nor necessary to use two deflators to convert the nominal PCHE into the real PCHE.

It should also be obvious from the above discussion that while Minhas et al have made a valiant effort to improve the quality of price deflators, the new indices have their own limitations so that our reliance on CPIAL is not entirely unjustified.

This does not mean that CPIAL, the deflator used by us, is the best. A major objection raised against this is that the agricultural labour households constitute only about 30 per cent of the total rural population and the remaining 70 per cent (which include a large number of poor small farmers) may have quite a different consumption pattern. And, therefore, for poverty analysis Minhas et al [1990] have advocated use of CPIMR which is derived on the basis of consumption pattern of the middle income range in the base period. The argument that the CPIAL is inappropriate because it is based on the consumption pattern of only 30 per cent of the rural household population is not that appealing. As a matter of fact, the CPIMR covers only those households which belong to the middle income range which comprise only 20 per cent of the total rural household population. As such a large proportion of the poor is not covered by this index.

Gaiha [1990] argues that CPIAL is the most appropriate deflator for measuring poverty. He makes two points in its favour. First, "agricultural labour households (ALH) are the largest occupational group among the rural poor; not only are the bulk of them poor but they also account for a large share of the rural poor". Second, since "ALH are typically net buyers of food, the CPIAL can be expected to provide a close approximation to the prices confronting the net buyers of food among the rural poor, which would be much larger than the share of ALH among the rural poor".

The most attractive feature of CPITR and CPIMR is that they are based on the consumption patterns observed in more recent years (1970-71) than the CPIAL (1960-61). The principal question therefore is: have the consumption patterns changed so drastically that CPIAL has become unusable? To answer this question, we again refer to the Minhas, Jain, Kansal and Saluja [1990] paper which presents CPITR based on both the weighting diagrams, viz, 1960-61 and 1970-71. We present their results at the all-India level but patterns at the State level are quite similar:

	1960-61 Weighting Diagram	1970-71 Weighting Diagram	Per Cent Difference
1972-73	121.5	121.1	−0.3
1973-74	147.6	146.7	−0.6
1977-78	173.9	172.2	−1.0
1983	274.8	270.1	−1.7

These results indicate that the price indices do not vary significantly when the weighting diagram for the more recent year is used.

This suggests that the differences in consumption patterns across different PCHE ranges and over time should make little difference to the calculation of the consumer price indices. One would, therefore, expect the difference between CPIMR and CPIAL to be small because both these indices are based on the same retail prices. The values of these indices at the all-India level are as follows:

	CPIMR	CPIAL
1972-73	121.9	122.9
1973-74	148.7	151.6
1977-78	174.6	168.6
1983	282.2	267.0

It is puzzling to note that the differences between the two indices are quite large for the recent years. The calculations performed at the State level showed even larger differences. How do we explain these differences? Since this is an important issue, it is worthwhile to understand in more detail how Minhas et al [1990] have computed their new indices.

The CPIAL series is constructed on the basis of 62 consumer items, of which 37 belong to the food group, four to fuel and light group, 11 to clothing, bedding and footware group and 10 to miscellaneous goods and services group. In the construction of CPITR and CPIMR, 62 consumer items were aggregated into 49 items (37 food items, 10 miscellaneous and two item groups, viz, fuel and light and clothing, bedding and footware). As we do not know why and how this aggregation was done, it will be difficult to evaluate its effect on the price indices. Since the consumption patterns of the 49 items were not available for the 1970-71 year, all these items were further aggregated into 13 major groups (nine relate to food and four to non-food). The prices for each of these major groups were computed using the consumption patterns observed in the 1960-61 year. The State-specific aggregate consumer price indices were then constructed from the 13 major group indices using the consumption patterns of households in 1970-71.

The claim that the proposed indices (CPITR and CPIMR) are the best ones because they are based on the latest representative consumption patterns as the weighting diagram is also not entirely valid because in fact the consumption patterns of households of both years, 1960-61 and 1970-71, have been used. Assuming that the within-group consumption patterns are the same in the 1960-61 and 1970-71 periods, Minhas et al [1990] make allowance for changes in the consumption patterns between the groups. TJ overlook the fact that this is a highly restrictive assumption. One would normally expect that the consumption patterns of households within the groups would change more readily than between the groups. Because of changes in incomes, the substitution of one food item for another food item may be more prevalent than the substitution of food for non-food. Since the within-group consumption pattern is assumed to be the same in the two periods and the between-

group consumption pattern is expected to be stable, it is not surprising to find that the Minhas et al indices do not vary much when calculated using the weighting diagrams of the two periods.

Because the Minhas et al indices are computed on the basis of two weighting diagrams, 1960-61 and 1970-71, their computation of CPIMR is also problematic. Since the income ranges are constructed on the basis of current prices, the households in the middle range in the 1960-61 year may not have the same level of welfare and consumption patterns as those in the middle range of the 1970-71 year. This creates a problem as to which households should be selected in 1970-71 so that they are compatible with those selected in 1960-61. Moreover, CPIAL is the only index available for the most recent years 1986-87 for which the poverty estimates are presented in our most recent version of the paper [Kakwani and Subbarao 1990a].

Before we respond to the next set of issues, we recapitulate the discussion so far. Our use of the CPIAL is perfectly justified; adoption of alternative price deflators as suggested by TJ, even disregarding the numerous conceptual and empirical problems stated by us, would have introduced fresh, unknown (indeed, unknowable) biases into the poverty and inequality estimates; the inferences drawn by TJ (their Table 3) are consequently untenable; there are no errors in our computations and the data problems, we believe, are not serious enough to vitiate our conclusions.

The Decomposition

This technique enables one to separate the impact on poverty of changes in average consumption and in its inequality. The pure growth effect is measured as the per cent growth in poverty if the mean PCHE were to change but the Lorenz curve remained unchanged. Similarly, the inequality effect is measured as the per cent change in poverty if the Lorenz curve were to change but the mean PCHE remained constant. Since the poverty measures are non-linear, the total percentage change in poverty will not be equal to the sum of growth and inequality effects. In the *EPW* version, the residual (usually called the interaction term) was combined with the inequality effect. In the recent revised version of our paper [Kakwani and Subbarao, 1990a], we have separated the interaction term from the inequality effect.[1] Again, the direction of the results remained unchanged.

TJ are at pains to drive home the point that this methodology does not permit one to establish causal relationships. It is quite obvious that decomposition is an exact mathematical relationship and, therefore, cannot be used for establishing causality. We have ourselves pointed out this in our paper. Nonetheless, the methodology enables one to draw interesting inferences. For example, the inequality effect tells us whether or not growth in the economy is accompanied by a redistribution of income in favour of the poor. It should not, however, be interpreted to mean that growth is *causing* a redistribution of income. Even if we do not know what is causing the redistribution, it is nonetheless important to know whether or not growth is *accompanied* by a redistribution. For example, if the relationship between growth rate and inequality effect is found to be significantly positive, we may conclude that the growth process tends to benefit the rich proportionately more than the poor, even if the causality is not known. Since the relationship between growth and inequality is expected to be non-linear (Kuznets 1955), the correlation coefficient which measures the deviations from the linearity may invariably show that the variables are either not related or weakly related. In such situations, the best procedure is to use the rank transformations which have been found to be robust and powerful. In this section, we present results on Spearman's rank correlation coefficient to test whether there exists an association between the two variables. The test statistic where

$$t = \frac{\rho\sqrt{n-2}}{\sqrt{1-\rho^2}}$$

ρ being the rank correlation is distributed approximately as student's t-distribution with $(n-2)$ degrees of freedom. This approximation suggested by Pitman [1937] has been shown to perform better than the usual normal approximation (Iman and Conover 1978). Table 1 presents the correlation coefficients between growth rate and inequality effect and also between growth rate and total poverty effect. The student t value is calculated using 14 degrees of freedom.

The correlations in Table 1 suggest that the association between the growth rate and the inequality effect is positive and significant only in the first period (1973-74 to 1977-78). The relationship became insignificant during the subsequent periods. Thus, the adverse effect of income redistribution on poverty is supported only in the first period but not in the two subsequent periods. Although the factors that may have contributed to the virtual absence of this relationship in the subsequent periods are difficult to establish empirically, it is at the same time difficult to dismiss entirely the role of anti-poverty interventions introduced in this period especially because the scale and delivery of this effort stood in contrast to the piece-meal efforts of the past.

The correlation between the growth rate and the total percentage change in poverty was found to be negative and significant during all the three periods (with one exception being the poverty-gap ratio for the ultra poor during the 1973-74 to 1977-78 period when the correlation was not significant at 5 per cent level). It implies that a positive growth generally tended to reduce the poverty. Although these observations tend support to the 'trickle-down' hypothesis, anti-poverty interventions may have played an important role in suppressing the adverse effects of income redistribution which might have resulted because of the growth. The impact of the growth without anti-poverty interventions would have been smaller as we observed during the 1973-74 to 1977-78 period.

TJ went to such a great length just to point out that the growth effect is more dominant than the inequality effect. This is quite obvious from our tables. An important observation made in our paper was that the inequality effect was generally positive in the 1973-74 to 1977-78 period but it became generally negative in the subsequent period. Thus, in the first period the redistribution of income increased poverty whereas in the second period it reduced it. Consequently, the proportional reduction in poverty was greater in the second period than in the first period despite the lower growth rate in the second period. It is not

Table 1: Rank Correlations between Growth Rates in Per Capita Household Expenditure and Inequality and Total Poverty Effects

Period	Growth Rate and Inequality Effect		Growth Rate and Total Poverty Effect	
	Correlation	t-value	Correlation	t-value
		Head-count ratio poor		
1973-74 to 1977-78	0.62	3.2*	−0.68	−3.7*
1977-78 to 1983	0.33	1.4	−0.75	−4.5*
1983 to 1986-87	−0.03	0.1	−0.62	−3.1*
		Head-cout ratio ultra poor		
1973-74 to 1977-78	0.58	2.9*	−0.59	2.9*
1977-78 to 1983	−0.02	−0.1	−0.83	−6.1*
1983 to 1986-87	0.04	0.2	−0.56	−2.7*
		Poverty gap ratio poor		
1973-74 to 1977-78	0.66	3.5*	−0.57	−2.8*
1977-78 to 1983	0.13	0.5	−0.79	−5.1*
1983 to 1986-87	−0.01	−0.1	−0.57	−2.8*
		Poverty gap ratio ultra poor		
1973-74 to 1977-78	0.66	3.5*	−0.39	−1.7
1977-78 to 1983	0.05	0.2	−0.68	−3.7*
1983 to 1986-87	−0.06	−0.3	−0.53	−2.5*

Note: Asterisk indicates that the correlation is significant at 5 per cent level.

clear from TJ's writing why these conclusions do not follow even descriptively from a careful examination of our tables. They repeatedly make criticisms without providing explanation.

The decomposition proposed in the paper has important implications for the 'trickle-down' mechanism which is widely talked about by economists. Unfortunately, TJ dismiss this approach by calling it descriptive or non-causal. They further assert that there are interpretational problems with the decomposition of which we are not aware. The authors make such criticisms without providing any explanation. The only point on decomposition methodology raised by TJ is that depending upon in which year (base or terminal) Lorenz curve is kept unchanged the results can have very different interpretational implications. This is a valid point. The choice of the year is abritrary. We chose the base year Lorenz curve because we felt that this was a natural choice. If TJ provided a rationale for selecting the terminal year Lorenz curve, we would, of course, adopt it but we believe that there exists no such rationale. It might interest *EPW* readers to note that the same authors have written a paper (June 1990 after our paper was published) using the same decomposition.[2]

Growth and Inequality Elasticities

TJ argue that the growth and inequality elasticities estimated by us are of no value in the absence of an explicitly formulated economic model incorporating the mechanisms and processes connecting poverty, mean PCHE and relative inequality. We never implied that these elasticities would provide any clues to causality. Our aim in computing these elasticities was more modest, viz, to examine whether or not there is a temporal tendency for the poverty ratio to exhibit greater (or lesser) responsiveness to changes in growth and inequality. The question 'how' growth was impinging on poverty was never asked. Of course, it would be nice to formulate an economic model which incorporates all the processes concerning poverty but such a model has to be a fully blown general equilibrium model encompassing all the sectors of the Indian economy and their linkages to the foreign sector. We invite TJ to attempt such a model and throw light on causality.

In this context, TJ also point out that the elasticities are point elasticities and, therefore, are conditional upon the points of evaluation which should be kept constant in order to detect true inter-temporal changes. It seems that they have completely missed the meaning of these elasticities. It is true that the Engel elasticities are computed at a given point because they are generally not invariant to the points at which they are evaluated. TJ are extending the same idea to the growth and inequality elasticities. These elasticities are computed from given income or expenditure distributions. They are in fact fixed for a given distribution. Any provided the methodology which can encompass alternative assumptions. It is not clear whether TJ are criticising our assumption or the methodology itself. All economic models are constructed on the basis of some assumptions and, therefore, the conclusions emerging from them are never unambiguous. Thus their criticisms relating to our elasticity calculations are unnecessary.

The final point on elasticities made by TJ is that growth and inequality elasticity cannot be related to growth and inequality effects. This is correct but we have not made any attempt to relate the two. Elasticities measure the responsiveness whereas effects measure the actual change due to growth and income redistribution. Elasticities are computed on the basis of expenditure distribution for one year only whereas to compute growth and inequality effects we require expenditure distributions in two periods. Both these concepts convey quite different information about the characteristics of poverty. The elasticities are useful for simulating the effect of alternative policies. But it is equally useful to explain the actual changes in poverty. It is puzzling to know what point TJ are making by alleging that we are relating the two concepts. On the basis of the magnitudes of inequality elasticities, we do make two statements: (1) if the inequality deteriorates during the course of economic growth poverty may increase even with a faster economic growth because of temporal change in them reflects the changes taking place in the income distributions. It makes little sense to fix a point of evaluation.

As pointed out in our paper, the computation of poverty elasticity with respect to inequality is difficult because keeping per capita consumption constant, inequality in distribution can change in infinite ways. To compute this elasticity we need to make an assumption as to how inequality is changing; for instance, whether inequality is increasing by decreasing the share of the poor or increasing the share of the rich. In our paper, we have clearly stated that inequality elasticities are based on a proportional shift in the Lorenz curve and, therefore, are not unambiguous. This assumption may not be acceptable but one can compute these elasticities with alternative assumptions. We have

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increasing inequality elasticity; and (2) both growth and inequality elasticities are considerably higher for the ultra-poor than for the poor implying that increasing inequality will hurt ultra-poor more than the poor. Then TJ go on to say, "both the statements imply general reduction in inequality and not a particular characterisation used in B". This statement is based on the mistaken impression that we related inequality effects and elasticities. We made no effort to establish causality between growth, inequality and poverty. It seems that TJ have completely misinterpreted what has been said in our paper.

Data-Related Problems

TJ raised two other data-related points. They argue that 1977-78 NSS poses problems as it reports unusually high proportion of expenditures on durables at the top open-ended class interval. We have no access to their *all-India* analysis of this problem; we did, however, look at this problem at the *State-level* and found it relevant only for two States, Maharashtra and Rajasthan, and made appropriate adjustments. It is worth stressing that a judgment on how serious is this problem is essentially a subjective judgment. We believe the problem is more serious in the two States mentioned. The expenditure figures on durables in the other States did not lead us to suspect their accuracy. TJ, however, are right in pointing out that the adjustments made for Maharashtra and Rajasthan in real mean PCHE have not been carried over to our decomposition exercises for period I. This was done in our revised, recent version of the paper [Kakwani and Subbarao, 1990a], and we found no change in the direction of results.

TJ also point out that we have made some calculation errors in computing PCHE. To clarify our position, we only need to repeat the procedure we adopted in computing all-India PCHE. We have adjusted the expenditures in current prices for each State for State-wise price differences (both over time and across States) and then aggregated to derive all-India real PCHE estimates. Our estimates, therefore, need not correspond with those all-India PCHE estimates derived on the assumption that the price levels in different States are the same each year. Moreover, our all-India estimates of the real PCHE are based on the average for 15 States whereas the published all-India tables are averages for more than 15 States. Thus, the observed differences in the numerical results are to be expected owing to differences in methodology and coverage; they do not reflect lack of care on our part but a lack of understanding on the part of TJ about the procedure we used in estimating all-India PCHE.

Regressions

It is quite obvious from even a casual reading of our paper that regression relationships were not estimated to establish causality. Our purpose was again limited to testing the hypothesis whether or not there exists a significant association between the variables. If the association is found to be statistically insignificant, it would most likely imply a non-existence of causal relationship. But if the association is statistically significant, it would only mean monotonicity in the relationship between the variables. One would then require further investigation to establish causality. This task could have been accomplished by using correlation coefficients. But we used regressions because they immediately provided us with the t-values.

Other Issues

Finally, TJ object to our use of two-point comparisons. It is well known that NSS is now available only quinquennially and one can only compare five-year periods so that, contrary to TJ's hope, there is no way one can get a complete time series for the 1970s and the 1980s. TJs references to the problems created by the dance of the monsoons is a real one; but we disagree with their view that the years chosen by us are "exceptional years", especially when analysis is conducted at a disaggregated State-level; we also do not see much logic in ignoring observations on the basis of such factors as the rate of inflation. It is worth stressing no two years can ever be "identical years" from the viewpoint of sectoral, macro, fiscal and monetary angles even if data were available on a time series basis; every year has some year-specific factors associated with it. Variation is the reality and it is the analysts' job to explain this variation, of course with due regard to exceptional extraneous occurrences (such as the drought of 1987). We believe there was no such exceptional occurrence in the chosen years; we hasten to add that it is our personal judgment. Moreover, purists might argue—and TJ may be in sympathy with them—that we need at least 20 observations, and given five yearly surveys, we need to wait for a hundred years to do any meaningful analysis of poverty "trends" in India. In that sense, we have no hesitation in saying that we do not belong to the category of purists.

The above discussion shows that there was nothing wrong with our methodology and the deflator chosen; causality was never implied (let alone established) by us; the qualitative conclusions of our paper nevertheless hold good; that there were no errors in our estimation, and that TJ's suggestion of haste in our publication is without any basis.

Notes

1 We have greatly benefited from discussions with Martin Ravallion who suggested to us to separate the interaction term from the inequality effect. For an excellent discussion of the decomposition see Datt and Ravallion [1990].

2 The decomposition proposed by TJ makes little intuitive sense. It is beyond the scope of the present note to provide a detailed critique of it.

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16

SCs and STs in Eastern India
Inequality and Poverty Estimates

Mridul Saggar
Indranil Pan

This paper employs inequality and poverty measures to consumption expenditure data for SCs, STs, and other households in four eastern states published by NSSO. Inequality and poverty differences among SCs, STs and other households, rural-urban disparities and inter-state variations in these respects are considered. The eastern region as a whole suffers from economic backwardness and large incidence of poverty and this is specially true for SCs and STs. Rural-urban disparities in consumption also exist with the urban sector better-off than the rural sector. Also, the SCs were found to be comparatively better-off than the STs. However, the generally held view that large inequalities exist among SCs and STs is ill-founded. State level comparison shows Assam to be performing better than the others, with lower poverty levels and more egalitarian distribution of consumption.

I
Introduction

THIS paper employs inequality and poverty measures to consumption expenditure data for SCs, STs and other households in four eastern states, viz, Assam, Bihar, Orissa and West Bengal. Consumption expenditure pattern is analysed to examine: (i) inequality and poverty differences among SCs, STs and other households, (ii) rural-urban disparities, and (iii) inter-state variations. Data generated by the 38th Round of National Sample Survey (NSS) is used for this purpose.

While studies abound on the consumption inequalities among rural and urban households for various expenditure classes, little effort has been made to compare the consumption levels of SCs and STs with those of other households in both urban and rural sectors. To our knowledge, the only study on the levels of living of SCs and STs is by Vijay Nayak and Sailaja Prasad (1984). Using ungrouped NSS data for the 28th and 32nd Rounds, they compare the levels of living, inequalities in the levels of living and disparities in the levels of education and occupational structure of SCs/STs *vis-a-vis* the non-SCs/STs (i e, other households) in Karnataka during 1973-74 and 1977-78. They conclude that the SCs/STs have a lower standard of living than the non-SCs/STs. Though there has been a fall in the standards of living in real terms for both SCs/STs and non-SCs/STs over the two periods, the SCs/STs seem to have suffered more. It is also found that inequality is less within SCs/STs as compared to non-SCs/STs. Inequality within all groups has also increased, with the SCs/STs registering a sharper rise than the non-SCs/STs. Inequality within all groups has also increased, with the SCs/STs registering a sharper rise than the non-SCs/STs. Such analysis can provide useful input for framing development programmes in the country. Unfortunately, ungrouped data are not published by the National Sample Survey Organisation (NSSO), nor is the age or class composition of its sample available. Only a select few have access to original NSS tapes and perhaps this has dissuaded researchers to work in this area. However, information on consumption of SCs, STs and all households generated by the 38th Round was published by the NSSO in *Sarvekshana* (1989) in the form of grouped data.

The study is presented under the following sections. Section II gives information on the data set and the choice of methodology. Section III gives some preliminary observations and Section IV presents the results on disparities in the consumption levels. Section V covers findings on poverty indices. Section VI concludes the study by summarising the findings, makes brief comments on policy aspects and implores for more research in the area.

II
Data Source and Methodology

Data Source

Household budget surveys have traditionally provided enormous insight into the problem of inequalities, particularly in respect of income and consumption. Contemporary literature on the subject has increasingly relied on longitudinal studies. In the absence of institutional support in India for panel data, longitudinal studies are scanty and no generalisations are possible to support macro policy changes. As such, this study also takes recourse to the NSS data.

The paper uses estimates of the 38th Round of the NSS which relate to the period December 1982 to December 1983. The reference period was 30 days prior to the enquiry conducted during calendar year 1983. We analysed the data for both rural and urban SCs, STs, and other households for the four eastern states—Assam, Bihar, Orissa and West Bengal. However, data for other households for all the states considered were not directly obtained from the publication. These were derived as a residual from the data for all households after taking out the effects for SC and ST population through the use of proportion of SCs and STs in total population as published by the NSSO in *Sarvekshana* (1989). Also, data for urban STs was available only for Orissa. The survey captured expenditure on domestic account, including consumption out of non-marketed self products, gifts and transfers but excluded transfer payments, expenditure on residential housing and expenditure on household enterprises. The sampling design for both rural and urban sector was a two-stage stratified sampling[1]. While the NSS sampling design is based on scientific principles despite not being random, it nevertheless suffers from some limitations. These limitations are, however, not discussed here as they have been already widely documented in the literature[2].

Methodology

Inequality Measures

Consumption inequalities in the four eastern states is captured in the study by employing the following alternative measures: coefficient of variation, Gini coefficient, Atkinson's index and Theil's entropy measure. The choice of these measures was influenced by the properties of these indices. All the above mentioned indices satisfy the three basic properties that an inequality index should ideally possess, viz, (1) mean or scale independence: the index should be invariant to scaling up or down of everyone's income by a constant proportion; (2) population size independence: index should be invariant to scaling up or down of population at each income class by a constant proportion; and (3) Pigou-Dalton criteria: index value should decline on any transfer

from richer to poorer person that does not disturb the relative ranks of these persons[3].

The geometric definition of the Gini coefficient is used in this paper. It is given by

$$G = 1 - [\Sigma (F_{j+1} - F_j)(Q_{j+1} + Q_j)]$$

where $F_j = \Sigma n_i / n_0$ is the cumulative population share in each class, n_i being the cumulative population up to the ith class and n_0 being the total population. $Q_j = \Sigma n_i x_i / n_0 e$, where, x_i is the mean consumption expenditure of the ith class and e is the mean consumption expenditure over the entire distribution. The data is of course arranged in ascending order of per capita expenditure for the whole distribution for computing F_j and Q_j. Alternatively, other methods developed by Kendall and Stuart (1963), Rao (1969), Sen (1973) and Fei and Ranis (1974) may be used to compute the Gini ratio[4]. However, all these measures can be shown to be equivalent to the geometric definition as is demonstrated in Sudhir Anand (1980, pp 311-316).

Theil's entropy index T is defined as

$$T = \left\{\Sigma \left[\frac{Y_i}{Y}\right] T_i\right\} + \left\{\Sigma \frac{Y_i}{Y} \log (Y_i/Y)(n_i/n)\right\}$$

where Y_i denotes the mean expenditure in the ith class and Y is the mean expenditure of the entire population. The first term captures the within group inequality and the second term captures the between group inequality. Since the grouped data from NSS does not permit us to capture within group inequalities, our computations of Theil's index was reduced to computing only the second term in the above expression.

Atkinson's index (1970) is of particular interest to economists as it is normative in nature and based on social welfare evaluation of income distribution $y = (y_1, y_2, \ldots, y_n)$ among n individuals. The Atkinson's Index, I is defined as

$$I = 1 - \left(\frac{Y_{EDE}}{\mu}\right)$$

where Y_{EDE} is equally distributed expenditure obtained from a given social welfare function. It gives the level of per capita expenditure which, if equally distributed would give same social welfare as at present. μ denotes the average for the whole population. The formula can be translated for computational convenience as

$$I = 1 - \left[\Sigma \left(\frac{y_j}{\mu}\right)^{1-\varepsilon} \left(\frac{n_j}{n_0}\right)\right]^{1/1-\varepsilon} \qquad \text{for } \varepsilon \neq 1$$

and

$$I = 1 - \left[\pi \left(\frac{y_j}{\mu}\right)^{(n_j/n_0)}\right] \qquad \text{for } \varepsilon = 1$$

where ε represents the inequality aversion parameter. Higher the value of ε, more averse the society is to consumption inequalities. Since I is a normative index, the choice of ε depends on value judgement. Atkinson (1970) uses $1.0 < \varepsilon < 2.5$ in the empirical sections of his paper. Stern (1977) presented a number of arguments in support of ε values between 1.5 and 2.5. We computed the index for ε values of .5, 1.0, 1.5, 2.0, 2.5 so as to provide a thorough picture.

Poverty

By the very nature of the word 'poverty', normative element creeps into its measurement. The concept of poverty depends upon some absolute or relative notion of who is poor. Traditionally, the absolute poverty concept has been adopted in India in which absolute minimum standards of living are fixed in terms of income/consumption expenditure translated from nutritional requirements measured in calories[5]. The Dandekar-Sukhatme controversy in this regard is well entrenched in Indian economy literature. Here, we only wish to attract the readers' attention to the vexed issues relating to the choice of appropriate consumer price indices (CPI) for estimating the incidence of poverty, and recommend Minhas et al (1986) as a ready reference. The problem was compounded in our case as for analysing poverty in select states, the all-India price indices or poverty lines were not representative of these states. Therefore, we found it more appropriate to use statewise poverty lines for rural and urban areas for the year 1983, computed by Jain and Tendulkar (1990). The authors had updated the poverty line defined by Planning Commission for 1962 by using a middle-range CPI at all-India level and then adjusted for the differential in prices in a given state relative to all-India. The poverty lines in terms of mean per capita expenditure (MPCE) for the country and the four eastern states in 1983 are shown in Table 1.

Using the above poverty lines, two alternative measures of poverty were computed for the four eastern states—the head count ratio (H) and a variant of the Foster-Greer-Thorbeck (henceforth FGT) index. The former was chosen for its simplicity and the latter for its properties. The head count ratio is defined as H=n/N where n is the number of poor among the total population, N. H measures the incidence of poverty but does not quantify the aggregate income needed to lift all the poor to the level of poverty line.

In view of the limitations of the head count ratio, Amartya Sen (1976) proposed that poverty measures should satisfy the monotonicity axiom, the transfer axiom and the transfer sensitivity axiom. We opt to use the FGT index in our poverty analysis for the eastern states, as this is one index which satisfies Sen's three basic axioms as well as meets the decomposability property. The index is defined as

$$P_\alpha(y, y_\alpha) = \frac{1}{N} \Sigma \left[\frac{(Z - Y_i)}{Z}\right]^\alpha$$

where Z is the poverty line, Y_i is the income of the ith person and α is the poverty aversion parameter. A larger α gives greater emphasis to the poorest poor. The computation of the FGT is not a straightforward affair in the Indian context, as the published NSS data gives the expenditure distribution in the form of grouped data. Instead, we chose to use the FGT variant developed by Suryanarayana and Geeta (1992), which derives an expression for P_α assuming income distribution to be lognormal with two parameters, mean, θ and the standard deviation, γ of log variable. The P_α measure so defined is applicable to grouped data and takes the form

TABLE 1: STATEWISE POVERTY LINES IN TERMS OF MPCE AT 1983 PRICES

(Rs per month)

	Assam	Bihar	Orissa	West Bengal
Rural	103.50	105.33	103.53	109.69
Urban	96.23	116.81	129.94	100.12

TABLE 2A: MEAN, MEDIAN AND MODE OF MONTHLY PER CAPITA EXPENDITURES BY HOUSEHOLD GROUPS FOR THE STATES IN DIFFERENT SECTORS

	Mean	Median	Mode
Assam			
Rural SC	111.08	103.8	89.25
Rural ST	108.78	100.14	82.87
Rural others	114.02	105.64	88.87
Urban SC	113.73	105.56	89.22
Urban ST	—	—	—
Urban others	167.08	144.29	98.70
Bihar			
Rural SC	76.38	68.47	52.62
Rural ST	80.77	70.23	49.15
Rural others	100.84	88.66	64.30
Urban SC	121.21	95.19	43.15
Urban ST	—	—	—
Urban others	142.08	119.27	73.66
Orissa			
Rural SC	87.31	79.27	63.20
Rural ST	72.71	65.64	51.50
Rural others	111.60	97.74	70.02
Urban SC	115.75	106.63	88.38
Urban ST	111.84	95.50	62.83
Urban others	164.60	136.92	81.57
West Bengal			
Rural SC	94.99	82.33	57.01
Rural ST	85.26	76.93	60.27
Rural others	111.42	95.76	64.44
Urban SC	133.07	109.47	62.27
Urban ST	—	—	—
Urban others	175.96	139.01	65.12

$$P_\alpha = \frac{1}{Z^\alpha}\left[Z^\alpha \cdot G\left(\frac{\ln Z - \theta}{\gamma}\right) - \binom{\alpha}{1} Z^{\alpha-1} e^{\gamma(\alpha-1)} G\left(\frac{\ln Z - (\theta+\gamma)}{\gamma}\right) + \binom{\alpha}{2} Z^{\alpha-2} e^{2\gamma(\alpha-2)} G\left(\frac{\ln Z - (\theta+2\gamma)}{\gamma}\right) + \ldots + (-1)^r \binom{\alpha}{r} Z^{\alpha-r} e^{r\gamma(\alpha-r)} G\left(\frac{\ln Z - (\theta+r\gamma)}{\gamma}\right) + \ldots\right]$$

where r is any rational number, reflecting the choice of α greater than or equal to 0. We computed the P_α for $\alpha = 0, 1, 2, 3$. For $\alpha > 1$, the monotonicity and transfer axioms are satisfied, while for $\alpha > 2$, transfer sensitivity axiom is also satisfied. It is also interesting to note that as α increases, P_α decreases and for increasingly large values of α, P_α tends to zero as it gives an overriding weightage to the transfer sensitivity axiom. Thus, it was considered appropriate to compute the measure only for some restricted values of α terminating at 3 at the upper end.

III
Preliminary Observations

Before analysing the results obtained from a wide array of measures employed from among the ones cited in the preceding section on methodology, a few preliminary observations about the consumption levels by comparing the MPCE would be in order. The averages for household groups in rural and urban areas for the four states is presented in Table 2A. Table 2B gives the index numbers of MPCE in the four states, taking the all-India MPCE as 100. Table 2C gives a comparative picture of MPCE by household groups in these states, by taking the MPCE for all households in each state to be 100. Thus Table 2B gives us an across-state comparison of average MPCE and Table 2C gives us an across-household comparison of average MPCE in each of the four states. Table 2D presents the MPCEs in rural areas as a percentage of MPCEs in the urban areas, to facilitate finding out the rural-urban divide in each state.

The following observations emanate from Tables 2A, 2B, 2C and 2D :

(1) The MPCE of SCs and STs is considerably less than that of other households for all the states in both rural and urban areas (Tables 2A and 2C). Though this appears to be a trivial finding that conforms to general expectations, it nevertheless is central to the whole issue as it establishes that SCs and STs are economically weaker and, therefore, there is a prima facie case for policy intervention to improve their consumption standards.

(2) Rural Assam constitutes a striking exception to the first observation as the MPCE of SCs and STs is only marginally below that of the other households in this region. In terms of the Index numbers of MPCE with respect to MPCE for all households of Assam, the average consumption of SCs is only 1.7 per cent below the state average and that of STs is only 3.8 per cent lower, while that of non-SC/ST household is merely 0.9 per cent above the state average (Table 2C). This clearly testifies to near absence of inter-class disparities in rural Assam. It may be pointed out here that assistance of term lending institutions and banks did not reach the desired levels due to low absorption capacity of the region; the credit-deposit ratio for Assam was as low as 46.8 per cent in March 1982. As for the public expenditures, though tribal sub-plans and plans for SCs were in vogue, no major thrust was made in the direction. Therefore, we found no ready explanations for low inter-class disparities. To an extent the answers would lie in the realm of sociological structure but we would not wish to speculate. We would rather welcome supportive research effort in this area from those well-versed with micro-level realities of the state. Unfortunately the 1981 census could not be held in Assam due to disturbed social conditions. As a result not enough social indicators are available for the state.

(3) The MPCE is marginally higher for SCs compared to STs except in case of rural Bihar. This makes out a case for special development programmes for regions inhabited by STs. The broad division of resource allocation for poverty alleviation and rural development should reflect some bias in favour of STs *vis-a-vis* SCs.

(4) The average consumption level of STs in Bihar compares favourably to that of SCs (Tables 2A, 2C). This *inter alia* reflects the effective targeting of special development programmes for STs. A large segment (93 per cent) of the ST population in the state is concentrated in the Santhal Parganas and north and south Chotanagpur district. Of the 193 blocks in this region, sub-plans for tribal area development were operational, in early 80s, in 112 blocks. These were the blocks in which ST population exceeded 50 per cent of the total population. As part of the sub-plans, the blocks were grouped under 14 Integrated Tribal Development Programmes and provisions were made for agriculture, animal husbandry, milk, education, health, etc. and steps were undertaken to strengthen administrative structure. Since 1976-77, separate provision was made in budget of the state government for these sub-plans with a share in state expenditure ranging from 13 to 19 per cent of the total state plan. Supplementary policy actions were also undertaken in the form of special allocations for STs under education, housing, etc, and launching of the Mada programme for socio-economic development of STs.

(5) The rural-urban divide in consumption standards exist (Table 2D). The disparities are higher in case of West Bengal than other eastern states, both for SCs and non-SCs, except in case of Bihar SCs. This is somewhat surprising as the political base for the ruling party in West Bengal comes largely from the rural areas. In case of Assam, the absolute consumption levels of SCs are same in rural and urban areas.

(6) The MPCE of non-SC/ST households in all four eastern states are below the all-India

TABLE 2D: MPCE IN RURAL AREAS AS A PERCENTAGE OF MPCE IN URBAN AREAS FOR SC AND ST IN DIFFERENT STATES

	Assam	Bihar	Orissa	West Bengal
SC	97.67	63.02	75.42	71.39
ST	—	—	65.02	—
Others	68.24	70.98	67.80	63.32

TABLE 2B: INDEX NOS OF MPCE BY HOUSEHOLD GROUPS FOR STATES IN THE TWO SECTORS WITH RESPECT TO ALL-INDIA MPCE

	Rural			Urban		
	SC	ST	Others	SC	ST	Others
Assam	111.77	124.81	94.69	88.20	—	97.08
Bihar	80.99	92.68	83.74	94.00	—	82.55
Orissa	92.57	83.43	92.68	89.76	84.02	95.64
West Bengal	100.72	97.83	92.53	103.20	—	102.24
All-India	100.00	100.00	100.00	100.00	100.00	100.00

TABLE 2C: INDEX NOS OF MPCE BY HOUSEHOLD GROUPS FOR STATES IN THE TWO SECTORS WITH RESPECT TO STATE MPCE FOR ALL HOUSEHOLDS

	Rural				Urban			
	SC	ST	Others	All	SC	ST	Others	All
Assam	98.27	96.24	100.88	100	70.87	—	104.12	100
Bihar	81.47	86.14	107.55	100	86.84	—	101.79	100
Orissa	89.56	74.59	114.49	100	76.48	73.89	108.75	100
West Bengal	90.81	81.51	106.52	100	78.30	—	103.54	100

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levels, except in case of urban West Bengal (Table 2B). The consumption standards are strikingly low in case of Bihar with the indices of 83.74 and 82.55 for rural and urban areas, respectively. For SCs and STs, the consumption standards are remarkably above the all-India levels for rural Assam. However, it is worrisome to note that MPCE in both rural and urban areas of Bihar and Orissa compares poorly with all-India levels for all categories. The relative backwardness of these two states should be considered in shaping the policies and perhaps the Planning Commission and the Finance Commission need to impart a still sharper edge to their redistributive policies in an effort to strike a regional balance in growth and development process.

IV
Inequality Estimates

We had earlier brought to fore the striking result of MPCE of rural SCs and STs in Assam being only marginally below that of non-SC/ST rural population of Assam (Table 2C). The inequality measures computed here (Tables 3A and 3B) bring to fore an additional feature in case of SC/ST population of rural Assam. Not only are the MPCE of SCs and STs of rural Assam in tune with general rural population of the state, but also their consumption expenditure is fairly equally distributed across the SC/ST population. This is reflected by a relatively low coefficient of variation of 0.33 in case of rural SCs and 0.37 in case of rural STs. These coefficients are lower than the coefficient for all the categories for all the states. This observation is valid even for other measures of inequality. The Gini ratios, excluding the state of Assam range from a low of 0.23 in case of Bihar rural SCs to a high of 0.33 in case of non-SC/ST urban population of West Bengal. In comparison, the Gini ratios for SCs and STs of rural Assam were as low as 0.17. Theil and Atkinson index also revealed similar results in terms of inter-state and inter-class comparisons. In contrast, there are strikingly high inequalities in consumption expenditures in case of urban SCs of Bihar and non-SC/ST population of urban West Bengal. Consistently, the inequality measures were higher for these two categories than for any other category of any other state. While the high inequalities are a disconcerting feature by nature, one can draw some comfort from the fact that the MPCE for these two categories is not very low compared to the all-India levels and this is reflected in the MPCE indices in Table 2B.

Some other striking observations can also be made in light of Tables 3A and 3B. First, the economic inequalities remain high in the state of West Bengal despite the conscious endeavour for a designed state intervention in favour of redistributive measures. In absence of inter-temporal data on consumption pattern of SCs and STs a definitive conclusion is not possible on whether the inequalities are accentuating or going down over time. However, from the available information from the 38th Round it is axiomatic that urban inequalities are the highest from among the four eastern states and even the rural inequalities are high enough. For most of the cases, the Gini, Theil and Atkinson indices for SCs, STs and other households in West Bengal are higher than in two other eastern states, viz. Bihar and Orissa, which are known for their iniquitous structure and class conflicts. A second striking result is that while the rural-urban divide exists in terms of higher MPCE for urban areas, the divide works the other way round when inequality measures are considered and the urban areas suffer from distinctly higher inequality. Both the exponents as well as detractors of the inverted-U hypothesis would agree that in initial phases of high growth inequalities would accentuate. Urban areas are now set on a higher growth path than the rural areas and it is only natural that they record a higher level of inequalities. We find that except for the case of Orissa, the inequality measures are higher for urban population of all the other states in all categories compared to the rural segments. Incidentally, the result also provides a rationale for the prevailing urban bias in raising tax revenue, but should not be interpreted to negate the possibilities of taxing agricultural sector altogether. On the other hand, the higher inequalities in urban areas should awaken policy-makers to the need for implementing urban poverty alleviation and employment generation programmes with as much vigour as they do in case of rural areas. The third and the final striking result brought out by this section is that, in general, the consumption inequalities are lower in case of SC and ST population as compared to other households. Exceptions to this rule are rural Orissa, where inequality indices are more or less same across all the three categories and urban Bihar where there is disconcertingly high inequality among SC population. The lower inequality among SC/ST population in general is indeed an important result that tends to provide a rationale for state intervention through programmes designed specially for SC and ST population. Such direct targeting for SCs and STs would have lost moral force in case inequalities were high among SCs and STs, in which case economic criteria and not the caste criteria would be preferable for targeting of development programmes. Our findings need not be interpreted to altogether discount the possibility of a conjunction of caste-cum-economic criteria. But, certainly the lower inequalities among SCs and STs provide a rationale for targeting SC and ST population as a group.

The analysis till now was made at an aggregative level using the total per capita expenditure across all commodities. It would be interesting to see how the consumption profile shifts across classes and whether expenditure pattern is more unequal for some commodity groups compared to others. While far greater insight on this issue can be drawn from estimates on Engel elasticities (which is not taken up in this paper), we nevertheless feel that interesting observations can be made by comparing the concentration ratios for select commodity groups. These ratios are presented in summary form in Table 4A to Table 4D for four major commodities—total cereals, milk and milk products, fuel and light and clothing; and for total expenditure on food and total expenditure on non-food items.

It is notable from the tables that concentration ratios for expenditure on non-food items is much higher than on food expenditure and this observation is true for all groups and all states covered in the analysis and in several cases the former is more than twice the latter. This result is hardly surprising as it is in complete conformity with consumer theory. Food items are a necessity and should, therefore, have a lower income and price elasticity. Therefore, expenditure on food items can be expected to be more equal across expendi-

TABLE 3A: MEASURES OF INEQUALITY: COEFFICIENT OF VARIATION, GINI RATIO AND THEIL'S ENTROPY INDEX

	Coeff of Var	Gini	Theil
Assam			
Rural SC	.33	.171	.022
Rural ST	.37	.174	.025
Rural others	.41	.197	.030
Urban SC	.40	.218	.033
Urban ST	—	—	—
Urban others	.64	.275	.066
Bihar			
Rural SC	.49	.225	.041
Rural ST	.54	.270	.053
Rural others	.53	.246	.048
Urban SC	.83	.325	.096
Urban ST	—	—	—
Urban others	.60	.296	.065
Orissa			
Rural SC	.49	.242	.044
Rural ST	.50	.245	.046
Rural others	.52	.244	.047
Urban SC	.47	.236	.042
Urban ST	.53	.239	.047
Urban others	.58	.294	.064
West Bengal			
Rural SC	.64	.276	.063
Rural ST	.47	.237	.041
Rural others	.57	.288	.061
Urban SC	.60	.293	.064
Urban ST	—	—	—
Urban others	.66	.327	.079

ture groups than one can expect in case of non-food items.

Within the food group, the concentration ratio is considerably low for cereals than for milk and milk products. This again appears logical as cereals intake is necessary for survival and enters the consumption basket of poor and rich in accordance with the body needs. The higher total expenditure of rich is mostly on account of items other than cereals, such as clothing or milk and milk products. Among the non-food items, the concentration ratio for fuel and light was considerably lower than clothings. This result may surprise some but those conversant with rural realities would realise that fuel and light is as much a necessity for rural households as for urban and as much a necessity for poor as for rich, the only difference may be in the mix of energy sources for fuel and light and not necessarily in the expenditure thereupon.

Comparing the concentration ratios across rural and urban households, it is manifest that while the urban Gini ratios for total expenditure may be somewhat higher (Table 3A), the concentration ratio for cereals is mostly higher in case of rural households, perhaps because part of the rural population may not have access to minimum cereal requirements. The clothing concentration ratio is somewhat higher in case of urban households except for some anomalies. In any case this ratio is quite high, both for urban as well as rural areas. This reflects the broad social milieu in which quality of clothing and, therefore the expenditure thereupon, reflect the social status. This prompts the higher income brackets to spend progressively and disproportionately higher amounts on clothing.

The comparison of concentration ratio for SC and ST population with those for other households shows that in most cases inequality is higher in non-SC/ST population. This trend is mainly on account of higher variations in non-food expenditure of non-SC/ST population as that on food items is found to be much more egalitarian. The concentration ratio for cereals, in general, was found to be somewhat higher for SCs and STs as compared to non-SC/ST households. Considerably higher inequalities existed in case of milk and milk product consumption of SC/ST households, with the concentration ratio being quite high (.533 to .784) in case of Orissa, both in urban and rural areas. Perhaps the milk marketing network needs to be strengthened in eastern India. The Operation Flood gains in case of western and northern India are well known. The programme needs to shift its attention to hitherto neglected eastern region and the NDDB should be asked to spread its network in the four eastern states in close co-operation with the state governments. As for the high concentration ratio in case of clothing, nothing much can be done except that low cost clothes can be made free of excise duty while most of the revenue may be raised from high cost clothes. To some degree such a fiscal policy design already exists but it may not have contributed a great deal to the lowering of concentration ratio as the producers of high cost clothes are in better position to shift the incidence of tax back to the consumers, because the high income bracket has the ability to pay.

V
Poverty Estimates

Using the poverty lines in 2.2 2. for computing the head count ratio and the FGT variant for grouped data, poverty estimates were obtained for SCs and STs and other households for the four eastern states. The results obtained are presented in Tables 5 and 6.

From the head count measure it is obvious that the incidence of poverty is alarmingly high among SC and ST population, both in rural and urban areas of Bihar and Orissa

TABLE 3B: MEASURES OF INEQUALITY—ATKINSON INDEX

	Values of Epsilon				
	0.5	1.0	1.5	2.0	2.5
Assam					
Rural SC	.024	.047	.068	.088	.108
Rural ST	.027	.051	.072	.091	.109
Rural others	.033	.064	.092	.118	.144
Urban SC	.037	.074	.108	.141	.17
Urban ST	—	—	—	—	—
Urban others	.068	.122	.167	.206	.24
Bihar					
Rural SC	.044	.083	.118	.150	.18
Rural ST	.059	.112	.161	.206	.247
Rural others	.052	.098	.140	.179	.215
Urban SC	.094	.163	.217	.260	.296
Urban ST	—	—	—	—	—
Urban others	.07	.133	.186	.233	.274
Orissa					
Rural SC	.049	.093	.135	.175	.213
Rural ST	.05	.096	.14	.181	.219
Rural others	.051	.097	.14	.180	.219
Urban SC	.046	.087	.124	.158	.188
Urban ST	.05	.092	.128	.160	.189
Urban others	.07	.132	.187	.232	.282
West Bengal					
Rural SC	.066	.121	.17	.214	.256
Rural ST	.046	.088	.128	.165	.200
Rural others	.069	.133	.196	.257	.315
Urban SC	.069	.131	.184	.232	.274
Urban ST	—	—	—	—	—
Urban others	.086	.161	.226	.282	.332

TABLE 4A: CONCENTRATION RATIOS FOR SELECT ITEMS FOR ASSAM

	Rural			Urban		
	SC	ST	Others	SC	ST	Others
Total cereals	.063	.093	.118	.113	—	.074
Milk and milk prods	.331	.335	.290	.396	—	.304
Food total	.118	.137	.151	.183	—	.173
Fuel and light	.118	.137	.150	.112	—	.116
Clothing	.589	.259	.530	.274	—	.546
Non-food total	.317	.282	.323	.311	—	.449

TABLE 4B: CONCENTRATION RATIOS FOR SELECT ITEMS FOR BIHAR

	Rural			Urban		
	SC	ST	Others	SC	ST	Others
Total cereals	.164	.199	.143	.098	—	.082
Milk and milk prods	.520	.630	.483	.415	—	.480
Food total	.190	.232	.204	.192	—	.220
Fuel and light	.119	.179	.121	.189	—	.197
Clothing	.536	.680	.569	.730	—	.596
Non-food total	.331	.383	.356	.558	—	.445

and in the rural West Bengal. Three-quarters or more of SC and ST rural population is poor in Bihar, Orissa and West Bengal. In West Bengal and Bihar even the non SC/ST rural population has a high poverty incidence. In general, poverty is higher in case of SCs and STs, when compared to non SC/ ST population, though the difference is not large in case of rural Assam. In case of urban areas, the poverty incidence is distinctly lower than in rural areas, though in case of Orissa, nearly three quarters of the SC/ST population was poor even in urban areas. The incidence of poverty among non SC/ST urban population was below 50 per cent in case of Bihar and Orissa and was quite low in case of West Bengal (26 per cent) and Assam (17.6 per cent). For Assam, the poverty incidence is lower compared to all other states, reflecting again the low inequalities in consumption expenditure amidst high MPCE, as shown in the preceding two sections. Furthermore, poverty incidence among rural households is only marginally higher for SC and ST households compared to non SC/ST households. In urban areas, however, poverty is distinctly higher in case of SCs compared with non-SC/ST population.

The results obtained by the FGT variant are in broad conformity with the head count ratio. It may however be mentioned that our FGT measure P_α for $\alpha = 0$ is not exactly equal to the head count ratio, though according to theory it should have been. This is due to the fact that for computing head count ratio, the frequency in the class where the poverty line lies was distributed equally across that class width and the percentage of people within that class who lie below the poverty line was added with the cumulated frequencies of the classes having income less than the poverty line. In contrast, for P_α measure we had imposed a log-normal distribution and the expenditure class with poverty line formed part of this distribution. Thus, the frequency of the expenditure class with poverty line was divided among poor and non-poor according to the parameters of the log-normal distribution. It may also be noted that with a higher α, the value of P_α decreased. In fact at $\alpha = 3$, P_α ranges between a low of .005 in case of urban Assam non SC/ST households and a high of only .094 in case of rural Orissa ST households.

We have seen that the poverty analysis undertaken has brought to fore some interesting findings. Poverty incidence in eastern India is indeed high and is on a much higher side than the official all-India poverty ratio figures. While the inequality measures showed the poor performance of the region on equity front, the alarmingly high poverty incidence shows that the area must be lagging on the growth front as well. Increasing the pace of development in eastern India must, therefore, be put high on the country's economic agenda. Those conversant with the socio-economic profile of eastern India would acknowledge that economic inequities are rooted in the rigidities in social structure prevalent in the region. Even as late as the early 80s the economic and social relations were at best feudalistic in structure. For instance, till December 1992, of the 7,888 bonded labourers identified in the country 7,325 were in Bihar and the bulk of the remaining in Orissa. Furthermore, the agricultural growth has been low in the region, except during 80s when particular endeavour was made to step up rice production through special rice production programme (SRPP) and special foodgrains production programme (SFPP). The industrial growth has been lopsided on the side of heavy and infrastructural industries, mainly in the public sector, and the industries in the region are plagued by low labour-intensity and poor productivity. The tertiary sector growth has also been rather poor. As a result unemployment backlog has become a matter of concern, making it imperative that employment generation capacity of the new investments in the region is kept in mind. Also, considering the high poverty incidence the crucial role of direct poverty alleviation and employment generation programmes cannot be neglected. Considering that poverty is indeed a widespread malaise in rural regions, increased outlay for rural development needs to be sustained over a fairly long period.

VI
Conclusions

The study has thrown up a number of interesting results, which have been discussed in various sections of this paper.

TABLE 6: POVERTY MEASURES—FGT INDEX

	Values of α			
	0.0	1.0	2.0	3.0
Assam				
Rural SC	.470	.093	.027	.009
Rural ST	.503	.103	.030	.011
Rural others	.465	.103	.033	.013
Urban SC	.409	.093	.031	.012
Urban ST	—	—	—	—
Urban others	.186	.039	.013	.005
Bihar				
Rural SC	.852	.322	.150	.078
Rural ST	.788	.310	.153	.084
Rural others	.630	.196	.081	.039
Urban SC	.604	.210	.097	.051
Urban ST	—	—	—	—
Urban others	.458	.136	.056	.027
Orissa				
Rural SC	.731	.251	.108	.045
Rural ST	.847	.343	.171	.094
Rural others	.525	.147	.057	.026
Urban SC	.691	.218	.091	.043
Urban ST	.724	.237	.101	.049
Urban others	.428	.124	.064	.063
West Bengal				
Rural SC	.714	.259	.121	.064
Rural ST	.792	.287	.132	.068
Rural others	.593	.206	.095	.050
Urban SC	.389	.108	.042	.020
Urban ST	—	—	—	—
Urban others	.250	.066	.026	.012

TABLE 4C: CONCENTRATION RATIOS FOR SELECT ITEMS FOR ORISSA

	Rural			Urban		
	SC	ST	Others	SC	ST	Others
Total cereals	.159	.189	.127	.099	.097	.053
Milk and milk prods	.533	.655	.470	.695	.784	.473
Food total	.205	.223	.186	.185	.197	.213
Fuel and light	.128	.145	.177	.096	.179	.172
Clothing	.505	.479	.495	.613	.483	.559
Non-food total	.354	.320	.400	.367	.347	.436

TABLE 4D: CONCENTRATION RATIOS FOR SELECT ITEMS FOR WEST BENGAL

	Rural			Urban		
	SC	ST	Others	SC	ST	Others
Total cereals	.173	.172	.174	.108	—	.063
Milk and milk prods	.484	.474	.489	.440	–	.399
Food total	.227	.204	.246	.240	—	.243
Fuel and light	.177	.129	.174	.206	—	.230
Clothing	.630	.549	.523	.622	—	.605
Non-food total	.419	.337	.406	.399	—	.454

TABLE 5: POVERTY MEASURES—HEAD COUNT RATIOS

	Rural			Urban		
	SC	ST	Others	SC	ST	Others
Assam	49.57	53.70	47.58	43.03	—	17.60
Bihar	84.59	79.20	65.77	67.06	—	48.31
Orissa	74.49	84.84	55.38	73.23	77.10	44.45
West Bengal	74.27	78.54	60.57	44.29	—	26.06

Many of these have important policy implications. We synthesise some of the key findings to facilitate thinking on important policy issues.

First, the eastern region as a whole suffers from economic backwardness and this is reflected in low MPCE which is below the all-India levels. This is particularly true for the SCs and STs. The incidence of poverty is also considerably higher than the all-India figure. Secondly, the rural-urban divide exists in eastern India, with a lower MPCE and higher poverty incidence in rural areas as compared to urban. The consumption inequality measures are however, higher for urban areas. This is further confirmed by looking at the concentration ratios for a select few commodities. Thirdly, the study shows that the SC and ST households have lower consumption standards than non SC/ST households and also suffer from high poverty incidence. More importantly, consumption inequalities are low among SCs/STs compared to other households. The analysis of the concentration ratios reinforces this view. Also among SCs and STs, SCs are somewhat better-off compared to STs in terms of marginally higher MPCE and lower poverty.

The first two results are incidental to the study but are nevertheless important as it confirms the need to expedite development in eastern India through direct measures, particularly those for employment generation and poverty eradication. The third result is central to the issues that this paper set out to raise. SC and ST households are unequivocally worse off than the general population and, therefore, merit special preferences in government plans to uplift the consumption standards of the population. Furthermore, the view prevalent in certain quarters that there are large inequalities within the SC and ST households is shown to be ill-founded. A general line of attack on specific social benefit programmes for SCs and STs is that in presence of large inequalities within these groups, economic benefits are cornered by the higher rung of the SC/ST classes and this lot graduates themselves to still higher expenditure classes, leaving the downtrodden unaffected or worse-off. If this were true, one is likely to see high inequalities in consumption expenditure for SCs and STs. Our results are quite contrary to this. While inequalities are low, poverty incidence is high. This makes a strong case for targeted intervention for SCs and STs to raise their consumption standards. As STs are, in general, relatively worse-off than SCs, special area programmes exclusively targeted for STs may supplement the programmes targeted for SCs and STs.

Apart from the general findings stated above, the study also yielded some striking state-specific results. First, Assam appears to be an outlier among the eastern states suffering from low consumption standards and high poverty and inequalities. In Assam, the consumption levels are high, the poverty incidence appear to be lower than all-India trends and consumption expenditures are well distributed across SC, ST and Other Households, as also within these households. Therefore, it is difficult to explain the social unrest in the state merely in terms of economic reasons. Second, inequalities remain high in West Bengal despite the redistributive policies. The incidence of rural poverty is also at a high level. Among the four eastern states poverty ratio is the second highest in West Bengal, next only to Bihar. Thirdly, in Bihar STs are marginally better-off than SCs, perhaps due to specially targeted programmes for STs. Fourth, poverty incidence is alarmingly high in both the rural and urban areas of Bihar and Orissa, more so in the rural areas.

Lastly, we hope the study will stimulate research towards objective analysis of standards of living for SCs and STs in various parts of the country. Such information will go a long way in forming necessary policy response to socio-economic issues and also help in evolving a socio-political consensus on the policy measures. We also hope that more up-to-date data will be generated and published by the NSSO on consumption expenditure of SCs and STs to facilitate research in this direction.

Notes

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1 For details on the sampling structure refer to *Sarvekshana* (1989).

2 The interested readers may refer to Satya Paul (1989) for a comprehensive discussion on these limitations.

3 The commonly used statistical measures of range, variance and variance of log income were not used on the ground that they do not meet all the desirable properties stated above simultaneously. Theil's entropy index besides meeting all the three properties has added advantages of being defined for distributions with zero income recipients and is also additively decomposable.

4 For detailed references of these measures, please see Sudhir Anand (1980).

5 For a quick recapitulation of the poverty debate in Indian context, it may be recalled that the first effort in the direction was made in 1962 by a high level working group consisting of eminent economists, D R Gadgil, VKRV Rao, Pitamber Pant and some technocrats and nutritional experts. The group used norms set by the Nutrition Advisory Committee of the ICMR in 1958 to arrive at the conclusion that the national minimum consumption expenditure per household (of five persons) should not be less than a hundred rupees per month at 1960-61 prices.

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SOCIAL SECTORS

Growth with social justice and alleviation of poverty have been primary objectives of Indian planning since its inception in 1951. Several anti-poverty measures also have been in operation for decades focussing on the poor as the target groups. These include programmes for the welfare of weaker sections, women and children, and a number of special employment programmes for self and wage employment in rural and urban areas.

2. The government has relied mainly on three approaches for reduction of poverty and unemployment: the first entails pursuit of higher economic growth which will improve the levels of living of all groups of people in the society including the poor; the second involves direct anti-poverty and employment programmes; and the third has stressed high priority to government expenditure on social sectors. The reforms underway since the economic crisis of 1991 have sought to strengthen these approaches.

TABLE 10.1

Central Government Expenditure (Plan and Non-Plan) on Social Services (Rs. Crore)

Item	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98 (RE)	1998-99 (BE)
1. Social Services	5380	5892	6397	8150	9223	11631	13659	16520	21159
a Education, Art & Culture and Youth Affairs	1686	1755	1878	2378	2799	3630	3988	5134	6535
b Health and Family Welfare	1273	1382	1722	2145	2413	2542	2751	3369	4366
c Water supply, Sanitation, Housing and Urban Development	825	934	786	1262	1351	1756	2957	3449	4495
d Information and Broadcasting	436	417	371	392	479	596	593	696	923
e Welfare of SC / ST and other Backward classes	346	419	486	564	744	800	833	728	1101
f Labour, Employment and Labour Welfare	289	357	347	526	440	507	587	651	831
g Social Welfare & Nutrition	520	628	803	880	997	1800	1950	2293	2908
2. Rural Development	2678	2283	3211	4680	5803	6609	5081	5321	5890
3. Basic Minimum Services (BMS)* including Slum development							2466	2673	3760
4. Social Services, Rural Development and Basic Minimum Services (1+2+3)	8058	8175	9608	12830	15026	18240	21206	24714	30809
5. Total Central Government Expenditure as % of GDP at current market prices	18.1	16.6	16.0	16.2	15.5	14.6	14.3	15.0	15.1
6. Social Services, Rural Development and Basic Minimum Services as % of Total Expenditure	7.7	7.3	7.8	9.0	9.3	10.2	10.5	10.5	11.5
7. Social Services, Rural Development and Basic Minimum Services as % of GDP at current market prices$	1.4	1.2	1.3	1.5	1.4	1.5	1.5	1.6	1.7

Note : Figures for the years 1990-91 to 1996-97 are actuals. * : Came into operation from 1996-97.

$: The ratios to GDP are based on new series of National Account Statistics with 1993-94 as base year released by the Central Statistical Organisation (CSO) on February 3, 1999. For the purpose of comparability, GDP at current market prices for the years 1990-91, 1991-92 and 1992-93 have been interpolated by using an average link factor of 1.0876 obtained from the over lapping years viz. 1993-94, 1994-95, 1995-96 and 1996-97 for which both the old series and new series for the GDP at current market prices are available.

Source : Budget Papers.

TABLE 10.2

Central Plan Outlay for Major Schemes of Social Sectors and Rural Development

(Rs. crore)

Ministry/Department/Scheme	1990-91		1995-96		1996-97		1997-98		1998-99
	(BE)	(RE)	(BE)	(RE)	(BE)	(RE)	(BE)	(RE)	(BE)
1 EDUCATION	865	837	1825	2504	3388	2574	4095	3350	4245
of which									
a) Elementary Education	265	224	651	1443	2264	1567	2542	2265	2779
b) Adult Education	96	131	234	170	225	112	127	81	94
2 HEALTH INCLUDING I. S. M. & H.	275	255	670	649	815	818	955	918	1195
3 FAMILY WELFARE	675	785	1581	1506	1535	1547	1829	1829	2489
4 WOMEN AND CHILD DEVELOPMENT	330	313	730	821	847	847	900	1026	1226
of which									
Integrated Child Development Services	268	255	588	669	682	682	734	600	603
5 WELFARE	364	366	890	890	890	890	1389	804	1539
6 RURAL DEVELOPMENT AND RURAL EMPLOYMENT & POVERTY ALLEVIATION	3130	2975	7700	8248	8632	7775	9001	8290	9811
of which									
a) Jawahar Rozgar Yojana (JRY)	2100	2001	3862	2955	1865	1655	2078	1953	2095
b) Employment Assurance Scheme (EAS)*			1570	1816	1970	1840	1970	1905	1990
c) National Social Assistance Programme+				550	932	550	700	490	700
d) Integrated Rural Development Programme including Rural Artisans	377	356	656@	656	656	646	611	552	800
e) Rural Water Supply and Sanitation	443	421	1170	1170	1170	1155	1402	1402	1727
f) Indira Awas Yojana ++				492	1194	1194	1190	1144	1600
g) Million Wells Scheme ++				211	448	388	448	373	450
7 OTHER PROGRAMMES									
a) Nehru Rozgar Yojana (NRY).	120	110	71	68	71	50	80	31	
b) Scheme for Self Employment for Educated Unemployed Youth (SEEUY) $	57	53							
c) Prime Minister's Rozgar Yojana (PMRY).			145	145	145	115	145	95	110
d) Swarna Jayanti Shahari Rojgar Yojana (SJSRY)@@								103	189
(A) Total Central Plan outlay on Major Schemes on Social Sectors (1 to 7)	5816	5694	13612	14831	16323	14616	18394	16446	20804
(B) Total Plan Expenditure	30466	29956	48500	48684	54685	54894	62852	60630	72002
(C) A as percentage of Total Plan Expenditure	19.1	19.0	28.1	30.5	29.8	26.6	29.3	27.1	28.9
(D) A as Percentage of GDP at current market pricesSS	1.0	1.0	1.1	1.2	1.2	1.0	1.2	1.1	1.2

* Came into operation on October 2, 1993.

\+ The scheme was announced on 15th August 1995. Rs. 550 Crore was provided at RE stage.

@ BE (Rs 640 crore) was revised upward within total BE for the Deptt. of Rural Development.

++ The Indira Awas Yojana (IAY) and the Million Wells Scheme (MWS) were earlier the sub schemes of JRY. From 1.1.1996 they have become separate schemes.

$ Integrated with PMRY.

@@ Is a rationalised version of the erstwhile schemes of Urban Basic Services, NRY and PM's Integrated Urban Poverty Eradication Programme.

$$: The ratios to GDP are based on new series of National Account Statistics with 1993-94 as base year released by the Central Statistical Organisation (CSO) on February 3, 1999. For the purpose of comparability, GDP at current market prices for 1990-91 has been interpolated by using an average link factor of 1.0878 obtained from the overlapping years viz. 1993-94, 1994-95, 1995-96 and 1996-97 for which both the old series and new series for the GDP at current market prices are available.

Source : Budget Papers.

3. The Central government expenditure on social sectors (comprising education, health & family welfare, water supply, sanitation, housing, social welfare, nutrition, rural employment and minimum basic services) as a ratio to total expenditure increased from 7.7 per cent in 1990-91 to 10.5 per cent in 1997-98 (RE) and further to 11.5 per cent in 1998-99 (BE). As a ratio to the GDP at current market prices, the central government expenditure on social services increased from 1.4 per cent in 1990-91 to 1.6 per cent in 1997-98 (RE) and further to 1.7 per cent in 1998-99 (BE) (Table 10.1).

4. The Central plan outlay on major schemes on Social Sectors as a percentage to the GDP at current market prices increased from 1.0 per cent in 1990-91 to 1.2 per cent in 1998-99(BE) (Table 10.2). The central outlay for Welfare of Weaker Sections increased by 91.4 per cent in 1998-99(BE) over 1997-98(RE), Family Welfare by 36.1 per cent, Health by 30.2 per cent and Education by 26.7 per cent.

5. Increased availability of health care and family welfare services have resulted in reduction of all India death rate, birth rate and infant mortality rate. The crude death rate declined from 14.9 per thousand in 1971 to 9.8 in 1991 and further to 8.9 in 1997. Similarly, the infant mortality rate per thousand declined from 129 in 1971 to 80 in 1991 and further to 71 in 1997. The birth rate per thousand also declined from 36.9 in 1971 to 29.5 in 1991 and further to 27.2 in 1997 (Table 10.3). These tentative trends are consistent with the view that rapid economic growth has brought about an improvement in living standards of people in general.

TABLE 10.3

Basic Indicators of Human Development

Year	Life expectancy at birth (years)	Literacy rate (per cent)	Birth rate (per thousand)	Death rate (per thousand)	infant mortality rate (per thousand)
1951	32.1	18.3	39.9	27.4	146
1961	41.3	28.3	41.7	22.8	146
1971	45.6	34.5	36.9	14.9	129
1981	50.4	43.6	33.9	12.5	110
1991	59.4	52.2	29.5	9.8	80
1996	62.4	NA	27.5	9.0	72
1997	NA	62*	27.2	8.9	71

Source : Registrar General and Census Commissioner of India.
* As per NSSO.

6. However, there are wide inter-state variations in indicators of human development. For instance, in Kerala the life expectancy at birth at 72 years and overall literacy at 90 are significantly higher than those in states like Bihar, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh where concerted efforts are required to improve overall quality of life. In fact the indicators of human development in Kerala are comparable with several Asian developing countries like China, Malaysia, Indonesia, Thailand and Sri Lanka which have made significant progress in human development over the years (Table 10.4).

TABLE 10.4

Indicators of Human Development for Some Asian Countries

Country	Life Expectancy at birth (Years) 1995	Infant Mortality rate (Per thousand births) 1996	Adult Literacy rate (Per cent) 1995
India	62.4	72	52
Kerala State (India)	72.0	13	90
China	69.2	38	82
Indonesia	64.0	47	84
Korea, Republic	71.7	6	98
Malaysia	71.4	11	84
Philippines	67.4	32	95
Thailand	69.5	31	94

Source: UNDP – Human Development Report, 1998.

For India, estimates are from Registrar General & Census Commissioner of India & relate to the year 1996 (P).

7. Average real wages for unskilled agricultural labour, which reflect the economic conditions of agricultural labourers, declined by 6.2 per cent in the crisis year of 1991-92 (agriculture year July to June) for the country as a whole, but increased in subsequent years except in 1994-95 (Table 10.5). However, there were no uniform trends across the states implying that local conditions exert significant influence on agriculture wages.

Poverty

8. Together with the overall economic growth, the anti-poverty and employment generation programmes have helped in reducing the incidence of poverty over the long run. The poverty ratio declined from 56.4 per cent in 1973-74 to 37.3 in 1993-94 in rural areas and from 49.0 per cent in 1973-74 to 32.4 per cent in 1993-94 in urban areas. For the country as a whole, the poverty ratio declined from 54.9 per

TABLE 10.5

Annual Percentage Change in Real Wages for Unskilled Agricultural Labour for Selected States

	Percentage Change for agricultural year (July to June) over previous year						
State	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97(P)	1997-98(P)
Andhra Pradesh	(-) 11.40	(+) 1.57	(+) 8.60	(+) 2.71	(-) 1.73	(+) 1.51	(+) 1.40
Assam	(-) 8.73	(+) 0.58	(-) 6.58	(-) 1.67	(+) 2.68	(+) 2.95	(+) 0.93
Bihar	(-) 4.39	(-) 5.00	(+) 5.98	(+) 1.69	(-) 2.30	(-) 2.79	(-) 0.79
Gujarat	(-) 4.31	(+) 7.92	(+) 2.86	(+) 1.27	(+) 2.92	(+) 5.08	(+) 14.52
Karnataka	(-) 13.25	(-) 14.39	(+) 41.31	(-) 15.60	(-) 8.61	(+) 21.48	(+) 15.22
Kerala	(+) 4.07	(+) 9.74	(-) 2.84	(-) 5.24	(+) 13.20	(+) 14.60	(+) 15.34
Madhya Pradesh	(-) 3.89	(+) 12.57	(-) 3.53	(+) 4.93	(+) 1.24	(+) 1.31	(+) 0.96
Maharashtra	(-) 14.79	(+) 0.66	(+) 25.58	(-) 0.68	(-) 7.89	(-) 7.98	(+) 31.73
Orissa	(-) 3.89	(+) 11.03	(-) 0.14	(-) 3.52	(+) 0.55	(-) 0.27	(+) 2.56
Punjab	(+) 3.65	(+) 4.25	(+) 1.51	(-) 1.17	(-) 6.50	(-) 0.42	(-) 3.35
Rajasthan	(+) 6.12	(-) 3.56	(-) 7.66	(+) 1.05	(+) 10.33	(+) 17.81	(+) 3.78
Tamil Nadu	(-) 4.85	(+) 13.29	(+) 11.60	(+) 1.03	(+) 3.63	(+) 28.05	(-) 16.67
Uttar Pradesh	(+) 1.02	(+) 7.56	(-) 6.77	(-) 2.31	(+) 14.78	(-) 6.37	(+) 18.29
West Bengal	(-) 6.25	(-) 24.39	(-) 6.50	(-) 5.29	(-) 0.28	(+) 10.21	(-) 5.16
All India	(-) 6.19	(+) 5.21	(+) 5.61	(-) 0.39	(+) 0.72	(+) 4.67	(+) 4.88

(P) : Provisional.

Notes : (i) Data on state average wage rates for unskilled agricultural labour in current prices are taken from Ministry of Agriculture. The same have been converted into real wages by deflating with the State level Consumer Price Index Numbers for Agricultural Labourers (CPIAL) with 1960-61 as base. (CPIAL has been sourced from Labour Bureau, Shimla). Having estimated real wages for agricultural year percentage change over previous year has been worked out.

(ii) New series of CPIAL with base 1986-87 = 100 were released w.e.f. Nov., 1995. To maintain continuity of old series of CPIAL, the new series have been converted by using the linking factor of each State and then, the average for each State has been worked out on the basis of converted series.

(iii) The real wages for unskilled agricultural labour for each State have been weighted by total agricultural labourers of the State for working out all India average. The weighted average real wages for all India are based on 14 States as reported above. Having estimated weighted average real wages for all India, percentage change over previous year has been worked out.

Source: Ministries of Agriculture and Labour.

cent in 1973-74 to 36 per cent in 1993-94 (Table 10.6). Large Sample surveys on common expenditure on the basis of which poverty ratios are estimated are not available in subsequent years.

9. Although reduction of the overall poverty ratio in India from 55 per cent to 36 per cent during a period of two decades is significant, India's performance in poverty reduction has been weak as compared with some of the East Asian countries. It may be observed from Table 10.7 that the success of some of the East Asian countries (like China and Indonesia) lies in faster economic growth. In general, the faster the rate of overall growth, the faster is the rate of poverty reduction. It is, therefore, reasonable to expect that a sustained and long lasting solution to the problem of poverty depends on creation of opportunities for broad based economic development and higher growth.

Employment

10. It may be observed from Table 10.8 that the average annual growth rate of overall employment (in both organised and unorganised sectors) declined continuously from 2.75 per cent in the period 1972-1978 to 1.77 per cent in 1983-1988, but increased to 2.37 per cent in 1987-

TABLE 10.6

Number and Percentage of Population Below Poverty Line

(Number in million and poverty ratio in percentage)

Year	Rural sector		Urban sector		Combined All India	
	Number (million)	Poverty ratio	Number (million)	Poverty ratio	Number (million)	Poverty ratio
1973-74	261	56.4	60	49.0	321	54.9
1977-78	264	53.1	65	45.2	329	51.3
1983	252	45.7	71	40.8	323	44.5
1987-88	232	39.1	75	38.2	307	38.9
1993-94	244	37.3	76	32.4	320	36.0

Source: Planning Commission.

TABLE 10.7

Poverty incidence and growth rates in India and selected Asian countries

(in per cent)

Country	Poverty ratio 1975	Poverty ratio 1995	Annual Reduction in 1975-95 Percentage point	Average GDP growth 1970-1980	Average GDP Growth 1980-1995
India	54.9	36.0	0.9	3.2	5.6
China	59.5	22.2	1.9	5.0	11.1
Indonesia	64.3	11.4	2.6	7.8	6.6
Korea	23.0	5.0	0.9	9.0	8.7
Malaysia	17.4	4.3	0.7	7.8	6.4
Philippines	35.7	25.5	0.5	6.2	1.4
Thailand	8.1	0.9	0.4	7.2	7.9

Source : For India, Planning Commission; for others World Bank Report on Social Consequences of the East Asian Financial Crisis, September, 1998.

Note : For India, poverty ratios refer to the years 1973 and 1993 respectively and GDP growth rates are based on old series with base 1980-81.

1994. However, the growth rate of organised sector employment maintained its declining trend even during the period from 1987-88 to 1993-94. There was a significant improvement in the growth rate of organised employment in the private sector from 0.43 per cent in 1983-1988 to 1.18 per cent in 1987-1994. For the first time the growth rate of employment in the organised private sector exceeded the employment growth rate in the pubic sector.

TABLE 10.8

Growth of Employment (per cent)

Period	Growth rate of overall employment	Growth rate of employment in the organised sector		
		Public	Private	Total
1972-73 to 1977-78	2.75	...	...	2.45
1977-78 to 1983	2.36	2.99	1.41	2.48
1983 to 1987-88	1.77	2.17	0.43	1.38
1987-88 to 1993-94	2.37	1.00	1.18	1.05

Source: Planning Commission.

11. Table 10.9 presents the annual growth rates of employment in the organised public and private sector during 1991 to 1996. It can be observed from the table that the private sector contributed predominantly to the increase in the organised sector employment in the reform period since 1991 except in the year 1993. The government has decided to set up the Second National Commission on Labour with a view to provide protection to millions of workers. The main focus of the Commission would be to suggest rationalisation of the existing labour laws in the organised sector and also to suggest an umbrella legislation for ensuring a minimum level of protection to the workers in the unorganised sector.

Poverty Alleviation and Employment Generation Programmes

12. India's anti-poverty strategy comprises of a wide range of poverty alleviation and employment generation programmes, many of which have been in operation for several years and have been strengthened to generate more employment, create productive assets, impart technical and entrepreneurial skills and raise the income level of the poor. Under these schemes, both wage employment and self-employment are provided to the people below the poverty line. In 1998-99, government proposed to unify the various poverty alleviation and employment generation programmes under two broad categories of Self Employment Schemes and Wage Employment Schemes. Funding and organisational patterns will also be rationalised to achieve maximum beneficial impact of these programmes. The budgetary (plan) support on Rural Development and Rural Employment & Poverty Alleviation has been enhanced to Rs.9811 crore in 1998-99(BE) from Rs.8290 crore in 1997-98(RE).

TABLE 10.9

Growth rates of Employment in organised sector (per cent)

Year	Public sector	Private sector	Total organised
1991	1.52	1.24	1.44
1992	0.80	2.21	1.21
1993	0.60	0.06	0.44
1994	0.62	1.01	0.73
1995	0.11	1.63	0.55
1996	(-)0.19	5.62	1.51
1997	0.67	2.04	1.09

Source : Planning Commission.

13. The salient features of some of the major employment and anti-poverty programmes are given below:

(a) Integrated Rural Development Programme (IRDP) and its allied programmes of Training Rural Youth for Self-Employment (TRYSEM) and Development of Women and Children in Rural Areas (DWCRA) are major self-employment programmes for poverty alleviation. The basic objective of IRDP is to enable identified rural poor families to augment their incomes and cross the poverty line through acquisition of credit based productive assets. Assistance is given in the form of subsidy by the government and term credit by the financial institutions for income generating activities.

This is a centrally sponsored scheme funded on 50:50 basis by the Centre and the states. It is stipulated that at least 50 per cent of the

assisted families should belong to Scheduled Caste and Scheduled Tribe categories. It is also required that at least 40 per cent of those assisted should be women under this programme. About 535 lakh families have been covered up to November 1998 since 1980-81 under the programme out of which coverage of SC/ST families had been 45 per cent. The level of per family investment is currently more than Rs.17441 compared to Rs.1642 during 1980-81. A sum of Rs.800 crore (including Rs. 60 crore for Rural Artisans) has been provided in 1998-99 (BE), an increase of about 45 per cent over 1997-98 (RE).

(b) *The Training of Rural Youth for Self-Employment (TRYSEM)* is to train rural youth from the target group of families in skills so as to enable them to take up self/wage employment. It has been laid down that the coverage of youth from SC and ST communities should be at least 50 per cent of the rural youth trained. Out of the total beneficiaries, at least 40 per cent should be women.

(c) *The Programme of Development of Women and Children in Rural Areas (DWCRA)* aims to improve the socio-economic status of the poor women in the rural areas through creation of group of women for income generating activities on a self-sustaining basis. Up to November, 1998, 1.97 lakh women were benefited during 1998-99. A sum of Rs.100 crore has been provided in 1998-99 (BE).

(d) *Jawahar Rozgar Yojana (JRY)* is a wage employment programme with its main objective of generation of employment in the lean agriculture season to the unemployed and under-employed rural people both men and women living below the poverty line. The significant aspect of the scheme is that it is implemented by the Panchayats at the village, block and district levels in the ratio of 70:15:15 respectively. An amount of Rs.2095 crore has been allocated during 1998-99 (BE) for JRY. Against a target of 396.66 million man-days during 1998-99, a total of 190.28 million man-days were generated up to November 1998 with an expenditure of Rs.1244 crore.

(e) The Employment Assurance Scheme (EAS) has been universalised so as to make it applicable to all the rural blocks of the country. It aims at providing 100 days of unskilled manual work up to two members of a family in the age group of 18 to 60 years normally residing in villages in the lean agriculture season, on demand, within the blocks covered under EAS. A sum of Rs.1990 crore has been provided during 1998-99 (BE). During 1998-99, a total of 237.61 million man-days have been generated under the scheme with an expenditure of Rs.1572 crore up to November 1998.

(f) *The Million Wells Scheme (MWS)* which was earlier a sub-scheme of JRY, is funded by the Centre and states in the ratio of 80:20. The objective of the MWS is to provide open irrigation wells free of cost to poor, small and marginal farmers belonging to SCs/STs and freed bonded labour. A sum of Rs.450 crore has been provided in 1998-99 (BE). Up to November 1998, a sum of Rs. 225.90 crore has been incurred during 1998-99 and 49821 wells were constructed.

(g) *The National Social Assistance Programme (NSAP) recognises* the responsibility of the Central and state governments for providing social assistance to poor house-holds in case of maternity, old age and death of bread earner. NSAP is a centrally sponsored programme with 100 per cent central funding to the States/UTs that provides benefits under its three components viz. (i) National Old Age Pension Scheme (NOAPS); (ii) National Family Benefit Scheme (NFBS); and (iii) National Maternity Benefit Scheme (NMBS). On the basis of suggestions made by the Central Advisory Committee on NSAP, the Government has since approved changes relating to enhancement in the rate of benefits for NFBS and NMBS. A sum of Rs.700 crore has been provided for the above three components of NSAP in 1998-99 (BE).

(h) The Swarna Jayanti Shahari Rozgar Yojana (SJSRY) which came into operation from 1.12.1997, sub-summing the earlier urban poverty alleviation programmes viz., Nehru Rozgar Yojana (NRY), Urban Basic Services Programme (UBSP) and Prime Minister's Integrated Urban Poverty Eradication Programme (PMIUPEP). The scheme aims to provide gainful employment to the urban unemployed or underemployed poor by encouraging the setting up of self-employment ventures or provision of wage employment. It is being funded on a 75:25 basis between Centre and the states. It comprises two special schemes *i.e.* The Urban Self-Employment Programme (USEP) and the Urban Wage Employment Programme (UWEP). The scheme gives a special impetus to empowering and uplifting the poor women and launches a special programme,

namely, Development of Women and Children in urban areas under which groups of urban poor women setting up self-employment ventures are eligible for subsidy up to 50% of the project cost. During the year 1997-98, a sum of Rs.98.63 crore was released to States and UTs under SJSRY. A sum of Rs.189 crore has been provided in 1998-99 (BE) out of which Rs.64.59 crore has been released to twelve states till 30.11.1998.

(i) *Prime Minister's Rozgar Yojana (PMRY)* for providing self-employment to educated unemployed youth had been designed to provide employment to more than a million persons by setting up of seven lakh micro enterprises in Eighth Plan. During the Eighth Plan, loan in 7.70 lakh cases were sanctioned and 5.76 lakh cases disbursed. The scheme is being continued in the Ninth Plan. Since inception of the scheme up to the programme year 1997-98, over 7.52 lakh cases have been disbursed. During 1998-99, 57527 cases have been sanctioned loans and 27533 cases disbursed by the end of October, 1998. A sum of Rs.110 crore has been provided in 1998-99 (BE).

The achievements of the special anti-poverty programmes are indicated in Table 10.10.

TABLE 10.10

Performance of Special Employment and Poverty Alleviation Programmes

(In lakh)

Programmes	1996-97		1997-98(P)		1998-99(P) (upto Nov. 98)	
	Target	Achieve-ment	Target	Achieve-ment	Target	Achieve-ment
A. Programmes in Rural Areas						
1. JRY- Mandays of employment generated	4141.4	4006.3	3864.9	3883.7	3966.6	1902.8
2. EAS - Mandays of employment generated	*	4030.0	*	4717.7	*	2376.1
3. IRDP- Families assisted	*	19.2	*	17.1	*	7.7
4. TRYSEM- Youths Trained	2.9	3.6	3.0	2.5	2.9	0.8
5. DWCRA- (a) Groups formed	0.3	0.4	0.3	0.4	0.6	0.2
(b) Membership	-	5.8	-	4.6	-	2.0
6. IAY-House Constructed	11.2	8.0	7.2	7.7	9.9	3.6
7. MWS- Wells Constructed	-	1.1	-	1.0	-	0.5
8. ARWSP- Habitation/villages	1.0	1.0	1.0	1.2	1.1	0.5
9. CRSP-Sanitory latrine	8.3	12.2	18.8	11.6	16.0	5.6
10. NSAP —						
(a) NOAPS- Beneficiaries	53.7	46.6	48.7	40.3	48.8	40.2
(b) NFBS- Beneficiaries	4.6	1.6	2.7	1.8	2.1	1.4
(c) NMBS- Beneficiaries	46.0	14.0	25.7	15.4	17.8	6.6
B. Programmes in Urban Areas						
1. NRY-(a) Families assisted	1.2	0.6	**			
(b) Mandays of employment generated	135.8	44.6				
(c) Persons trained	1.2	0.4				
C. Other Programmes						
1. PMRY -(a)Micro-enterprises @	2.2	2.2	2.2	1.8	2.2	0.3#
(b)Employment generated $	4.4	3.2	4.4	2.6	4.4	0.4#
2. SJSRY $$						
of which						
(i) USEP —						
(a) Beneficiaries					*	0.2##
(b) Persons trained					*	0.2##
(ii) UWEP- Mandays of employment generated					*	12.9##

P Provisional.
* Targets are not fixed.
$ Estimated @ 1.5 per case disbursed for the concerned programme years.
** Merged with SJSRY.
@ Cases disbursed.
$$ Came into operation from Dec., 97.
Up to Oct.98
As per report ending Dec., 98

Source: Ministry of Rural Areas & Employment and other concerned Departments.

Literacy and Education

14. Building on educational priorities set out in the National Policy on Education, 1986 as modified in 1992 and its Programme of Action, the National Agenda for Governance (NAG) has education amongst its highest priorities. The following educational agenda has been specifically identified:—

- Education for All – Free and compulsory primary education up to 5th standard and total eradication of illiteracy.
- Education of prioritised groups – girls, SCs/STs and Backward classes and educationally backward minorities.
- Access and quality – equal access and opportunity for all up to school stage and improvement of quality at all levels.
- Financing of education – increase in government and non-government spending on education, and bringing this up to 6 per cent GDP level.

In addition, the item on harnessing of youth power makes a specific mention of its involvement in the total eradication of illiteracy. The items dealing with Constitutional and Legal Reforms, and Information Technology have important implications for educational planning and management in particular.

15. In pursuance of the emphasis embodied in the National Policy on Education and reiterated in the NAG, several schemes have been launched by way of central intervention, primarily for meeting the needs of the educationally disadvantaged and for strengthening the social infrastructure in the sector. The important schemes by way of illustration are Operation Black Board (OB), Non-Formal Education (NFE), Teacher Education (TE), National Programme of Nutritional Support to Primary Education (NPNSPE) (Mid-day Meal Scheme), District Primary Education Programme (DPEP), Total Literacy Campaign (TLC), Community Polytechnics (CP), Shiksha Karmi Project (SKP), Area Intensive Programme for Educationally Backward Minorities (AIPEBM) and Integrated Education for Disabled Children, etc. Several resource institutions have either been strengthened/established to achieve the objectives of the NPE.

16. As per the report given by the National Sample Survey Organisation (NSSO), the overall National figure for literacy has gone up from 52.2 per cent in 1991 to 62 per cent in 1997. The male literacy has gone up from 64.1 per cent to 73 per cent and the female literacy from 39.3 per cent to 50 per cent during the same period. The literacy percentage has also gone up substantially in some of the educationally backward states. Since independence, India has tripled its literacy (female literacy increased by five times).

17. The Gross Enrolment Ratio (GER) in the primary stage (classes I-V) increased from 42.6 per cent in 1950-51 to 89.7 per cent in 1997-98 and in the upper primary stage (classes VI-VIII) from 12.7 per cent to 58.5 per cent over the same period. The percentage of girls' enrolment to total enrolment has increased from 28.1 in 1950-51 to 43.6 in 1997-98 in the primary stage and increased from 16.1 to 40.1 over the same period in the upper primary stage.

18. The dropout rate of girls is much higher than that of boys at both the stages. The enrolment of SCs and STs has increased considerably at the primary stage. The share of enrolment of SCs has increased from 17.1 per cent in 1986 to 19.6 in 1993 at primary stage and from 14.7 to 15.6 over the same period at upper primary stage. Similarly, the share of enrolment of STs has increased from 7.8 per cent in 1986 to 9.1 per cent in 1993 at primary stage and from 5.1 per cent to 5.9 per cent over the same period at upper primary stage. Moreover, substantial increase in the share of girls' enrolment belonging to these communities has also taken place.

19. In order to improve the internal efficiency and minimum level of learning, at the school level, the Central government has taken three important initiatives since 1993, namely, Area Intensive Programme for Educationally Backward Minorities (AIPEBM), District Primary Education Programme (DPEP) and National Programme of Nutritional Support to Primary Education (NPNSPE) (Mid-Day Meal Scheme).

20. The government proposes to formulate and implement plans to gradually increase the governmental and non-governmental spending on education up to 6 per cent of GDP. Planning Commission has set up an Expert Committee to assess the current status of expenditure on education, both in public and private sector. The central plan allocation on education has been enhanced from Rs.3350 crore in 1997-98 (RE) to Rs.4245 crore in 1998-99 (BE). In order to

initiate plan to implement the provisions of National Agenda for Governance, the current year's budget (plan and non-plan) provides for nearly 50 per cent increase i.e.from Rs.4716 crore in 1997-98(RE) to Rs.7047 crore in 1998-99(BE).

Population and Family Welfare

21. An enhanced outlay of Rs.2489 crore has been provided for various programmes of Family Welfare in 1998-99 (BE) as compared to Rs.1829 crore in 1997-98 (RE) registering an increase of 36 per cent. Through various on-going family welfare programmes, government has been able to achieve a decline in fertility rate from 4.5 in 1981 to 3.5 in 1995. The crude birth rate (CBR) declined from 33.9 per thousand population in 1981 to 27.2 in 1997. The crude death rate (CDR) also declined from 12.5 to 8.9 per thousand population over the same period. As a result, the natural rate of growth of population further declined to 1.83 per cent in 1997 compared to 1.95 in 1996. The Eighth Plan target of CBR of 26 has been achieved by major states, except the States of Assam, Bihar, Haryana, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh.

22. The Reproductive and Child Health (RCH) programme has been introduced during the Ninth Plan. Under the RCH Programme, several new schemes for improving quality and coverage of services are under implementation. The replacement of the system of setting contraceptive targets from above by decentralised planning based on community needs assessment has been well received in all parts of the country.

23. The Pulse Polio Immunisation has been continued for the fourth year during 1998-99 with the objective of eradicating polio. Two supplemental doses of oral polio vaccine were administered on 6.12.1998 and on 17.1.1999.

Medical and Health Care

24. Central sector emphasis continues to be on control and eradication of communicable and non-communicable diseases like Malaria, Tuberculosis, Leprosy, AIDS, Blindness, Cancer, etc. and various programmes to this effect are being implemented with the World Bank assistance. Measures for upgradation of central and state levels organisations for drug quality control and food safety and strengthening of medical store organisations are also being undertaken. It may be observed from Table 10.11 that there had been marked expansion in infrastructure for health services since 1951.

25. An enhanced outlay of Rs.1195 crore including Rs. 50 crore for Indian System of

TABLE 10.11

Expansion of Health Services

(In numbers)

Item	1951	1961	1971	1981	1992	1996	1997
1. Medical Colleges **	28*	60	98	111	146	165	165
2. Hospitals **	2694	3094	3862	6804	13692	15097#	NA
3. Dispensaries **	6515	9406	12180	16751	27403	28225#	NA
4. Community Health Centres @	0	0	0	217	2186	2572	2628
5. Primary Health Centres @	725	2565	5112	5740	20701	21917	22446
6. Sub-centres @	-	-	28489	51405	131370	134931	136379
7. Hospital beds(all types)**	117178	230000	348655	569495	834650	870161#	NA
8. Doctors **	61840	83756	151129	268712	395851	375291(P)	484401(P)
9. Dentists **	3290	3582	5512	8648	11300	23953#	NA
10. Nurses **	16550	35594	80620	154280	385410	565696	NA

NA Not available
* Pertains to 1950
** As on December 31
@ As on March 31
# As on 31.12.95
P Provisional

Source : Ministry of Health and Family Welfare.

Medicine and Homeopathy has been provided in 1998-99 (BE) as compared to Rs.918 crore in 1997-98 (RE). The Department of Indian System of Medicine and Homeopathy (ISM&H) has identified thrust areas namely improving the standards of education and strengthening the educational institutions, standardisation of drugs and quality control, enhancing the availability of raw material, information, education and communication, etc. Specialty clinics of Unani, Ayurveda and Homeopathy have been set up in major allopathic hospitals like the Ram Manohar Lohia Hospital and Safdarjung Hospital respectively.

Development of Women and Children

26. The strategy of women's development comprises social and economic empowerment of women through attitudinal change towards girl child, and education, training, employment, support services and emphasis on women' rights and law. Similarly, for the child, various schemes to raise nutritional and early childhood care and pre-school educational status have been implemented. A provision of Rs.1226 crore has been provided in 1998-99 (BE) as against Rs.1026 crore in 1997-98 (RE), for implementation of various welfare schemes for women and children.

27. Under the scheme of Balika Samridhi Yojana launched on October 2, 1997 with a specific objective to encourage the enrolment and retention of girl child in the schools, the mother of a girl child born on or after August 15, 1997 in a family, below the poverty line in rural and urban areas is given a grant of Rs.500 besides a scholarship for education of the girl child when she attends school. 12 lakh girl children were benefited during 1997-98. A sum of Rs.60 crore has been provided in 1998-99 (BE) under the scheme.

28. The scheme for school drop-out adolescent in the age group of 11-18 year is being implemented in 507 blocks of ICDS projects. So far four lakh adolescent girls have been benefited. Six projects under Support to Training and Employment Programme (STEP) were sanctioned to benefit 53325 women during 1997-98. A sum of Rs.16 crore has been provided during 1998-99 (BE).

29. Under Indira Mahila Yojana (IMY) for empowerment of women, 28000 small homogeneous women's groups were formed up to 1997-98. A sum of Rs.10 crore has been provided in 1998-99 (BE). The scheme of Mahila Samridhi Yojana (MSY) to inculcate habit of saving among rural women is being revised and merged into IMY to have an integrated package of 5 components including formation of viable women's group.

30. Under the scheme of Employment and Income Generating Training-cum-Production centres, partially funded by Norwegian Agency for International Development and Cooperation (NORAD), 178 projects were sanctioned to benefit 36095 women in 1997-98. A budgetary provision of Rs.18 crore has been provided in 1998-99 (BE) under this programme.

31. The Rashtriya Mahila Kosh (RMK) set up for meeting the credit needs of the poor women has sanctioned loan to 250312 women during 1997-98. Under the scheme of Short Stay Home for Women and Girls, there are 361 short homes running in the various parts of the country to benefit 10830 women. Since inception, 811 working women hostels have been sanctioned to benefit 56974 women for single, divorced, married and widowed women who migrate to towns and cities in need of employment.

32. For the welfare and development of the children, the Integrated Child Development Services (ICDS) scheme aims to provide an integral package of services of health check-up, immunisation, supplementary nutrition, referral services, pre-school education, nutrition and health education to children, pregnant women and nursing mothers. The scheme which started in 1975-76 on an experimental basis in 33 projects has been extended to 5614 centrally sponsored ICDS projects of which 4200 projects are now operational. The programme benefited 3.81 million expectant and nursing mothers and 21.0 million children under six years of age. A sum of Rs.603 crore has been provided in 1998-99 (BE). Apart from ICDS the other programme for child development are day-care centers for children below five years belonging to weaker sections of the society, Balwadi Nutrition Programme, Early Childhood Education and National Institute of Public Cooperation and Child Development.

Welfare of Weaker Sections

33. The National Scheme for Liberalization and Rehabilitation of Scavengers aims to provide

alternate dignified and viable occupation to each scavenger and his/her dependents. The scheme which was modified w.e.f. 1.4.1996, inter-alia, includes TRYSEM norms for training, release of central assistance direct to Scheduled Caste Development Corporation and adoption of cluster approach in the training and rehabilitation programme. The National Safai Karamchari Finance and Development Corporation set up in January 1997 provides loans for higher education to students from safai karamchari community besides providing assistance in self-employment ventures and technical and entrepreneurial skills.

34. The National Commission for Minorities, reconstituted w.e.f. 26.11.1996 to focus on effective implementation of 15 point programme for the welfare of minorities, has constituted a High Powered Study Committee for socio-economic conditions of minorities in India. The Central Government has raised equity share towards National Minorities Development and Finance Corporation from 25 per cent to 60 per cent.

35. The welfare of STs and SCs is being closely monitored by the state governments through the Special Component Plan (SCP) and Tribal Sub-Plan (TSP) with the support of special central assistance provided by the Central government. The consolidated achievements during the Eighth Plan (1992-97) had been 51.53 lakh ST families against the target of 49.78 lakh families. The target for 1997-98 was fixed as 10.97 lakh ST families out of which 9.86 lakh ST families were assisted. A target of 11.01 lakh families has been fixed for 1998-99 out of which 4.13 lakh ST families have been assisted up to 30.11.1998. On going schemes like pre-matric and post-matric scholarship and providing hostel facilities to SC boys and girls continued to be operative in 1998-99.

36. In addition to various schemes for the development and growth of welfare of disabled persons, a national centre for drug abuse prevention has been established. A sum of Rs.1539 crore has been provided in central sector plan during 1998-99 (BE) for various schemes of welfare of weaker sections of the society including minorities, persons with disabilities and others covered under Social defence.

Housing

37. The Central government provide policy guidelines for housing programmes for various target groups and supplements the efforts of the state governments by implementing certain central sector/centrally sponsored schemes mainly for the benefit of urban poor.

38. A new National Housing and Habitat Policy 1998 has been formulated which was approved and laid before the Parliament on 29.7.1998. The objectives of the policy are to facilitate construction of 20 lakh dwelling units each year with emphasis on the poor. Out of 20 lakh additional houses, 7 lakh houses would be constructed in urban areas and 13 lakh in rural areas. HUDCO is expected to meet more than 55 per cent of the target i.e. 4 lakh units and the balance 3 lakh units per year will be met by other housing financial institutions recognised by the National Housing Bank, corporate sector and cooperatives.

39. A scheme of Night Shelter and Sanitation Facilities for the urban footpath dwellers is being implemented as a centrally sponsored scheme in the metropolitan and other major urban centres. 61 schemes benefiting more than 40000 footpath dwellers have been sanctioned by HUDCO as on 31.10.1998 in various parts of the country since April 1991. A sum of Rs.1600 crore has been provided as central outlay in 1998-99 (BE) for rural housing with a target to construct 923908 houses under the Indira Awas Yojana (IAY) in the current year. The existing housing programme of the IAY for construction of new houses free of cost for the target group below the poverty line comprising SCs/STs, freed bonded labourers and also non-SC/ST families will continue. In addition, a new component for upgradation of kutcha and unserviceable houses will be introduced.

40. The Government has promulgated an ordinance to repeal the Urban Land (Ceiling and Regulation), Act 1976 (ULCRA). It will be implemented in all Union territories and two states of Haryana and Punjab. This was aimed at speedy growth in sectors like housing and transport, land assembly, development and disposal of excess land would be facilitated. The Delhi Rent Act, 1995 was enacted for overcoming the shortcomings in the existing Rent Act but after taking into consideration various representations, the government decided to amend the Act to make it more acceptable and

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UNDP's Human Development Index

A Computation for Indian States

A K Shiva Kumar

An attempt to construct the Human Development Index (HDI) for 17 Indian states and to rank these states with the countries for which the HDI has been computed in the UNDP's Human Development Report 1990.

THE HUMAN DEVELOPMENT REPORT 1990 of the UNDP argues for viewing development not merely as an expansion of income and wealth, but as a process of enlarging people's capabilities.[1] The *Report* emphasises three elements of living standards: longevity, literacy, and, what may be called, a measure of necessary income. Longevity as an indicator of human development captures several aspects of welfare because of its close correlation with nutrition, health, and other important biological and social achievements. The relevance of literacy to human development, is of course, self-evident. The third element of human development discussed in the *Report* is the command over resources needed for a decent living, covering those aspects of living which are not well represented by life expectancy or literacy. In the absence of more specialised indicators of this command over resources, a practically useful indicator is per capita income.[2] But incomes are only means of good living and must not be confused with it. The *Report* takes the logarithm of per capita income to reflect the conversion of income into good living.[3] The *Report* uses data on life expectancy, literacy, and "income for a decent living standard" to construct a composite Human Development Index (HDI) for each country.[4]

This note constructs the HDI for 17 Indian states for which data are available and ranks the states along with the countries for which the HDI for 1987 has been computed and presented in the *Report*.

TABLE 1: CLASSIFICATION OF 130 COUNTRIES ACCORDING TO HDI, 1987

HDI		Lowest	Highest
Low (HDI below 0.500)	44 countries including India	0.116 Niger	0.489 Morocco
Medium (HDI 0.500 to 0.799)	40 countries including China, Sri Lanka	0.501 Egypt	0.790 Albania
High (HDI above 0.800)	46 countries including Cuba, Costa Rica	0.800 Malaysia	0.996 Japan

Source: From data in UNDP (1990).

CONSTRUCTION OF HDI

In order to construct the HDI, the first step is to specify a minimum value (the maximum deprivation set to one) and a desirable or adequate value (no deprivation equal to zero) for life expectancy (X_1), literacy (X_2) and the logarithm of real GDP per capita (X_3). A life expectancy at birth of 78 years (which is the figure for Japan) has been taken as the maximum value, and of 42 years (the figure for Afghanistan, Ethiopia and Sierra Leone) as the minimum value. The lowest value for adult literacy is 12 per cent (the rate in Somalia), and the maximum is 100 per cent. The minimum value of purchasing power adjusted GDP per capita is Zaire's $220 (log value 2.34). The average of-

TABLE 2: BASIC DATA RELATING TO 17 INDIAN STATES

	Females 1,000 Males 1981[b]	Life Expectancy 1981-86[c]			Adult Literacy Rate[d] (Percentage)			Per Capita Income[e]		
		Males	Females	Combined	1971	1981	1987 (Projected)	Per Capita Net State Domestic Product at 1970-71 Prices (Rupees) 1980-81	1986-87	Real SDP Per Capita 1987 (PPP $)
Andhra Pradesh	975	56.1	60.0	58.0	28.3	32.5	35.3	647	758	983
Assam[a]	901	52.7	52.0	52.4	36.4	43.6	48.5	558	605	785
Bihar	946	55.2	52.9	54.1	23.5	29.4	33.6	441	482	625
Gujarat	942	55.3	58.3	56.8	42.0	48.3	52.5	904	860	1,116
Haryana	870	61.4	59.6	60.6	29.7	39.2	46.2	1,060	1,233	1,600
Himachal Pradesh	973			56.6	32.3	43.6	52.2	711	855	1,109
Jammu and Kashmir	892			56.8	21.1	29.9	36.9	642	684	887
Karnataka	963	60.2	61.1	60.6	35.9	43.0	48.0	687	799	1,037
Kerala	1,032	65.2	69.9	67.6	69.1	78.1	84.1	621	639	829
Madhya Pradesh	941	53.2	51.5	52.4	26.6	35.6	42.4	516	583	756
Maharashtra	937	59.9	60.7	60.2	44.9	51.8	56.5	957	1,039	1,348
Orissa	981	54.1	51.9	53.0	31.0	38.7	44.2	477	535	694
Punjab	879	64.3	64.3	64.3	35.2	42.6	47.7	1,354	1,652	2,143
Rajasthan	919	54.8	55.4	55.1	22.0	28.2	32.7	535	666	864
Tamil Nadu	977	58.3	57.9	58.1	42.9	50.4	55.4	584	828	1,074
Uttar Pradesh	885	51.1	46.9	49.1	24.5	30.8	35.3	519	607	787
West Bengal	911	57.0	56.3	56.6	40.5	48.1	53.3	797	860	1,116
India	933	55.6	56.4	56.0	34.0	40.8	45.5	698	812	1,053

Notes and Source: a Assam's population figure for 1981 is an official projection obtained from Government of India (1987). The national growth rate in adult literacy between 1971 and 1981 has been used to project Assam's adult literacy rates for 1981 and 1987.

b Figures on sex ratios are from the Census of India, 1981.

c Projections of life expectancy for males and females for all states except Himachal Pradesh and Jammu and Kashmir are based on the 'Report of the Expert Committee on Population Projections' and quoted in Government of India (1989). Figures of life expectancy in Himachal Pradesh and Jammu and Kashmir are based on the gains in life expectancy recorded between 1970-75 and 1976-80 given in Office of the Registrar General (1985).

d Rates of adult literacy have been computed from the Census of India, 1971 and 1981.

e Figures of real per capita SDP for the states are from Directorates of Economics and Statistics, and are quoted in Government of India (1989).

ficial poverty line in nine industrial countries, $4,861 (log value 3.68) has been taken a desirable upper value.

The deprivation indicator, I_{ij} for the j^{th} country with respect to the i^{th} variable is then defined as:

$$I_{ij} = \frac{(\max_j X_{ij} - X_{ij})}{(\max_j X_{ij} - \min_j X_{ij})}$$

A simple average of three indicators is then taken:

$$I_j = \sum_{i=1}^{3} I_{ij} / 3$$

The final step is to measure the as one minus the average deprivation index.

$$(HDI)_j = (1 - I_j)$$

The *Report* has calculated the HDI in 1987 for 130 countries and grouped them as shown in Table 1.

The HDI for 17 Indian states has been constructed for 1987 using the same methodology as in the *Report*. It would have been useful to calculate the HDI for the smaller states and union territories in India. However the absence of disaggregated data on health and life expectancy for the union territories and for the states of north-east India prevents the computation of the HDI for these regions. The selected states are those for which data on the three indicators are available as shown in Table 2. The following procedures have been adopted for estimating the values of life expectancy, adult literacy and per capita incomes for 1987:

Life expectancy at birth: The report on the expert committee on population projections gives projections of the life expectancy for males and females in different states of India for 1981-86. These life expectancy figures for 1981-86 have been weighted by the 1981 sex ratios to arrive at an estimate of the combined life expectancy figure for each state.

Adult literacy rate: The figures on adult literacy for 1971 and 1981 are available from the Census of India. The annual growth rates in adult literacy rates between 1971 and 1981 have been used as the basis to project adult literacy rates for 1987 for each state. For Assam, where the Census was not conducted in 1981, the average national growth rate in literacy between 1971 and 1981 has been used for making the projections.

Per capita GDP: According to the *Human Development Report*, India's real GDP per capita (in PPP $) for 1987 was $1,053. The value of each state's real GDP per capita has been estimated as follows:

(1) For each state, K_n, the ratio of the per capita net state domestic product measured at constant prices to the national per capita income at constant prices in 1987 has been computed.

(2) India's real per capita GDP (in PPP $) estimated at $1,053 for 1987 has been multiplied by K_n for each state to arrive at an estimate of the level of the state's real per capita GDP.

The basic data used for arriving at the estimates of the three indicators for 1987 are presented in Table 2. Table 3 shows the computation of HDIs for the 17 Indian states. The HDI index for India as a whole is 0.439, placing it in the category of low HDI countries. The diversity within India is conspicuous. The HDI ranges from a low of 0.292 in Uttar Pradesh to a high of 0.651 in Kerala. Only four Indian states out of the

TABLE 4: RANKING OF 17 INDIAN STATES BY HDI, 1987

	HDI	Per Capita Net State Domestic Product at 1970-71 Prices	
		Rs	Rank
Low HDI			
1 Uttar Pradesh	0.292	607	5
2 Bihar	0.306	482	1
3 Madhya Pradesh	0.344	583	3
4 Rajasthan	0.347	666	7
5 Orissa	0.348	535	2
6 Assam	0.372	605	4
7 Jammu and Kashmir	0.381	684	8
8 Andhra Pradesh	0.397	758	9
9 Himachal Pradesh	0.462	855	12
10 Gujarat	0.465	860	13
11 West Bengal	0.467	860	13
12 Karnataka	0.475	799	10
13 Tamil Nadu	0.483	828	11
Medium HDI			
14 Haryana	0.514	1,233	16
15 Maharashtra	0.532	1,039	15
16 Punjab	0.586	1,652	17
17 Kerala	0.651	639	6

TABLE 3: HUMAN DEVELOPMENT INDEX FOR 17 INDIAN STATES, 1987

	Life Expectancy at Birth	Adult Literacy Rate (Per Cent)	Real SDP Per Capita (PPP $)		Deprivation				Human Development Index	SDP Per Capita Rank 1987	HDI Rank Minus SDP Rank
			Actual	Log	Life Expectancy	Adult Literacy	North Minimum Purchasing Power	Average of the Three			
1 Uttar Pradesh	49.1	35.3	787	2.90	0.80	0.74	0.59	0.708	0.292	5	4
2 Bihar	54.1	33.6	625	2.80	0.66	0.76	0.66	0.694	0.306	1	−1
3 Madhya Pradesh	52.4	42.4	756	2.88	0.71	0.66	0.60	0.656	0.344	3	0
4 Rajasthan	55.1	32.7	864	2.94	0.64	0.77	0.56	0.653	0.347	7	3
5 Orissa	53.0	44.2	694	2.84	0.69	0.64	0.63	0.652	0.348	2	−3
6 Assam[a]	52.4	48.5	785	2.89	0.71	0.59	0.59	0.628	0.372	4	−2
7 Jammuu and Kashmir	56.8	36.9	887	2.95	0.59	0.72	0.55	0.619	0.381	8	1
8 Andhra Pradesh	58.0	35.3	983	2.99	0.56	0.74	0.51	0.603	0.397	9	1
9 Himachal Pradesh	56.6	52.2	1,109	3.05	0.60	0.55	0.47	0.538	0.462	12	3
10 Gujarat	56.8	52.5	1,116	3.05	0.59	0.54	0.47	0.535	0.465	13	3
11 West Bengal	56.6	53.3	1,116	3.05	0.59	0.53	0.47	0.533	0.467	13	2
12 Karnataka	60.6	48.0	1,037	3.02	0.49	0.59	0.50	0.525	0.475	10	−2
13 Tamil Nadu	58.1	55.4	1,074	3.03	0.56	0.51	0.49	0.517	0.483	11	−2
14 Haryana	60.6	46.2	1,600	3.20	0.49	0.61	0.36	0.486	0.514	16	2
15 Maharashtra	60.2	56.5	1,348	3.13	0.50	0.50	0.41	0.468	0.532	15	0
16 Punjab	64.3	47.7	2,143	3.33	0.38	0.60	0.26	0.414	0.586	17	1
17 Kerala	67.6	84.1	829	2.92	0.30	0.18	0.57	0.349	0.651	6	−11

Table 5: HDI of 17 Indian States and of Countries in 'Low' and 'Medium' Categories

Country	HDI	Country	HDI
Low HDI		40 Kampuchea, Dem	0.471
1 Niger	0.116	41 Cameroon	0.474
2 Mali	0.143	*Karnataka*	0.475
3 Burkina Faso	0.150	42 Kenya	0.481
4 Sierra Leone	0.150	43 Zambia	0.481
5 Chad	0.157	*Tamil Nadu*	0.483
6 Guinea	0.162	44 Morocco	0.489
7 Somalia	0.200	**Medium HDI**	
8 Mauritania	0.208	45 Egypt	0.501
9 Afghanistan	0.212	46 Lao PDR	0.506
10 Benin	0.224	*Haryana*	0.514
11 Burundi	0.235	47 Gabon	0.525
12 Bhutan	0.236	Maharashtra	0.532
13 Mozambique	0.239	48 Oman	0.535
14 Malawi	0.250	49 Bolivia	0.548
15 Sudan	0.255	50 Myanmar	0.561
16 Central African Republic	0.258	51 Honduras	0.563
17 Nepal	0.273	52 Zimbabwe	0.576
18 Senegal	0.274	53 Lesotho	0.580
19 Ethiopia	0.282	*Punjab*	0.586
Uttar Pradesh	0.292	54 Indonesia	0.591
20 Zaire	0.294	55 Guatemala	0.592
21 Rwanda	0.304	56 Viet Nam	0.608
22 Angola	0.304	57 Algeria	0.609
Bihar	0.306	58 Bostswana	0.646
23 Bangladesh	0.318	59 El Salvador	0.651
24 Nigeria	0.322	*Kerala*	0.651
25 Yemen Arab Republic	0.328	60 Tunisia	0.657
26 Liberia	0.333	61 Iran, Islamic Republic	0.660
27 Togo	0.337	62 Syrian Arab Republic	0.691
Madhya Pradesh	0.344	63 Dominican Republic	0.699
Rajasthan	0.347	64 Saudi Arabia	0.702
Orissa	0.348	65 Philippines	0.714
28 Uganda	0.354	66 China	0.716
29 Haiti	0.356	67 Libyan Arab Jamahiriya	0.719
30 Ghana	0.360	68 South Africa	0.731
31 Yemen, PDR	0.369	69 Lebanon	0.735
Assam	0.372	70 Mongolia	0.737
Jammu and Kashmir	0.381	71 Nicaragua	0.743
32 Cote d'Ivoire	0.393	72 Turkey	0.751
33 Congo	0.395	73 Jordan	0.752
Andhra Pradesh	0.397	74 Peru	0.753
34 Namibia	0.404	75 Ecuador	0.758
35 Tanzania	0.413	76 Iraq	0.759
36 Pakistan	0.423	77 United Arab Emirates	0.782
37 India	0.439	78 Thailand	0.783
38 Madagascar	0.440	79 Paraguay	0.784
Himachal Pradesh	0.462	80 Brazil	0.784
Gujarat	0.465	81 Mauritius	0.788
West Bengal	0.467	82 Korea, Dem Republic	0.789
39 Papua New Guinea	0.471	83 Sri Lanka	0.789
		84 Albania	0.790

Source: Table 1, Human Development Index, *UNDP Report*; and from Table 4 of this note.

17, Haryana, Maharashtra, Punjab and Kerala, had an HDI in the medium category. Ranking the states of India along with the countries ranked in the *Report* makes for an interesting comparison.

India as a whole ranks 37th in terms of HDI. Among the Asian countries, it has a higher HDI than Afghanistan, Bhutan, Nepal and Bangladesh, but its HDI is much lower than Sri Lanka, Thailand, China and Philippines. If India's HDI is compared with those of African countries, India has done better than Somalia, Ethiopia, Nigeria and Uganda, but not as well as Botswana, Zimbabwe, Zambia and Egypt. If we compare India's HDI with those of developing countries in Latin America, we find that with the exception of Haiti, all other countries in Latin America have a higher HDI than India.

There were only 19 countries with a lower HDI than Uttar Pradesh, the state with the lowest HDI in India. Uttar Pradesh with an HDI of 0.292 lies between Ethiopia and Zaire, ranked 19th and 20th respectively. The HDIs for Bihar, Rajasthan, Madhya Pradesh and Orissa are in the same region as Bangladesh, Nigeria, Uganda, Haiti, and Ghana. Kerala, the state with the highest HDI in India, comes between Botswana and Tunisia, ranked 58th and 60th in the world respectively. Kerala's achievements are exceptional given that the level of human development has been achieved despite low per capita incomes. While 101 countries had per capita incomes that were higher than Kerala's, there were only 51 countries in the world with a higher life expectancy and 53 countries with a higher adult literacy than the levels achieved in Kerala.

Notes

[I am grateful to Lincoln Chen, T N Krishnan, V K Ramachandran, and Amartya Sen for comments.]

1 UNDP [1990]. On the concept of capabilities, see Sen [1985] and Dreze and Sen [1989]

2 "The third key component of human development—command over resources needed for a decent living—is perhaps the most difficult to measure simply. It requires data on access to land, credit, income and other resources. But given the scarce data on many of these variables, we must for the time being make the best use of an income indicator"; [UNDP, 1990, p 12].

3 "A further consideration is that the indicator should reflect the diminishing returns to transforming income into human capabilities. In other words, people do not need excessive financial resources to ensure a decent living. This aspect was taken into account by using the logarithm of real GNP per capita for the income indicator" [UNDP, 1990, p 12].

4 The HDI is not conceptually or statistically equivalent to the Physical Quality of Life Index (PQLI). The PQLI treats development as achieved well-being. The focus of the *Report* is on socioeconomic development, with development viewed not as an expansion of commodities and wealth, but as the widening of human choices. For a further discussion on the differences, see UNDP [1990], Technical Notes No 1.

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COMH-70.25

(A)

Poverty Estimates and Indicators

Importance of Data Base

M H Suryanarayana

This paper emphasises the importance of the data base in any discussion of poverty and identifies the major data gaps for policy studies. Beginning with the identification of the poor based on a measure of standard of living and a minimum norm and going up to the final stage of policy prescription, an awareness of the data base and the constraints it imposes on interpretations is crucial. Conventional approaches to poverty identification and measurement presuppose a stationary economy. But in an economy subject to changes in institutional parameters involving increasing commercialisation of product markets and growing casualisation of labour markets, as in India in recent years, the conventional approach can yield misleading results and policy prescriptions.

I
Introduction

IDENTIFICATION of the poor and estimating the magnitude of poverty has received considerable attention during the reform programme for stabilisation and structural adjustment in different countries all over the world. Identification of the poor is important for effective targeting of various poverty alleviation programmes and safety nets so as to ensure their budgetary cost effectiveness in minimising the social cost of the reform programme. The magnitude of poverty has to be estimated for assessing the budgetary implications of the various safety net programmes and for evaluations of these programmes. As part of its efforts to minimise the social costs of the reform programme and the associated budgetary costs, the Indian government is also seized of the problem of identifying the poor, the magnitude of poverty and their cost-effective solutions. Ever since the reform programme began in July 1991, there has been considerable debate on efficient targeting of the various poverty alleviation programmes and safety nets, the public distribution system in particular.

As for any empirical policy study, effective solutions for the issues raised above presuppose an efficient information set. The information requirement varies with the questions raised and the proposed objectives of policies. If the questions are who are the poor, what is the magnitude of poverty and if the objective is to examine the welfare levels and consequences of policy changes, then a measure of economic (material) welfare or standard of living would be the relevant variable. If the question is what makes the people poor and the purpose is to formulate efficient policies for poverty alleviation then causes and correlates of poverty assume relevance. In either case, identifying the poor assumes a lot of importance.

Poverty is generally defined as the inability to secure a minimal level of economic welfare. This raises the questions: How to measure economic welfare? What constitutes a minimal norm or poverty criterion? The answers for these questions depend, in turn, upon the scope for policy action as dictated by government's resource constraint, social consciousness and academic perception of the problem. This is because economic welfare may be measured in terms of different variables: per capita income, per capita consumer expenditure, per capita food consumption, Engel ratio, calorie intake, anthropometric measures or basic needs. Poverty groups identified, estimates of their magnitude and policy measures designed will vary depending upon the economic welfare measure chosen for defining poverty.[1] All through the post-independence period the focus of academic research as well as government policy reports in India has been on absolute poverty or the proportion of the poor population. Absolute poverty is estimated on the basis of private consumer expenditure with reference to a poverty line defined on a normative calorie intake basis. Even when we address such a narrow set of questions, the scope for misinterpretation of statistical measures by disregarding data considerations is considerable and hence, the question of data base is quite important.[2] The most widely used data base for poverty studies in India is the household consumer expenditure data collected by the National Sample Survey Organisation (NSSO). Conceptually, consumer expenditure as a measure of standard of living has the advantage that it is amenable to welfare interpretations subject, of course, to the limitation that it does not consider the welfare derived from leisure and pure public goods. In a predominantly monsoon dependent agricultural economy like India where agriculture constitutes the source of livelihood of about two-thirds of the population, consumer expenditure measure has an additional advantage that it may not reflect the periodic variations in income. But, when it comes to empirical verifications it bristles with many problems. Empirically, conclusions from comparison of real consumer expenditure levels would vary depending upon how different items of consumption are valued. In a country where income distribution is not optimal, market price is not a proper welfare measure. In addition, as regards the NSS data base, there are a number of statistical questions regarding its reliability. There are other issues like sample data presentation, tabulation and institutional parameters which have been ignored in the poverty studies resulting in misleading inferences.

Even though the government has been carrying out poverty alleviation programmes, much remains to be done on the poverty-identification and measurement fronts for policy operational purposes. This is so in spite of the policy emphasis on cost-effectiveness of the poverty alleviation programmes.[3] Cost-effectiveness can be achieved either by maximising benefits to the poor for a given budgetary cost or by minimising the cost subject to a poverty alleviation target. One approach to achieve cost-effectiveness is by 'better targeting' of programmes, i e, by maximising the coverage of the poor and minimising the leakages of benefits to the non-poor. How do we pursue such goals and formulate different policy actions? Different country experiences including that of India have shown that identifying the poor for purposes of targeting by 'means-test' is administratively costly. This is because people have an incentive to under-report incomes so as to secure more benefits than they are eligible for.[4] If so, targeting is desirable so long as the administrative cost of identifying the poor does not exceed the saving involved in excluding the non-poor. This problem is sought to be overcome by 'indicator targeting', i e, by making eligibility for benefits conditional on correlates of poverty, such as land holding, caste, or place of residence.[5] In that case, we need to ask, what are the appropriate indicators or correlates

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of poverty and their implications? What are the data requirements in such a context?

This paper addresses some of these questions pertaining to the two themes of poverty estimates and targeting of programmes. The paper is organised as follows. Section 2 deals with the first set of issues on data base for estimating the magnitude of poverty in India, i e, consumer expenditure data collected by the NSSO, its limitations, scope for wrong inferences and the need for an integrated approach. Section 3 deals with the shift in emphasis towards targeted welfare programmes for the poor and their implications for methodology and data base. The final section sums up the paper.

II
Data Base for Poverty Estimates

Poverty analysis in India is generally carried out using private household consumer expenditure as a measure of standard of living.[6] Income/consumer expenditures are sufficient measures so long as they include own production. Even then they capture only certain economic aspects of welfare. They do not take into account other dimensions of welfare like health, life expectancy, literacy, access to safe drinking water, public goods or common property resources. In fact, these other dimensions are important since they do not remain the same over time in the course of economic development. Poverty, defined and estimated using a narrow concept of standard of living, has its own limitations in the context of a developing economy.

Much has been written about the adequacies and inadequacies of the NSS methodology and their implications for estimates of consumption aggregates and distributions [Dandekar and Rath 1971; Dandekar and Venkataramaiah 1975; Iyengar and Bhattacharya 1975; Kadekodi 1992; Minhas 1988; Mukherjee 1986; Srinivasan and Bardhan 1974; Suryanarayana and Iyengar 1986; Tyagi 1982; Vaidyanathan 1986a, 1988]. Most of these studies examine the question of reliability of the NSS estimates of the underlying population parameters by different statistical criteria. This section of the paper examines the implications of some of the features of the NSS estimates of consumer expenditure for poverty estimates and their interpretation in the course of development.

The NSS is a socio-economic enquiry carried out in the form of successive rounds. The period of enquiry has been varying across rounds and has varied from a few weeks to months. During these rounds, the NSS collects information on various socio-economic aspects of households, household consumption being one of the most important. The data are collected on the basis of interviews of households. The households are selected following simple random sampling. The sample design is stratified and two-stage in both rural and urban sectors. The stratification of rural areas is with respect to homogeneity of population density, cropping pattern, etc, while that of urban areas is with respect to population sizes of towns and cities. The first stage units are villages in the rural sector and urban blocks in the urban sector. The households constitute the second stage units in both the sectors.[7]

The NSS concept of consumer expenditure includes all the non-productive expenditure incurred by the households. It includes consumption out of home-grown produce, gifts, loans, etc. Data on perquisites like food in the employer's house are not included in the NSS estimates of consumption of the employee households. This must have resulted in underestimation of foodgrain consumption by the employee households who in the rural sector are generally poor landless households. In-kind wage payments, including prepared food at the employer's home, used to be quite common during the 1950s and 1960s. The consequent underestimation of foodgrain consumption by the labour households must have resulted in overestimation of poverty, particularly distributionally sensitive measures like the Sen index [Sen 1976] and the P_2 measure [Foster-Greer-Thorbecke 1984]. According to the second agricultural labour enquiry of 1956-57, agricultural labourers received wage payments in kind for about 50 per cent of the mandays worked.[8] As studies [see, for instance, Vaidyanathan 1986b] have shown, there has been increasing landlessness and casualisation of labour since the mid-1970s, which must have resulted in increasing market dependence of the poor. Such progressive market dependence of the landless poor must have involved increasing monetisation of the labour market and hence, also that of their consumption. As a result, the extent of underestimation of foodgrain consumption by the poorer households and hence, overestimation of poverty must have declined. This is one factor that has to be taken into account in interpreting the observed declining trends in poverty estimates since the mid-1970s.

The NSS does not take into account the imputed rental value of owner occupied houses. This would affect estimates of consumer expenditure inequality measures and hence any estimation of poverty based on the inequality parameter.[9] The consumer expenditure data are collected by the NSS using a moving reference period by which the interviewing of sample households is spread over the year. This introduces a seasonality bias into the data. Its implications have been well documented in the literature. What is little recognised is that such a procedure also superimposes price variation on actual variation in consumption during a period of rising prices. This will affect estimates of poverty and inequality based on consumer expenditure distribution. This must have been a serious problem for estimates of poverty and inequality for the 1960s and 1970s when there was considerable inter-year price dispersion caused by restrictions on inter-state foodgrain movements [Ray 1970]. This is one aspect which has not been taken into account in the studies on trickle down of agricultural growth in rural India [Suryanarayana 1996b].

The NSS surveys are generally based on the consumer expenditure schedules. The NSS surveys were integrated household surveys during the 19th to 25th rounds inclusive. That the NSS used integrated schedule only for some select rounds has affected adversely the inter-temporal comparability of its estimates of consumer expenditure and hence poverty estimates. Available evidence indicates that people under-reported their consumption during the rounds covering the integrated household surveys [Mukherjee and Saha 1981; Suryanarayana 1996b]. Accordingly, the NSS estimates of consumer expenditure for these years are substantially lower than the National Accounts Statistics (NAS) estimates. This could be one reason why NSS based poverty estimates show substantially higher levels of poverty during the 1960s. Thus, such questions on inter-temporal comparability of data base affect inferences on trends in poverty.

The data base also gets affected by the method of valuation. Poverty estimates based on such data using conventional statistical deflators may be valid in a given stationary context but loses its meaning and relevance when the context itself undergoes a change. For instance, the NSS distinguishes between consumption from homegrown stock and that from market purchases, and values the former at farm harvest prices and the latter at market retail prices. In a semi-monetised economy where a substantial segment of the rural population consists of subsistence farmers, this approach may be valid. For instance, consumption out of home grown stock accounted for 50.9 per cent of total food grains consumption in the rural areas and 7.15 per cent in the urban areas during 1964-65 [GOI 1972:4]. In the development context, as observed in recent years in India, institutions, labour markets, and production conditions change. As already noted, with progressive market dependence of the poor there must have been increasing monetisation of consumption. By the NSS method of valuation, the same amount of physical consumption would get exaggerated in nominal terms due to changing price weights, whereby an increasingly larger part of

consumption is valued at (generally) higher retail prices. On the other hand, with the green revolution, there have been changes in the crop composition of foodgrain output from the cheaper inferior cereals to superior but costlier superior cereals like rice and wheat involving a decline in per capita availability of coarse cereals necessitating a shift in consumption patterns in favour of the latter. In such a context, inferences on trends in measures of poverty based on estimates of consumer expenditure obtained by dual valuation can be misleading [see, for details, Suryanarayana 1995].

Such questions are fundamental for any empirical study on poverty during the development process. Few studies have addressed these questions or cared to relate them to their main query. Both are needed because a poverty measure, like any other descriptive statistical measure, is a conditional measure, i e, conditional on the prevailing structural features like market, production and other institutional parameters. Unless one considers these conditional parameters, one is likely to end up making wrong inferences. The following is an example. The very concept of poverty line and its updating by simple price ratios does not make sense since with changes in structural parameters the base year poverty line is not valid any longer. Similarly, various poverty measures which are supposed to aggregate and summarise characteristics of the poor will not convey the dynamics of underlying changes. For instance, Ahluwalia (1978) does not examine these institutional parameters; instead Ahluwalia regresses poverty estimates on agricultural production and confirms trickling down of growth to the poor. But actually due to structural changes in production conditions and labour markets, cereal consumption of the general population and some poorer sections has actually declined contrary to what one would expect during a period of poverty reduction [Suryanarayana 1995]. A similar limitation applies to the recent debate on economic reform and increase in poverty. Studies, using poverty measures, have not examined how far these measures summarise the dynamics underlying the explanation put forward by them. For instance, Tendulkar and Jain (1995) make estimates of poverty for 1990-91 and 1992. They find that between 1990-91 and 1992, there was a substantial increase in rural but only a marginal increase in urban poverty. They contrast these rural and urban changes and attribute the increase in rural poverty to bad harvest. This is because economic reform measures in the initial years involved fiscal contraction and import compression which must have adversely affected the urban sector first. Hence, urban poverty should have increased more sharply than the rural. That this did not happen was, according to them, due to the decline in agricultural production particularly coarse cereals along with speculative hoarding by traders and farmers which resulted in an increase in cereal prices reducing thereby the economic entitlement of only the rural poor. The urban poor did not suffer to the same extent because they were relatively better protected by the urban-biased public distribution system (PDS). Thus, Tendulkar and Jain conclude that economic reforms contributed indirectly and was not a major cause of increase in rural poverty. They arrive at these conclusions without examining how far the data or the summary measure reflects the postulated economic processes. They build up poverty estimates and their explanations from diverse non-comparable data sources. As shown in Suryanarayana (1996a), the price indices used in obtaining rural-urban poverty estimates are outdated and non-comparable. Further, the NSS data itself shows that percentage reduction in cereal consumption was more in the urban than in the rural areas in majority of the states and particularly in the most urbanised states of Maharashtra, Gujarat and West Bengal. Thus, the statistical details underlying the summary statistics do not provide any support for the explanation put forward by Tendulkar and Jain. Instead, they support the contrary, by their own reasoning. These two illustrations show the importance of data base and its verification in any discussion on poverty analysis, explanation and their policy implications.

There is another limitation stemming from the fact that poverty estimates based on consumption data are conditional measures, namely, these consumption estimates do not take into account the access to common property resources[10] and their importance for the poor. For instance, as Jodha (1990) shows, in dry regions of India in 1982, about 84 to 100 per cent of the poor population depended on common property resources for fuel, fodder and food. Over time, there has been a decline in area, productivity and maintenance of these common property resources due to large-scale privatisation, inappropriate policies and programmes for productivity improvements, increased commercialisation resulting in over-exploitation and resource degradation, etc. This has resulted in reduced reliance of the poor on common property resources and hence, increased cost of achieving the basic minimum level of living. Therefore, the current approach of updating the poverty line by adjusting for only price changes may not be valid; instead the very poverty line may have to be redefined before obtaining the conditional poverty measures. Accordingly solutions for poverty eradication may differ and get varying emphasis.

Further, the NSS estimates of consumer expenditure would serve the purpose so long as the questions to be addressed are limited and confined to a poor economy subject to serious budget constraint which restricts the policy options and size. In such a context, caloric based 'minimal' poverty line reflects an approach to poverty alleviation which is concerned with eradication of mass hunger and starvation. Accordingly, the studies in India have all along considered a calorie based poverty norm and confined themselves to measuring absolute poverty. This explains why factors other than hunger got low priority in policy formulations, and plan achievements with respect to primary education, primary health, etc, have remained quite modest. Therefore, it is time that we defined a poverty line with adequate provision for education, nutrition, health, housing, etc. This would call for data on various socio-economic aspects of rural households.

But, even access to public services and common property resources vary across households. No single survey data gives information on all these aspects. This would raise questions regarding comparability and integrability of the data sets on various aspects. For instance, the NSS estimates of household size based on the survey of social consumption is quite different from that based on the consumer expenditure survey for 1986-87. The average household size is 5.26 in rural all-India and 4.79 in urban all-India as per the NSS annual consumer expenditure survey but 5.20 and 4.90 respectively as per the NSS social consumption survey [GOI 1989 and 1990]. Therefore, even though there are various NSS surveys of different socio-economic aspects of households, there are questions regarding the extent to which such data can be combined to throw up a complete and integrated picture of poverty.

Policies for a sustained solution for poverty can be formulated only with an adequate understanding of the nature and causes of poverty. This calls for a distinction between chronic and transient aspects of poverty. Such aspects can be examined only with panel data. Of course, it will raise questions as to how far the results based on such panel data can be generalised for the population. Their value is essentially from their policy implications and suggestions. One approach to overcome such constraints could be to examine qualitative aspects of economic life. Jodha (1988) shows that there is a need for supplementing macro investigations with micro studies. Of course, often they end up with contradicting conclusions. Jodha explains such contradictions in terms of methodological deficiencies of the micro approaches. Such deficiencies are due to (i) restrictive concepts and categories used for identifying rural realities; (ii) restrictive

norms and yardsticks used for assessment of rural realities; and (iii) communication gaps between the researcher and the respondent. Jodha (1988) illustrates the need for supplementing researcher's approach by the respondent's approach, citing results on incidence of poverty in two villages of Rajasthan during 1963-66 and 1982-84. Poverty identification was done by the conventional approach using the income criterion and by qualitative indicators of economic well-being. Households that had become poorer by the income criterion were actually better off by the qualitative measures of economic well-being. The villagers measured the changes in their economic status in terms of the following criteria: (i) decline in their reliance on the traditional patrons, landlords, and resourceful people for sustenance, employment, and income; (ii)decline in dependence on low pay-off jobs; (iii) improved mobility and liquidity position; (iv) shifts in consumption patterns and investment in durables. The changes reflected by these qualitative indicators are essentially the result of gradual changes over a long period of time unlike those reflected by the changes in income which capture only the transitory components.

In fact, the very purpose of the development process and policies is to achieve such improvements in economic status and opportunities and any analysis of changes in poverty has to consider such improvements. This underlines the need for supplementing information on consumption by other qualitative indicators so as to arrive at correct inferences. One effective solution seems to be a decentralised approach with the participation of the local people in identifying the poor, determining solutions for the poor and targeting them for the poor.

III
Poverty Alleviation Programmes and Indicator Targeting

How do we identify the poor by some simple indicators so as to ensure targeting of benefits only to the poor? The Government of India set up a working group to evolve an acceptable methodology for identifying the poor through criteria alternative to per capita income/calorie requirement. The working group considered the household as the unit of enquiry for identification [GOI 1985b]. The group sought to identify poor households by characteristics "which are simple, easily verifiable and easily amenable to collection and recording of information about them without observational errors". The list of household characteristics considered for field survey for identification of the poor is given in appendix I. However, the actual study was based on the results of the survey conducted by the directorate of economics and statistics, Maharashtra of the standard of living of the rural households during 1982-83. This was a re-survey of the same set of households canvassed during the 32nd round of the NSS during 1977-78. Essentially the group attempted a dichotomous classification of the households into poor and non-poor on the basis of not only consumer expenditure but also other household characteristics. The efficiency of classifying households as poor or otherwise by other characteristics was assessed by the extent of mis-classification *vis-a-vis* that by consumer expenditure.

The analysis was conducted for the sample data from the two districts of Aurangabad and Solapur. For example, one exercise was based on a sample of 171 households from Aurangabad. The study found that six characteristics, namely, (i) land possession, (ii) irrigated land, (iii) type of wall, (iv) possession of sofa-cot, (v) floor area per capita, and (vi) possession of account in bank/post office, were highly correlated with per capita consumption expenditure. A comparison of the classification of households into poor and non-poor by these characteristics with that by consumption expenditure by the discriminant analysis showed that the overall mis-classification was as high as 34.5 per cent. Among the six characteristics considered, land possession and irrigated land had low correlation with per capita expenditure. Hence, the exercise was repeated by dropping these two characteristics but the extent of mis-classification reduced to only 26.9 per cent. A similar exercise was carried out on the basis of a sample of 300 households from Solapur. The exercise considered 41 characteristics consisting of 24 qualitative characteristics (converted into quantitative form by standardisation assuming normal distribution), five quantitative characteristics and 12 new characteristics constructed from the sample data. From these, 14 characteristics having high correlation with per capita expenditure but low correlation among themselves were selected for discriminant analysis.[11] The study found the extent of mis-classification was about 35 per cent under two alternative threshold values and the results did not change substantially even for analyses based on (five-year) lagged and current per capita consumption. The group concluded that there is no alternative to the identification of the poor except by annual income or expenditure. Of course, when the estimates of per capita consumption itself has so many limitations, one may raise questions regarding the classification by expenditure criterion as the reference classification. It is also difficult to justify the assumption of normality while transforming the attribute values of qualitative characteristics into standard normal variate. This seems to be a major limitation of the exercise. For, normality of variables is a basic assumption of the discriminant analysis, which is very sensitive to the fulfillment or otherwise of the basic assumptions.

Attempts have been made in India for targeting some of the poverty alleviation programmes on the basis of the means-test. For example, the ministry of rural development identifies household by income criterion for targeting the benefits of the Integrated Rural Development Programme (IRDP). The target group is the rural poor consisting of scheduled castes, scheduled tribes, agricultural labourers, marginal

TABLE 1 : PROPORTION OF HOUSEHOLDS BENEFITTING FROM SPECIFIED POVERTY AMELIORATION PROGRAMME BY SOCIO-ECONOMIC STATUS: ALL-INDIA RURAL
(a) : Across Monthly Per Capita Expenditure Classes

Monthly Per Capita Expenditure (Rs) Class	Less Than 65	65-80	80-95	95-110	110-125 (Poverty Line 122.63)	125-140	140-160	160-180	180-215	215-280	280-385	385 and above	All
Number per 1000 of households receiving IRDP assistance by MPCE (Rs) class	60	60	64	66	63	67	63	63	60	67	57	60	63
Number per 1000 of households participating in public works by (MPCE) (Rs) class	81	75	76	72	67	66	67	56	60	51	49	42	64

Source: GOI (1993).

farmers with annual income less than a specified threshold level (Rs 6,400 per annum per family in 1987) and bonded labour families. The beneficiaries are identified in two stages. To begin with, a family income survey/census is carried out to ascertain family income from all sources. In the second stage, a list of all potential beneficiaries is prepared. The list is further screened by the gram sabha or in the general meeting of the village residents. But, this is not a fool-proof criteria. Studies by the National Bank for Agriculture and Rural Development (NABARD) and programme evaluation division of the planning commission have shown that there are leakages of IRDP benefits to ineligible households.[12]

Recent estimates of distribution of number of beneficiary households per thousand households of different poverty alleviation programmes across economic classes, occupational groups and social classes also show considerable leakages to the non-targeted groups. The NSSO collected information on receipt of IRDP assistance, participation in public works, etc, during the 43rd round survey on consumer expenditure. The enquiry, among other things, was about households which received IRDP assistance sometime during the last five years, those which participated in public works during the last 365 days and their consumption during the month preceding the date of survey. Tables 1 to 4 provide the proportion of beneficiary households across different socio-economic status. The results on distribution of proportion of IRDP beneficiary households across monthly per capita expenditure (MPCE) classes show that they are uniformly spread over all expenditure classes (Table 1). Since IRDP benefit refers to assistance received some time during the last five years while MPCE relates to the month preceding the survey, the results cannot be treated as unambiguous evidence of misallocation of IRDP since the observed pattern could also be due to the very success of IRDP in poverty alleviation. Therefore, the question on IRDP targeting should be verified further and one option would be to examine the spread of beneficiary households across six different 'land possessed' classes of households (Table 2). The data bring out that IRDP benefits have been conferred on all classes of households, and not on only the poorer groups. The state-wise data show that in Andhra Pradesh, Assam and Bihar, the proportion of beneficiary households increases with size class of land possessed; but in Kerala, Punjab and Himachal Pradesh the proportions of beneficiary households are more in the lower classes of land possessed [GOI 1993:101]. The findings on IRDP leakages to non-eligible households get only confirmed by the data on distribution of beneficiaries across other socio-economic categories (see Tables 3 and 4).

During the ongoing economic reform programme, there is renewed stress on the need for cost-effective safety nets to protect the poor without exacerbating the government budget deficit. This has called for targeting of various welfare programmes like the PDS. Any targeting exercise presupposes identification of the poor by means test or some other criteria. In the context of the PDS reform, experts have argued for commodity based targeting also by re-orienting the PDS in favour of coarse cereals, little realising that the consumption patterns of even the poor have undergone a change against coarse cereals and other inferior food items. This has happened partly due to availability constraints, partly due to increased incomes and hence entitlement, and due to greater market exposure [see Suryanarayana 1995].

Similar suggestions for indicator targeting have been made with respect to poverty alleviation programmes. Experts have recommended employment-oriented strategy towards poverty alleviation on the ground that it permits self-selection of the poor and hence leakages to the non-poor will be minimum. This is based on the understanding that there is considerable scope for targeting by setting the wages at the reservation level in programmes like public works. The reservation wage for unskilled workers being

TABLE 2 : PROPORTION OF HOUSEHOLDS BENEFITING FROM SPECIFIED POVERTY AMELIORATION PROGRAMME BY SOCIO-ECONOMIC STATUS : ALL-INDIA RURAL
(b): Across 'Land Possessed' Classes

Size Class of Land Possessed (Hectares)	Less than 0.01	0.01-0.4	0..41-1.00	1.01-2.00	2.01-4.00	Above 4.00	All
Number per 1000 of households receiving IRDP assistance by land possessed class	49	64	72	71	60	52	63
Number per 1000 of households participating in public works by land possessed class	59	57	69	71	70	75	64

Source: GOI (1993).

TABLE 3 : PROPORTION OF HOUSEHOLDS BENEFITING FROM SPECIFIED POVERTY AMELIORATION PROGRAMME BY SOCIO-ECONOMIC STATUS: ALL-INDIA RURAL
(c): By Type of Household

Household Type	Self-Employed in Agriculture	Agricultural Labour	Other Labour	Self-Employed in Agriculture	Others	All
Number per 1000 of households receiving IRDP assistance by household type	78	7	66	62	27	63
Number per 1000 of households participating in public works by household type	59	66	168	40	30	64

Source: GOI (1993).

TABLE 4 : PROPORTION OF HOUSEHOLDS BENEFITING FROM SPECIFIED POVERTY AMELIORATION PROGRAMME BY SOCIO-ECONOMIC STATUS : ALL-INDIA RURAL
(d): By Social Group

Household Group	Scheduled Tribe	Scheduled Caste	Neo-Buddhist	Others	All
Number per 1000 of households receiving IRDP assistance by household group	82	94	156	51	63
Number per 1000 of households participating in public works by household group	127	75	129	52	64

Source: GOI (1993)

inversely related to poverty, only the poor are expected to participate in such programmes, whereas the opportunity cost of participation is higher for the non-poor. However, Indian experience even with indicator targeting of poverty alleviation programmes has not been that successful. One important reason seems to be the faulty design of such programmes like guaranteed minimum wages and not reservation wages. The NSS results about the beneficiaries of public works programmes from the 43rd round survey are as follows. As regards public works beneficiaries, the NSS considers a household as a participant in public works during the reference period (365) days if at least one member of the household has worked for 60 days or more during the reference period. From Table 1, it can be seen that the proportion of household beneficiaries per 1000 households declined from 81 for the poorest expenditure class to 42 for the richest expenditure group for all-India. For Orissa, Bihar, Assam, Tamil Nadu, Andhra Pradesh and Uttar Pradesh, no such declining trend can be observed. The proportion of beneficiaries is higher in lower expenditure classes only in Gujarat, Rajasthan and Maharashtra (GOI 1993:104). The data on household classification by classes of land possessed for all-India show that the proportion of household participation is higher for groups possessing more land than those with less land (Table 2). When the public works participation is examined by occupation type of households, the all-India estimates show the participation to be highest among other labour households followed by agricultural labour households (Table 3). But in Tamil Nadu, West Bengal and Assam, it is the 'self-employed in non-agriculture' who seem to have benefited most than other categories. In all other states, 'other labour' households' participation is proportionately more; in Punjab and Maharashtra 'agricultural labour' and 'other labour' households participated more or less equi-proportionately [GOI 1993:104]. The data by social group, shows the SC/ST households to have benefited much more than 'other households' (Table 4). In sum, the evidence presented above brings out two salient features: (i) They indicate considerable leakages of benefits of poverty alleviation programmes like the IRDP and public works and hence call for their reform on the identification front for effective targeting. This would improve cost-effectiveness of these programmes and enhance the poor's economic access to food; and (ii) the pattern of leakages across different socio-economic categories vary across states suggesting that there is no single correlate or factor by which issues regarding targeting can be considered across the entire country.

There is also a need for studies to evaluate strategies and policies for poverty alleviation and their micro and macro implications in view of the current emphasis on efficient utilisation of resources. Even though there have been such studies based on computable general equilibrium (CGE) models, they have their own limitations. One major merit of such models is supposed to be their ability to endogenise the price vector and take into account the substitution effect of relative price changes. These CGE models[11] are based on traditional demand models for the rural sector in spite of the fact that a substantial portion of the rural resident households are subsistence and surplus farmers and their market participation rates for food consumption are very low. As per the available estimates, market participation rates for the all-India total rural population for rice and wheat were 57.19 and 30.2 per cent respectively in 1986-87 [GOI 1990]. For these households, an increase in the price of a staple commodity has not only a negative substitution and income effect but also a positive profit effect. Hence, there is a

Appendix I

List of Household Characteristics Considered by the Expert Group for Identifying the Poor

1 Principal occupation of the household
2 Secondary occupation of the household.
3 Household size by age and sex.
4 Number of earning members of the household.
5 Number of members working as attached labourers.
6 Number of workers engaged in non-agricultural occupation.
7 Monthly household expenditure.
8 Average monthly income of the household.
9 Total land possessed (irrigated + dry + others).
10 Total land owned by the household.
11 (a) Educational status
(b) Skill and training
12 Number of pairs of clothes in use.
13 General use of footwear, tea/coffee/soft drinks, hair oil, toilet soap/washing soap.
14 Housing : Area under roof
Type of walls of the house
Type of roof of the house
Height of the roof from the floor
Height of the floor
Type of floor
15 Lighting, electricity, lantern, etc.
16 Fuel – electricity, gas, kerosene, etc.
17 Livestock possession
18 Possessions: (a) Bullock cart
(b) Bicycle
(c) Motor cycle
(d) Car
(e) Time piece, torch
(f) Electric fan
(g) Sewing machine
(h) Electric iron
(i) Refrigerator
(j) Chairs and tables
(k) Utensils
(l) Cots
(m) Almirahs
(n) Carpets, mats, rugs
(o) Horse-drawn car (tonga)
(p) Rickshaw
(q) Hand-pulled cart
(r) Agricultural implements
19 Possession of an account in bank or post office.
20 Household reads newspaper.
21 Household members belong to co-operative societies.
22 Household indebtedness (with reason/purpose of loan)
23 Expenditure on food
24 Drinking water
25 Sanitation
26 Expenditure on ceremonies and functions*
27 Pattern of entertainment availed by the family.
28 Nutrition and Health parameters:-
a) Height and weight of children aged below five.
b) Measurement of mid-arm circumference of children.
c) Number of children born in the household during preceding five years and how many of these were found to be surviving on date of survey.

specification error involved in estimating a traditional demand model, which cannot take into account the profit effect, for the rural sector. The specification error must have been quite serious for India as most of these traditional demand models are estimated on the basis of the NSS data collected using a moving reference period spread generally over an agricultural year. Actually, consumer preferences in the rural sector have to be specified and estimated in terms of an agricultural household model that takes into account the interdependence of production and consumption decisions. Studies [Singh et al 1986] have shown that such specification errors really matter and the results differ depending upon whether the profit effect is considered or not. Estimates of own price elasticities of demand for agricultural commodity obtained using the two alternative approaches, that is, traditional demand and agricultural household models, differed significantly with respect to size for Japan, Thailand and Sierra Leone and with respect to both size and sign for Taiwan, Malaysia, Korea and Northern Nigeria. While the own price elasticity estimates obtained by the traditional demand models show negative consumer responses to agricultural commodity price changes for all the countries considered, those by agricultural household models show much smaller negative responses for Japan, Thailand and Sierra Leone but positive consumer responses for the remaining four countries [Singh et al 1986:27]. Equally striking are the differences in estimates of elasticities of demand for non-agricultural goods with respect to the price of agricultural goods. Cross price elasticities based on traditional demand models are small and negative because of negative income effects; those obtained from the agricultural household models are positive and large because of the positive profit effect. Unless the data required for such a type of specification and estimation are available, it is not possible to make accurate analysis of welfare consequences and policy implications of various market intervention and poverty alleviation programmes. But, even while using the traditional demand models for the general equilibrium analysis, some of the available CGE models are based on characterisation of consumer preferences by the Stone-Geary utility function and hence the Linear Expenditure System.[14] The underlying preference structure of the Stone-Geary utility function is additive, separable and linear. Demand models based on additive separability of preferences cannot account for substitution effects of relative price changes and price elasticities based on such demand models will be proportional to income elasticities [Deaton 1975]. Thus, the use of such demand models involves distorted measurement of consumer responses and hence, the price to be paid in using such models is 'too high' [Deaton 1974].[15] An attempt may be made to overcome these limitations by estimating demand systems that permit non-linear and non-separable preferences like the Almost Ideal Demand System [Deaton and Muellbauer 1980].[16] Such models can also be used to answer welfare related questions in a partial equilibrium framework at least for the urban sector. But the methodological problem is that the statistical properties of such models based on the NSS data are suspect. This is because the NSS estimates of total consumer expenditure at constant prices do not show any sustained growth or even substantial variation during the entire post-independence period [See, Suryanarayana 1995] and hence, the scope for obtaining statistically efficient estimates of parameters of non-linear consumer preferences is limited. In addition to this limitation, some of the CGE models do not have an explicit labour market and cannot account for the dynamics of labour market changes under the various poverty alleviation programmes.[17] This is not to say that these models and inferences based on them are invalid but to stress the need for appropriate modifications in their specification. Towards overcoming some of these limitations, it would be worthwhile to collect data on both consumption and productive activities of the households through integrated household surveys. Integrated surveys are important for evaluating the welfare implications of questions like increases in foodgrain prices. For answering such questions, it is not enough to have information on household food consumption but data on household food production are also needed.

IV
Summing Up

The preceding discussion emphasises the importance of data base in any discussion on poverty and identifies the major gaps for policy studies in India. Beginning with the primary question of identification of the poor based on a measure of standard of living and a minimum norm till the final stage of policy prescription, an awareness of the data base and the constraints it imposes on interpretations, etc, is quite important. The paper throws light on some such issues ignored in studies for India. It is noted that the conventional approaches to poverty identification and measurement presuppose a stationary economy. In a developing economy subject to changes in institutional parameters involving increasing commercialisation of product markets and increasing casualisation of labour markets as experienced by India in recent years, a conventional approach based on narrow data base and concepts can yield misleading results and policy prescriptions. Therefore, there is a need for an integrated approach for a comprehensive analysis.

Available evidence on the distribution of benefits across socio-economic classes of administratively targeted poverty alleviation programmes like the IRDP shows considerable leakages to the ineligible. Same holds good for public works programmes, where scope for self-targeting by fixing wages at the reservation level is considerable. Much needs to be done in the area of indicator targeting. The studies conducted by the expert group on identifying alternative indicators of poverty have their own methodological limitations and their conclusion that there is no alternative to identifying the poor except by means-test cannot be generalised for all time across the country. Same holds good for suggestions for indicator-based PDS reform by changing its commodity basket. In sum, the only effective solution seems to be decentralised approaches based on perceptions at the grass roots level.

Questions on macro strategies for poverty alleviation can be answered with appropriate computable general equilibrium models. Much needs to be done both in the specification and the estimation of such models for India. On the specification level, there is a need for agricultural household models for a predominantly rural and semi-monetised agricultural economy like India. Such models cannot be estimated without appropriate integrated household surveys and without relevant data on all aspects of household economic activities, which are presently not available in India. Such studies are also important for understanding the dynamics of changes in poverty and their welfare implications.

Notes

[This is a revised version of the paper presented at the workshop on 'Data Base for Rural Poverty Indicators' held at the National Institute for Rural Development, Hyderabad, during April 17-19, 1996.]

1 See, for instance, the study for Cote d'Ivoire by Glewwe and Van Der gaag (1990).

2 The question of aggregation, i e, how one obtains an index of poverty also matters from the point of view of policy design and implementation. As the planning commission admits, one of the reasons for ineffective targeting of Integrated Rural Development Programme (IRDP) is the tendency for the administrators to focus on those who are in the neighbourhood of the poverty line so as to claim higher success, measured in terms of head-count ratios, in poverty alleviation [Government of India 1983:49].

3 The Seventh Five-Year Plan states: "Cost-effectiveness of the programmes and minimisation of leakages should be the two guiding principles in the implementation of poverty alleviation programmes. Economic viability should be understood primarily in terms of cost effectiveness, i e, maximum income generation per unit of total expenditure incurred. This is to be distinguished from economic viability defined as level of investment sufficient to enable a family to cross the poverty line. The ability of a poorer household to cross the poverty line depends on its overall income, i e, income from the poverty alleviation programmes and other wage and non-wage incomes accruing to them" [GOI 1985a:51].

4 Glewwe and Kanaan (1989) show how household incomes can be predicted on the basis of household survey data on observable characteristics like area of residence and characteristics of household dwelling. These predictions in turn can be used to decide on budgetary allocations and income transfers to the poor so as to reduce poverty subject to the resource constraint.

5 see, for instance, Baker and Grosh (1994), Ravallion (1989) and Ravallion and Sen (1994). Similarly the question of alternative indicators of food and nutrition security for use in food and nutrition monitoring and evaluation systems has received considerable attention [Haddad et al 1994].

6 The working group appointed by the Government of India in 1962 distinguished between private expenditure and public expenditure, the latter supposed to be incurred by the state on health, education, etc. In keeping with this distinction, the expert committee defined poverty in terms of private household consumer expenditure [Perspective Planning Division 1962].

7 For details regarding how the sample size, number of strata, etc, has changed over time and their implications, see Vaidyanathan (1986a)

8 Cited in Jose (1978)

9 For instance, Ahluwalia (1978) estimates poverty measures in terms of parameters of Lorenz curve, proposed by Kakwani and Podder (1976), of consumer expenditure distribution.

10 The term common property resources refers to that of the community wealth or resources over which every member of the community has equal rights for use.

11 These were (i) Principal occupation; (ii) Use of toilet soap; (iii) Possession of torch; (iv) Reading newspaper; (v) Lighting; (vi) Having sofa-chair; (vii) Having cot-diwan; (viii) Possession of cup-board; (ix) Possession of fan; (x) Height of door; (xi) Irrigated land per capita; (xii) Land possessed per capita; (xiii) Floor area per capita; and (xiv) Per capita income.

12 These studies and their findings are cited in Subbarao (1985).

13 See, for instance, Janvry and Subbarao (1986), Mitra and Tendulkar (1986), Narayana et al (1991) and Quizon and Binswanger (1984).

14 See, for instance, Janvry and Subbarao (1986), Mitra and Tendulkar (1986) and Narayana et al (1991).

15 The ongoing research at the Indira Gandhi Institute of Development Research seeks to overcome some of these limitations.

16 For studies on India in this direction, see Coondoo and Majumder (1987), Majumder (1986), Ray (1991), Radhakrishna and Murty (1995), Suryanarayana (1996c) and Suryanarayana, Roy and Parikh (1993).

17 These issues are also quite important. It really matters whether the response functions are estimated taking into account the inter-dependence of different decisions as shown by Singh et al (1986).

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Right to Work as a Fundamental Right: Solution to the Problem of Poverty in India

T.V. Lucy

According to Article 23 of the International Bill of Human Rights, "Everyone has the right to work, to free choice of employment, just and favourable conditions of work and to protection against unemployment." This Bill further affirms "the right to equal pay for equal work and the right to just and favourable remuneration to ensure for himself and his family an existence worthy of human dignity." The right to work and a decent living are the central themes of the above Bill. A decent living implies alleviation of poverty and eradication of the causes of the same. The success of poverty eradication measures to a great extent, depends on the ability of the government to provide employment facilities to the unemployed and underemployed. Here comes the importance of the right to work as a fundamental right of the citizens of India. Incidentally, it may be noted here that India is a signatory to the U.N. Charter and, therefore, has the bounden duty to abide by and to implement the provisions of this Bill to the maximum benefit of its citizens.

Five Year Plans, Poverty Alleviation and Employment Generation

No doubt, at independence, India inherited the problem of mass rural poverty (Govt. of India: 1), and a shattered economy. Therefore, the government of India was faced with the difficult task of a war against abject poverty and hunger. Different programmes were framed and implemented in successive Five Year Plans to improve the economy (Banja 1988: 1). The First Five Year Plan gave the highest priority to the increase of agricultural production and irrigation. During the Second Five Year Plan priority was accorded to rapid industrialisation, expansion of employment opportunities and reduction of inequalities in income and wealth. Self-sustaining growth by securing 25 per cent increase in the national income, self-sufficiency in foodgrains, reduction of disparities in income and wealth etc.,

T.V. Lucy is editor of a Telugu monthly *"Mana Marpukosam"* and is involved in the activities of "Weaker Community's Action for Development and Liberation," Hyderabad.

were the main objectives of the third plan. Growth with stability, self-reliance etc. were to be achieved by the fourth five year plan. The fifth aimed at eradication of poverty, while the removal of poverty was the foremost objective of the sixth plan. Rapid generation of productive employment, alleviation of poverty, attainment of self-sufficiency in food and a higher degree of self-reliance were proclaimed to be the objectives of the seventh plan. The eighth plan proposes to emphasise growth and modernisation. It also proposes to reduce poverty levels to 18 to 20 per cent (Anon. 1992: 13-23).

Gains and Setbacks at a Glance

As a result of these measures, from a food deficit State India has become a surplus producer. It has attained the sixteenth position among the industrially developed nations in the world. In terms of its technical and scientific humanpower, India is the third largest in the world, next only to the USA and the former USSR (Bhanja and Venkatadri 1988: 1). Yet the other side of economic development is equally disheartening.

The plight of the majority of the rural population has not improved. Chowdhari (quoted in ibid: 1), reported evidence of steady increase in poverty and remarked that the economic development and economic planning have largely bypassed the people who were supposed to be its beneficiaries. It is little wonder, then, that despite the high investment, the number of the poor continues to swell year after year and plan after plan. The Fifth Plan stated, "at present over 220 million are estimated to be living below this level." The sixth plan (1878-83) has stated that "according to a recent estimate using norms of calorie consumption, the percentage of population below the poverty line in 1977-78 may be projected at 48 per cent in the rural areas and 41 per cent in the urban areas. The total number of the poor so defined would be about 290 million" (Anon. 1992: 13-23). According to official figures recently released, there are nearly 254 million people in our country still living below the poverty line. This figure is not, however, acceptable to several non-official agencies. They say that it is more than that. Whatever may be the extent of poverty and the manner of people living below the poverty line, the fact remains that poverty in our country is substantially a rural problem (Govt. of India 1992a: 15).

The Problem and the Causes Identified

The slogan *Garibi Hatao* raised during the parliamentary elections in 1971 is a clear indication of the identification of the problem of poverty. Therefore, the fifth plan approach paper stated that unemployment, underemployment and the low resource base of a majority of producers, particu-

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larly in agriculture, are the principal causes of poverty. Little wonder then that the fifth plan resolved to launch a direct attack on the problems of unemployment and underemployment. According to the sixth five year plan poverty was a reflection of the problem of unemployment and underemployment (Anon. 1992: 34-35).

Additional Employment Generation Programmes

In order that the benefits of development might reach the poorest of the poor, that is, the working class in the rural areas, the government of India undertook to implement several special programmes. Some of these are Small Farmers' Development Agency (SFDA), Marginal Farmers' and Agricultural Labourers' Development Agency (MFALDA), Drought Prone Area Programme (DPAP), Integrated Rural Development Programme (IRDP), National Rural Employment Programme (NREP), Rural Landless Employment Guarantee Programme (RLEGP), Development of Women and Children in Rural Areas (DWCRA), Training of Rural Youth for Self-employment (TRYSEM) and legislation like land reforms (Mathur 1985: 73-80). The Minimum Wages Act of 1948 for agricultural labourers, the Bonded Labour Abolition Act of 1976, besides the 20 point programme of the prime minister were some of the other measures (Mahajan 1984: 333-338). *Jawahar Rojgar Yojna* (JRY) seems to be the last in the series of programmes undertaken by the government of India to alleviate rural poverty by means of employment generation.

The End Result of the Programmes

Each of these programmes, though conceived in good spirit, failed to achieve the desired results mainly due to the loopholes in the planning and setbacks at the implementation level and due to the lack of political will (Anon 1992a). Each successive programme was meant to rectify the loopholes in the earlier one, without any structural change or innovative methods. A critical examination of the national development efforts revealed that, the marginal farmers, small farmers, agricultural labourers and the rural artisans, who composed the development scenario of rural India, had not benefited from them (Bhanja and Venkatadri 1988: 1-2). Out of 850 million Indians, over 600 millions live in the rural areas. Around half of them are stated to be living in absolute poverty. They suffer from chronic malnutrition and lack of access to health care, education and proper housing. Women and girls are often the worst off. In 1981 about 70 million people were officially registered as workers whose main occupation was agricultural labour. However, this number does not include women, because they are not registered as such or are only looked upon as house-keepers. One can safely

conclude that there are now more than 100 million agricultural labourers. Altogether it is reported that there are about 250 million men, women and children whose livelihood depends on agricultural labourers. Altogether it is reported that there are about 250 million men, women and children, whose livelihood depends on agricultural labour (Oonk. 1992: 10). According to V.R.K. Paramahamsa, (1984: 5-6) 254.7 million people in rural India were living below the poverty line in 1981.

Sad Plight of the Agricultural Labourers

For agricultural labourers, work is available for not more than 120 days in a year. There is high competition in the agricultural labour market, due to the non-availability or the seasonal nature of work and surplus labourers. There is the Minimum Wages Act for the agricultural labourers, but the provisions of this Act are seldom known to the employers and the employees alike. With the result, the agricultural labourers get much less than the stipulated wages. Disparity in wages between men and women continues to be the order of the day in spite of the law on equal wages for equal work. From backward and drought affected districts like that of Mahabubnagar in Andhra Pradesh, agricultural labourers are forced to migrate to far away places in search of work and livelihood. In this migration the workers, especially women and children, are put to untold difficulties, harassment and exploitation.

But little attention is paid to the problems faced by them. According to M.L. Mehta (1985: 191) since independence only two significant initiatives have come from the States in terms of launching innovative programmes of rural development. One came from Rajasthan in the shape of *Antyodaya* and the other from Maharashtra in the mid-80s in the shape of the Employment Guarantee Scheme.

On 2nd October 1977, the Rajasthan government launched the *Antyodaya* programme. The scheme was formulated after interviewing many poor persons and conducting a survey of several families drawn from 25 villages situated in five agro-climatic zones of Rajasthan. The Scheme, development of the last person (*antyodaya*) covered all the villages of the State. The beneficiary group included artisans, educated unemployed and non-agricultural labour along with the old and infirm. The programme focused on a small segment of the poor called "the poorest of the poor" (ibid: 190). States like Himachal Pradesh, Gujarat, Orissa and Bihar later launched this programme on the Rajasthan pattern (ibid: 192).

The Maharashtra Employment Guarantee Scheme

The idea of an employment guarantee scheme in Maharashtra arose in the 1960s. During this period the income gap between the urban and the rural areas increased, which resulted in large scale migration to the cities, especially to the city of Bombay. From 1969 onwards some experiments with Employment Guarantee had been started in a number of villages. The scheme itself was launched at the State level in 1974, and in 1979 the Employment Guarantee Act made employment a legal right.

According to the Employment Guarantee Scheme of Maharashtra, everyone who registers himself or herself as unemployed has to be offered work on a project within 15 days. One or more villages together have to guarantee the participation of at least fifty labourers. Two persons out of every family have to supply free labour for one day per month. Normally work is offered within a range of 5 to 8 k.m. from the village. Work is offered anywhere in the district, if it is not available within this range. Labourers are paid the official minimum wage, which is equal for men and women. The wages are partly paid in money and partly in coupons with which they can get subsidised food at the fair price shop. Creche facilities are also arranged at the work site, which helps the older children to attend school instead of minding their younger siblings, when both the parents are working. If the government is not able to offer work, an unemployment allowance of two rupees per day is paid.

The scheme is financed 50 per cent by the government and 50 per cent by the special taxes paid mainly by the city population. A major part of the work undertaken under this scheme is on the lands of small farmers. The kind of work undertaken is digging of wells, land reclamation, afforestation, horticulture etc. Decisions about the kind of work to be undertaken, are taken by a committee consisting of technical experts, politicians and at times representatives of the workers. Most decisions are taken at the district and sub-district level. Two thirds of the village council has to endorse the project to be undertaken in a village. As of March, 1991, more than 1,95,000 such projects were completed and about 13,000 were in progress.

Achievements and Advantages of the Scheme

The scheme has provided six months' employment to about one million people per year. About 45 per cent of the participants were landless labourers, the rest being small farmers. The scheme is more attractive for women who form two thirds of the labourers, particularly since wages paid for them in the scheme in comparison with the prevailing agricultural wages are relatively high. Often more than one family member is working on the same project. Therefore, women feel more protected against sexual harassment.

The city population has less reason to be afraid of rural migration since rural workers get more work. Farmers benefited from the improved infrastructure such as irrigation, land reclamation etc. which resulted in opportunities for multiple cropping, which in turn could absorb more labourers. Due to more employment opportunities in the completed project, demand for work under the Employment Guarantee Scheme has decreased. The agricultural production in the completed works has gone up at least by 25 per cent per year. Labour unions have been formed in about half of the districts in the State. Because employment is made a right to work and not a favour, the bargaining power of the rural workers has improved. The caste rigidity is mitigated as members of different castes have to work together on a project. Due to alternative employment facilities the bonded labour system has got reduced. Since 1989 "Rural Development Through Labour" has become an additional objective of the scheme which combines activities such as water and soil conservation, land reclamation, afforestation, cattle breeding, agriculture and horticulture, avoiding overgrazing etc. Thus the ecological balance is maintained.

The Employment Guarantee Scheme of Maharashtra is not altogether free from loopholes. But it is an innovative plan to assist the unemployed landless agricultural labourers. The positive benefits outnumber its very few negative effects. If the State of Maharashtra can succeed why not Andhra Pradesh and the remaining States in India? Most States are at present facing the same situation which Maharashtra faced in 1960s. This sort of an Employment Guarantee Scheme should serve as a first step towards the realisation of the right to work as a fundamental right.

International Concern for Employment Guarantee in India

Some NGOs in the West are of the opinion that the Western countries should support programmes like the Employment Guarantee Scheme for the poor. The India Committee of Netherlands for example, is of the opinion that the conversion of India's foreign debt to western countries should be in the form of financial support to the Employment Guarantee Programmes. Until now the landless agricultural labourers are not a target group of western development cooperation with India, though they constitute the majority of the rural poor. Many western governments are stating that their aid is primarily meant to tackle poverty, but in fact they are mainly supporting economic growth. It is only now acknowledged by some important international donors that the rural poor have been neglected as far as their development is concerned.

In a letter written to C. Francis of WCADL, Hyderabad, E. Fossati, Director of the Commission of the European Community expresses his feelings in the following way: "poverty in India is, however, also a problem of numbers and limited national resources. With a population of about 860 million people and an annual increase of about 2.1 per cent or 18 million to be fed from an already overexploited environment, short term measures by way of simple employment schemes to feed and activate the poor will only aggravate tomorrow's problems." Thus the concern of the human rights groups in Europe is not accepted by official organs.

Human Rights and the Right to Work

N. Vaidyanathan (1993: 159) says that, the ILO's work in the field of human rights aims at safeguarding the freedom of association, abolition of forced labour, elimination of discrimination in employment, promotion of equality of opportunity, prevention of economic exploitation, minimum wages, social security and adequate conditions of work and life.

During 1993, the year of the Indigenous People, the U.N. is holding a conference on Human Rights. This concern of the U.N. about the rights relates to every aspect of life, the violation of which is almost universal. It is impossible to imagine the creation of a sustainable world without the protection of rights. Right to work is one of the human rights. It is, therefore, worth taking the unemployed millions of India to the 21st century with the right to work as a fundamental right. This would be the best tribute India can pay to the U.N. cause of human rights.

Indian Constitution and the Right to Work

The Constitution of India is quite conscious of the right of its citizens to work. Article 41 of the Constitution says: "the State shall within the limits of its economic capacity and development make effective provision for securing the right to work. . . and to public assistance in case of unemployment." Article 43 authorises the States to make suitable legislation to the effect that all the workers get a living wage ensuring a decent standard of life. Unfortunately, this part of the Indian Constitution is not of the fundamental rights, but the Directive Principles of State Policy and, therefore, not enforceable by any court of law. It is left to the discretion of the States to apply these principles in making laws. Here it may be noted that in the 43 years of the Republic of India, only the government of Maharashtra has guaranteed the right to work to every adult person in the rural areas (Govt. of India 1992: 115). The Constitution of India accepts the right to property as a fundamental right but it does not accept the right to work as fundamental. It accepts as basic, the principle that a proprietor is entitled to compensation when his property is acquired for public purpose. But it does not accept the principle of compensating those whose labour power is not utilised (Paramahamsa 1984: 6).

No doubt the Government of India at various levels planned and implemented various employment generating programmes as has already been mentioned above. But no efforts has been made to make the right to work a fundamental right except by the National Front government under the former prime minister V.P. Singh (1989-90) which, as a first step, wanted to implement a national employment guarantee scheme for the rural poor. The government fell before it could implement its plans. The present government through its eighth five year plan promises full employment by 2000 A.D. But it does not seem to have any plan to make right to work a fundamental right or to implement any employment guarantee scheme seriously.

Role of Political Parties in Relation to Employment Guarantee

The ultimate goal of any political party is to capture power, both at the centre and in States, and to rule the country. But the paradoxical situation which prevails in a democracy is that power is said to be vested with the people. In order to get into power the party needs a majority vote to be cast by a majority of the citizens. To get this majority, political parties make use of the powerful elements of the rural elite. This sort of vote catching is a heavy financial burden on the political parties. In such a situation, these parties would do well to approach the rural poor directly and organise them on their right to work as a fundamental right. This sort of a vote catching mechanism would contribute a great deal towards the development, unity and integrity of the nation and would be a healthier practice than any other for the stabilisation of a secular India, and would be a real boon to the teeming millions of unemployed and unorganised agricultural labourers of this country.

Role of the Voluntary Sector in Relation to the Right to Work

The voluntary sector in India, in spite of its separate identity, aims and objectives, method of approach, and kinds of work etc., could work jointly towards the realisation of the right to work as a fundamental right. Already there is a movement in this country in this direction. Since the last five years, there has been a growing movement in India promoting the right to work. Some of the participating organisations emphasise the inclusion of the right to work as a fundamental right in the Constitution. This movement to organise the unemployed and underemployed leading to the right to work as a fundamental right, could be further strengthened by many more volun-

tary agencies joining hands, and through more coordinated efforts than hitherto.

Conclusion

Most of the development programmes of the government of India, contribute to the development of those who already have assets like land. The landless agricultural labourers benefited the least from these programmes. The physical labour is the only asset which they have. Their development, therefore, depends on the planning and implementation of programmes suited to make use of their physical labour for their benefit as stated by the International Bill of Human Rights for "an existence worthy of human dignity" and as stated by the Constitution of India "for ensuring a decent standard of living." Improving the standard of living of the workers amounts to improving the standard of life of the entire nation.

Taking into account the benefits of the employment guarantee scheme of Maharashtra, particularly for women, and its contribution towards the curtailing of population, it would be worthwhile for the government of India to make the right to work a fundamental right. The present government through the eighth five year plan and the AICC session on 27th March 1993, has promised to provide employment for all by 2000 A.D. (Anon 1992a). From the past experience one can presume that politicians who are never weary of making such promises, will not implement it. Moreover, by 2000 A.D. the government has to fulfil many more such promises, e.g. health for all, education for all etc. Hence, the unemployed agricultural labourers of this country need not be carried away by such promises. The unfortunate aspect of Indian development is that the influential and the vociferous sections of society have benefited the most out of the programmes. Hence it is up to the hitherto silent majority, the landless labourers, the Scheduled Castes, the Scheduled Tribes etc. to work unitedly for the realisation of their right to work as a fundamental right. And it is up to the political parties, the voluntary sector and anyone who cares for the unemployed landless millions of this country, to be in solidarity with them and support their movement.

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