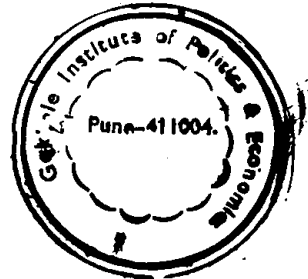


A REVIEW OF SELECTED STUDIES
ON THE CONCEPT AND MEASUREMENT
OF POVERTY IN INDIA

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JUNE 1986

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INTRODUCTION

Until very recently, the agreed-upon goal of economic development was thought to be the aggregate economic growth. Now it is recognised that GNP measures are incomplete. To assess a country's economic performance and its progress towards economic development, we must supplement the growth rate of GNP by other economic measures.

The percentage of poor population i.e. poverty percentage, is supplemented to growth rate of GNP to assess the economic performance of a country. In the present study an attempt is made to discuss selected studies, which broadly represent methodologies followed for measurement of Poverty in India.

Chapter 1 discusses the concepts of poverty. Chapter 2 examines different criteria that are used for measurement poverty in India. Chapter 3 deals with the methodologies followed by few economists for measurement of poverty in India.

CHAPTER 1

THE CONCEPT OF POVERTY

In the theory of economic development the notion of poverty plays an important role. The level of economic development achieved by a country is indicated by the percentage of poor population of that country. Hence definition and measurement of poverty in any country is of crucial importance. We discuss below the different concepts of poverty.

Poverty in general can be defined as a situation of very low standard of living^{of} a section of society. Standard of living in turn is determined by amount of goods and services. Hence poverty can be understood as inability of a section of society to fulfil its minimum basic needs.)

1.0 Concepts of poverty

There are two main concepts of poverty, namely

- (i) Relative poverty
- (ii) Absolute poverty.

1.1 Relative poverty

Relative poverty is concerned with the relative positions of income* groups to each other. Relative poverty is not understood by isolating poor and treating them as a special group. Society is seen as a series of income layers and poverty is concerned with how the bottom layers fare

* Income can be used as a proxy for measuring standard of living.

relative to the rest of the society.

The study of poverty according to this concept depends upon an understanding of the level of living of the rich. Since it is these conditions relative to each other that are critical in the conception of poverty. To understand the poor one must study the affluent also. (Fields(1980) and Kamta Prasad (1985).

Relative poverty exists purely due to income inequality. Naturally the actual standard of living of the population of a country cannot be revealed in this concept of poverty. For example, populations of two countries may have the same degree of income inequality. But average income level in absolute terms may be much higher in one than the other. Hence even though populations of both the countries are equally "Relative Poor" or measure of Relative Poverty in both the countries is equal, the actual standard of living of population of the two countries cannot be revealed.

In any country one cannot expect perfect income equality. Hence poverty in this sense can be observed in all the countries, including communist countries. Here we are not much interested in this concept. In the present study emphasis is given to the concept of Absolute Poverty.

1.2 Absolute poverty

The concept of Absolute Poverty can be understood as a social phenomenon in which a section of the population

is unable to fulfil even its basic needs. For such a purpose a certain criterion is fixed, which specifies minimum basic needs of the particular population concerned. The criteria can be specified in terms of minimum amount of goods and services that are necessary for a person on an average or in terms of income-expenditure level per person. Obviously for such a specification in income or expenditure level per capita, knowledge of consumption pattern of the population and prevailing prices is essential.

1.3 Poverty line, poor and poverty percentage

The criteria or cut-off point with the help of which one can separate total population into poor and non-poor is called "Poverty-Line". All the persons who lie below this poverty line are called 'poor'. This poor population as a percentage of total population is called "Poverty Percentage" or "Poverty Ratio".

1.4 Differences in definitions of poverty lines

In different societies attempts have been made to define poverty line. But no uniformity can be observed in all these definitions of poverty line. Poverty line expressed either in commodity terms or income-expenditure level has to be based on an assumption of certain basket of goods and services that the society expects its population to consume as a basic minimum. Naturally such an expectation is bound to differ on account of differences in following factors.

1.4.1 Natural factors

Firstly the natural factors such as climate, temperature, average rainfall, etc. can be different in different countries. For example, in tropical countries throughout the year temperature is high. While countries closer to two poles, south or north, experience very low temperature throughout the year. Because of such changes in temperature, even "Survival Needs or Subsistence Needs", i.e. poverty line of the population of the two countries, will differ significantly. Differences in other natural factors also can bring about changes in poverty line (F.A.O. (1973)).

1.4.2 Level of development

Secondly, what should be regarded as basic minimum needs also depends upon the level of development that a country has achieved. In developed countries the general standard of living of an average person will be much higher as compared to that of an average person in an developing country. For example, in U.S.A. an average person does enjoy much higher standard of living as compared to that of an average Indian. Hence concept of minimum needs i.e. poverty line will be much higher in U.S.A. as compared to the same in the Indian context. (Townsend, 1970)

1.4.3 Time period

Thirdly, even for the same country poverty line cannot remain unchanged over a long period. A poverty line which expresses, minimum needs that a society expects its

population to meet is bound to change over the period as a country develops economically. For example Rowntree (1941) had used different poverty lines for population of England in 1896 and 1936.

After considering all the factors, mentioned above, it can be concluded that there cannot be a single definition of poverty line which is universally acceptable and feasible. That means the definition of poverty line is place specific, time specific and specific to the degree of development of the particular country.

1.5 Townsend's objection to the difference between absolute and relative poverty

A Well-known American economist Prof. Peter Townsend (1970) does not accept any distinction between Absolute and Relative poverty because the needs which are considered to be minimum basic may be shown to be relative.

He suggests that "Poverty must be regarded as a general term of relative deprivation which is the effect of the maldistribution of resources. That section of the population whose resources are so depressed from mean as to be deprived of enjoying the benefits and participating in the activities which are customary in that society can be said to be in poverty."

1.5.1 In developed countries the standard of living of even bottom sections of the population is so high that the concept of absolute poverty does not carry much significance. In contrast to this in a developing economy the standard of

living of the bottom section of the society is below even the subsistence minimum or physiological minimum. Hence the concept of absolute poverty is much useful in the measurement of absolute poverty in developing economies. (Ojha (1970)).

CHAPTER 2

CRITERIA USED FOR MEASUREMENT OF POVERTY

For measurement of poverty (Hereafter refer the word Poverty in the context of Absolute Poverty) it is necessary to define poverty line which can separate total population into poor and non-poor. The poverty line, whatsoever may be its definition, has to be based on fulfilment of certain things expressed in quantitative terms.

2.1 Difficulties in defining poverty line

At this stage usual problem that arises is which basket of good and services should be chosen for measurement of poverty. It is well known that a human being has a multiplicity of needs both material and non-material. The fulfilment of basic material needs or physiological needs requires items like food, clothing and shelter which are well defined in a given society. Non-material needs comprise elements like medical and education facilities, appropriate family atmosphere, sense of security, fulfilment of religious and cultural aspirations and even prestige, political power etc. (Rein. (Pg.48). It is very difficult to decide and explain which items other than food should be included in the definition of poverty line on the grounds of necessity. Different economists have expressed different opinions on this particular issue but nothing any concrete as such has come out through these discussions. ✓

In the present study an attempt has been made to discuss and evaluate the main criteria that have been considered in the Indian context. While evaluating any criterion one must be sure that, the criterion used for defining poverty line must be able to be expressed in quantifiable terms with the help of which a Household* can be clearly categories as poor or non-poor.

In India the general standard of living of the population is very low. If one considers the definition of poverty line for Indian population, consisting of a number of items other than food, then most of the population will lie below poverty line. This will not serve the policy purpose of measurement of poverty.

In India average standard of living is so low that for measurement of poverty the criterion should be related to the most basic need of a human being i.e. food. Most of the criterion, that have been used in India, are based on this consideration. In the following pages an attempt has been made to explain some of the main criteria that have been used for defining poverty line, nature of poverty line in each case and the difficulties in using the criterion if any.

2.2 Calorie value of food intake

2.2.1 Importance of calories

Human body needs energy to maintain body temperature, for metabolic purposes to support growth and for physical activity. Food energy is expressed as kilo calories

* Household is a group of members of households having a common meal.

and calorie allowances are recommended so as to provide enough energy to promote growth in infants and children and maintain body weight in adults consistent with good health. (Indian Council for Medical Research (1981)).

It is most convenient to make recommendations for a 'reference man' and 'reference woman' whose profiles are described and then to make necessary adjustments for subjects who deviate from the standard reference. (i.e. for sections of population of different age, sex groups, etc.)

World health organisation (W.H.O. (1973)) has recommended minimum calorie requirements per head or per consumer unit for populations of different parts of the world. For the Indian population the prescribed calorie requirement is 2800 per consumer unit* or 2250 calories per capita. The actual calorie intake of households can be compared with calorie requirement of households. Out of total households, households for which actual calorie intake is less than the recommended calorie requirement, are called poor. Their percentage to total population gives us estimate of poverty percentage for the entire population.

2.2.2 Merit

This criterion is convenient for the measurement of poverty. One can use the cut-off point or poverty line as recommended calorie requirement and can easily identify

* Consumer unit or reference unit is an adult in between 20-39 years (ICMR (1981)).

whether a household should be categorised as poor or non-poor, considering its actual calorie intake and the recommended calorie requirement.

2.2.3 Drawbacks

This criterion has two major drawbacks which make it unsuitable for the purpose of measurement of poverty.

2.2.3.1 Human being, apart from sufficient calorie requirements, also requires vital nutrients such as minerals, vitamins etc. to maintain himself healthy, active and free from any disease. The intake of these vital elements do not necessarily increase along with increase in calorie intake. Hence adequate calorie intake does not mean adequate intake of vital nutrients. Because of this, the particular criterion is not able to ensure the fulfilment of vital nutrients.

2.2.3.2 The second drawback of this particular criterion is, it does not take into account money value required to afford a diet which can provide prescribed calorie. In other words it does not consider purchasing power necessary to achieve that much level of calorie intake. For the purpose of reduction in poverty, planners must know amount of income to be generated. Such an information cannot be provided by this criterion.

2.3 Balanced diet

2.3.1 Importance

The second criterion that has been considered in

the Indian context is that of the "Balanced Diet". Every person, to maintain himself healthy and free from any disease, requires not only sufficient calories, but also vital elements such as minerals, vitamins etc. The criterion of Balanced Diet stresses the need of qualitative aspect of food in terms of vitamins, minerals etc. This particular approach is accepted by medical and nutritional experts all over the world.

A few recommended balanced diets calculated by nutritional authorities are given in Table 1-A.

Table 1-A: Normative minimum dietary patterns

	<u>Sukhatme¹</u> <u>(minimum target)</u>	<u>FAO¹</u>	<u>Patwardhan²</u>	<u>Price multiplier per kg.</u>
Cereals	0.403	0.395	0.425	0.400
Pulses	0.104 ³	0.075	0.113 ³	0.600
Starchy roots	0.046	0.160	-	0.375
Sugar	0.050	0.035	0.043	0.600
Milk	0.201	0.098	0.113	0.500
Meat	0.007	0.036	-	2.130
Fish and eggs	0.019	0.027	-	1.500
Fruits and vegetables	0.137	0.225	0.170	0.500
Oils and fats	0.018	0.016	0.035	2.250
Value of diets at 1960-61 prices (Rs.)	0.5238	0.6087	0.4838	-

¹ Per person, ² Per adult unit, ³ Inclusive of nuts.

Source: Rudra A. (1974), Pg. 283.

2.3.2 Difficulties in using balanced diet approach

While measuring poverty by this criterion we cannot compare actual food intake with the "Balanced Diet", item by item. In a country like India with large diversities of people about food preferences as well as diversities of food production among the states and within the states, one cannot expect that people will precisely consume prescribed diet, item by item. That is, people may consume more cereals and milk but no meat at all or more cereals and pulses but no fruits at all.

In such a situation we can compare the substitutability in terms of calories, ^{at} the most. That is 2 gm. of cereals is equivalent to 1 gm. of milk which is equivalent to 0.5 gms. of oil and so on. But when apart from calories we have to compare several norms such as vitamins, minerals etc., substitution becomes difficult one. Although conceptually the criterion of "Balanced Diet" looks to be more comprehensive, severe practical difficulties, makes it unsuitable for measuring poverty.

2.3.3 Expenditure level consistent with cost of balanced diet

If we want to use this criterion for the measurement of poverty what we can do is, we can find out the cost of Balanced diet or Specified diet at first. Then we can find out level of expenditure at which on an average, a person will spend on food items which are included in the "Balanced Diet", an amount equivalent to its worked out cost. In this

case we do not compare food contents, item by item. But we see whether total expenditure on food items of Balanced diet is equivalent to its worked out cost or not.

Let us consider an example: Suppose that the cost of Balanced diet is Rs. 60 per person per month. Then our poverty line in this case will be level of expenditure in Rupees at which a household spends sixty rupees on food items included in the Balanced diet.

2.4 Balanced diet plus tolerable standard of living

Prof. V.K.R.V. Rao (1977) has mentioned the criterion of balanced diet plus tolerable standard of living. He says: "Poverty has to be identified with deficiency in 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."

2.4.1 Tolerable standard of living

In this particular criterion Prof. V.K.R.V. Rao has suggested need of a diet adequate not only in terms of calories but in terms of other vital elements such as minerals, vitamins etc., i.e. need of a Balanced diet. Prof. Rao thinks that apart from balanced diet human being requires other basic needs such as education, recreation, drinking water etc., which has to be taken into account while defining poverty line.

In this particular definition the term tolerable is a subjective. To use this criterion for the measurement

of poverty, one has to clearly specify the items that one is going to include in the tolerable standard of living. For example one can include: minimum cloth annually required per person, minimum education facilities per person, minimum recreation, public utilities and so on. We have already seen that there are several difficulties while using the concept of balanced diet itself. If we add to it requirements of tolerable standard of living, one can imagine how the criterion becomes difficult for measurement of poverty purpose.

2.4.2 What one can do is, if he wants to use this criterion at all, one can find out cost of all these items and find out level of expenditure at which people seem to spend on an average on these items an amount equivalent to its worked out cost. This expenditure level can be called the "Poverty Line".

2.5 Percentage expenditure on food

Food is very basic need of human being. Naturally every person at first tries to achieve sufficient level of food intake. Hence at a lower level of income percentage expenditure on food items is very high. But after consuming sufficient amount of food a person spends more and more on non-food items (comforts and luxuries). Hence as total expenditure goes on increasing percentage expenditure on food items goes on decreasing while that on non-food items goes on increasing. This pattern of expenditure is universally

observed. (Such a pattern is revealed in Engle's work).

2.5.1 Poverty line

One can use this universally observable phenomenon for measurement of poverty. For defining poverty line a certain percentage expenditure on food should be chosen as a cut-off point. Let us take an example: Suppose 85 per cent is decided as a cut-off point or poverty line. All the households by this definition can be called poor whose percentage expenditure on food is more than eighty-five. (Dandekar (1981)).

One can use eightyfive per cent itself as a poverty line or one can find out that level of expenditure at which on an average a person seems to spend eightyfive per cent of his total expenditure on food items. These two definitions even though look to be similar, produce different dimensions of poverty if they are used separately even for the same data. This particular aspect is discussed in detail later.

2.6.0 Use of criterion

So far we have seen that a number of criteria can be used for defining poverty line. These criteria can be divided into two broad categories. In the first category we can use the criterion itself as a poverty line. For example amount of calories required per person per day, so many gms. of pulses, cereals, milk etc. or percentage expenditure on food etc.

In this particular method we are not concerned

about income/expenditure of the particular sample household. We separate them into poor or non-poor by considering whether they have fulfilled particular criterion or not? For example if we have chosen per person per day minimum requirement as 2250 calories then our poverty line in this case will be 2250 calories itself. We find out poor population by observing their actual calorie intake only.

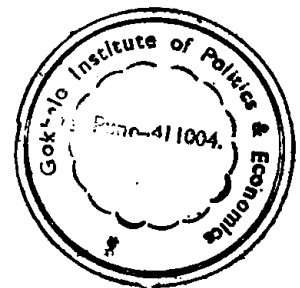
2.6.1 Conversion into expenditure level

In the second category we convert the criterion into expenditure level, i.e. we find out an expenditure level at which households on an average seems to fulfil this particular criterion. Continuing with the same sample as mentioned earlier the conversion of a criterion into expenditure level can be, finding out such an expenditure level at which households seem to spend on a diet which can provide them on an average 2250 calories per person per day.

Food, being the basic need of human being, total expenditure on food items and so calorie intake, increases along with increase in expenditure per person. But such an increase in calorie intake cannot be uniform for each household. The uniformity in increase in calorie intake cannot be observed along with increase in expenditure level due to differences in food availability among the states and within a state, preferences of people regarding food etc. Due to such a diversity, different households can attain minimum calorie requirement norm at different expenditure levels.

To arrive at a single poverty line, average expenditure level at which households attain minimum calorie requirement can be found out. This average expenditure level can be regarded as poverty line.

From the above discussion one can arrive at the conclusion that though these definitions of poverty line are highly related, are not identical. Hence when they are used for the same set of data, they can result into two different estimates of poverty.



CHAPTER 3ESTIMATES OF POVERTY

We have discussed in the earlier chapters the concept of poverty and definitions of poverty line that can be considered for the measurement of poverty. It is proposed in this chapter to examine the estimates of poverty that are made in the Indian context. We propose to review selected studies of measuring poverty percentages (at all India level).

3.1 Differences in estimates

A number of economists have estimated the percentage of poverty in India. The estimate of the percentage of poor population or poverty percentage depends upon a number of factors.

3.1.1 Time period

Firstly the period for which the estimates have been made may be different. In different time periods the standard of living of the population (which can be measured by distribution of per capita income or consumption) is bound to change i.e. either improve or worsen. Naturally all other factors such as poverty line, methodology remaining the same, due to different set of data (due to different years) poverty estimates will be different.

3.1.2 Poverty line

Secondly, in order to separate total population into poor and non-poor it is necessary to define a dividing

line or cut-off point which is called as poverty line. There are different bases (for example calorie value of intake, balanced diet) on which poverty line can be constructed. Choosing a proper base is ultimately a choice of the person who is estimating poverty percentage. Naturally poverty line constructed on different bases, which may be expressed in a common denominator such as per capita expenditure in Rs., is bound to differ. If poverty line or cut-off point differs then, even if data is taken from a single source and for the same year, poverty percentages will be different.

3.1.3 Data source

The data which is used for estimating poverty percentages can be taken from different sources such as Central Statistical Organization (C.S.O.) or National Sample Survey rounds (NSS) or combination of both. The type and details in which data is published may be different. The sampling procedure used may be different which may lead to under-reporting or over-reporting in any data source.

3.1.4 Methodology

Lastly the methodology that is adopted for calculating poverty line may also differ. For example if poverty line recommended for earlier years has to be used in current year, then considering price changes (usually in an upward direction) poverty line has to be changed (usually raised) accordingly, using suitable price index numbers. Different price indices such as agricultural labour price index, rural

retail price index, G.N.P. price index can be used to express poverty line in earlier year at current year prices.

Even if a single poverty line at an earlier year is accepted but different price indices are used to express it in current year prices, poverty line in Rs. in current year will be different. Naturally estimates of poverty percentage based on two different poverty lines will produce different estimates.

In short we can conclude that the estimates of the percentage of poverty may be different due to the differences in the period for which they are made, the poverty line that is used, the methodology that is adapted or due to the combination of more than one factor.

An attempt to measure poverty is not a recent one. Since ancient times, several attempts have been made to define and measure poverty, to show the wretched condition of a section of the population and to take suitable policy measures. In the present chapter, an attempt has been made to review several estimates measuring the percentage of poverty in India. The first systematic attempt to measure poverty was made by Dadabhai Naoroji.

3.2 Dadabhai Naoroji's estimates

A pioneering attempt in estimating poverty was made by Dadabhai Naoroji. He tried to depict the wretched condition of mass of population of India. He used the notion of "Necessary consumption". He says: "I now consider what is

necessary for the bare wants of a human being, to keep him in ordinary good health and decency". He had taken into account a basket of goods and services as necessary consumption as given by medical authorities at that time.

3.2.1 Cost of living

Dadabhai Naoroji had considered a number of recommendations about bare minimum such as recommendations for emigrant coolies, recommendations of administration report of Bengal etc. But these recommendations were not available separately for all parts of India. Hence as a bare necessity, Dadabhai Naoroji had taken into account recommended goods and services for the criminals in jails of different provinces. Multiplying these different quantities of goods by the appropriate set of prices, he has calculated the cost of living i.e. poverty line for criminals in different jails. The Table 3.1.A given below explains the minimum cost of living for criminals in different provinces.

Table 3.2.A: Cost of living for prisoners in jails in Rs.:
Per Prisoner per year for 1867-68

	<u>Cost of Living</u>			<u>Cost of Clothing</u>			<u>Total</u>		
	Rs.	As.	Ps.	Rs.	As.	Ps.	Rs.	As.	Ps.
Central Provinces	25	8	0	5	8	0	31	0	0
Punjab	23	6	0	3	13	0	27	3	0
North-West Provinces	18	8	0	3	5	0	21	13	0
Bengal	28	3	0	3	8	0	31	11	0
Madras	49	2	7	3	15	9	53	2	4
Bombay	41	13	0	5	10	0	47	7	0
Oudh	-	-	-	-	-	-	-	-	-

Source: Poverty of India - Dadabhai Naoroji, pg. 30

(1901)

He has used these minimum cost of living figures per prisoner per year for calculating cost of living or poverty line for the entire population. Assuming that jails are for adults only, he had calculated cost of living i.e. poverty line for the entire population i.e. per capita after considering distribution of the total population according to age and sex groups. The Table 3.2.B given below explains composition of the population according to sex and age.

Table 3.2.B: Percentage of population according to age groups

(Bengal Census Report)

<u>Male</u>		<u>Female</u>	
<u>Not exceeding 12 years</u>	<u>Above 12 years</u>	<u>Not exceeding 12 years</u>	<u>Above 12 years</u>
18.8	31.3	15.7	34.2

Poverty of India - Dadabhai Naoroji, pg. 30.

The total adults, i.e. above 12 years are 65.5 per cent and infants or children under 12 years are 35.5 per cent, which gives the proportion of 2 adults to each child or one child out of every three persons.

Dadabhai Naoroji had considered the cost of an adult to be 'a' and the cost of per person to be 'x'. He had assumed that out of 34 per cent of children under 12, only 17 per cent cost one half of an adult while the other 17 per cent cost nothing at all (which is an incorrect assumption considering ^{recent} developments in nutrition science). Using these assumptions he had calculated cost of living or poverty

line per capita as follows:

$$66a + 17\frac{a}{2} + 17 \times 0 = 100x$$

$$x = \frac{3}{4}a \text{ (approx.)}$$

(Poverty of India, pg. 31.)

Therefore, he concluded that the minimum cost of living per person will be about three fourths of cost per adult (i.e. prisoner). These cost of living figures, reflect the minimum necessity or poverty line per head for the populations of different provinces, are shown in Column 2 of Table 3.2.C.

3.2.2 Production per head

By considering the total cultivated area in each Province, the major crops that were grown in that particular province and the prevailing prices, Dadabhai Naoroji had calculated production per head in terms of rupees in different provinces. These figures reflected the total availability per head per year for the population of different provinces.

The figures of cost of living per head and production per head in Rs. for different provinces are given in the following Table 3.2.C.

By comparing figures of availability and necessity per head, for population of different provinces, Dadabhai Naoroji tried to focus light on the average standard of living of the population of different provinces.

Table 3.2.C: Production and cost of living in Rs. per head per year in different provinces

	<u>Production per head</u>	<u>Three Fourths of jail cost of living or cost per head outside jail*</u>
	(1)	(2)
Central Provinces	Rs. 22	Rs. 23
Punjab	Rs. 25	Rs. 20
North-West Provinces	Rs. 18	Rs. 16
Madras	Rs. 18	Rs. 41
Bengal	Rs. 19	Rs. 23-12
Bombay	Rs. 40	Rs. 35
Oudh	Rs. 18	-

Poverty of India - Dadabhai Naoroji, pg. 31.

* Figures are ¾th of figures in the last column of Table 3.1.

3.2.3 Condition of masses in India

At this stage, it is worthwhile to look into the comments made by Dadabhai Naoroji. He says: "It will be seen, from a comparison of the above figures, that, even for such food and clothing, as a criminal obtains, there is hardly enough of production even in a good season, leaving alone all little luxuries, all social and religious wants, all expenses of occasions of joy and sorrow, and any provision for bad season. It must, moreover, be borne in mind that every poor labourer does not get the full share of the average production. The high and middle classes get a much larger share, the poorer classes much less, while the lowest

cost of living is generally above the average share."

"Such appears to be the condition of masses in India. They do not get enough to provide the bare necessities of life." (Poverty of India, pg. 31).

3.2.4 Comments

Due to unavailability of sufficient and detailed data such as distribution of population according to broad expenditure groups, Dadabhai Naoroji could not calculate the percentage of population below the cost of living i.e. poverty line. He had compared the average requirement represented by cost of living for different provinces and average availability in different provinces represented by average production figures.

After comparing the figures of average production and cost of living for different provinces he had observed that in a few of the provinces only average production exceeded average cost of living. But in these provinces one could not expect equal share to all i.e. equal distribution of total produce. Naturally, he came to the conclusion that a section of total population must be living below (minimum) cost of living. In some of the provinces he observed that even average production was lower than average cost of living. Again upper sections in the society used to claim large percentage of share in total production, leaving some sections of the society below average cost of living (i.e. poverty line).

3.2.5 Observations

Following observations can be made on Dadabhai Naoroji's study:

- (i) For calculating the cost of living i.e. poverty line, his main consideration was balanced diet.
- (ii) Due to his specific assumptions he arrived at the conclusion that per capita cost of living was three fourth or 75 per cent of that of an adult. (According to latest studies at present one person is equivalent to 0.80 of an adult (i.e. consumer unit). We feel that due to his specific assumptions he arrived at lower figure of adults per person.

3.3 Planning Commission's estimates

It was accepted since long time that a very large number of Indian population was having a very low standard of living. India opted for planning and decided to make conscious efforts to improve standard of living of the masses. But upto fourth Five Year Plan no specific effort was made by Planning Commission to define what should be treated as a bare minimum or poverty line for the Indian population and to calculate the extent of poor population.

3.3.1 Study Group (1962)

A pioneering attempt in this direction was made in 1962 by a distinguished "Study Group"* appointed to define bare minimum or poverty line for Indian population. Since

* This distinguished "Study Group" was comprised of Prof. D.R. Gadgil, V.K.R.V. Rao, P.S. Loknathan, B.N. Ganguli, M.R. Mesani, Ashok Mehta, Shriman Narayan, Pitamber Pant and Annasaheb Sahasrabudhe. (Also referred as 'Working Group')

then an estimate of poverty line and incidence of percentage of poor population have become a regular feature of the Five Year Document. The Planning Commission has accepted recommendations as made by this distinguished "Study Group" in 1962.

The Study Group recommended that the national minimum for each household of five persons (4 adult consumer units) should not be less than Rs. 100 per month in terms of 1960-61 prices or Rs. 20 per capita per month. The Group recommended that for urban areas this figure can be increased upto Rs. 25 per capita.

This national minimum excludes expenditure on health and education, both of which are expected to be provided by the state according to the constitution and in the light of its other commitments.

In brief the Group fixed Rs. 20 per month per capita expenditure at 1960-61 prices as the minimum below which people should be considered as poor, i.e. the Group recommended Rs. 20 per capita per month as a poverty line. This level of expenditure was expected to provide the minimum nutritional diet and allow for a modest expenditure on items other than food.

3.3.2 Perspective planning divisions estimates

The perspective Planning Division of the Planning Commission (1962) estimated the percentage of poor population for 1960-61. It used the data on distribution of income and

consumption for 1960-61 to measure poverty which is given in Table 3.3.A.

Table 3.3.A: Distribution of Income and Consumption:
India 1960-61

<u>of</u> <u>population</u>	<u>Percentage distribution of</u>		<u>Maximum value of con-</u> <u>sumption in the group.</u> <u>Rs. per capita per month</u>
(1)	<u>Income</u>	<u>Consumption</u>	(4)
Lowest	2.4	2.98	9.6
Second	3.4	4.45	12.6
Third	4.3	5.56	15.2
Fourth	4.8	6.61	17.9
Fifth	6.3	7.74	20.8
Sixth	7.8	9.00	24.3
Seventh	9.2	10.54	28.6
Eighth	10.6	12.57	34.6
Ninth	14.5	15.69	45.1
Tenth	36.6	24.86	-

Source: Ahmad, Mahatooz - Size distribution of personal Income and Saving in India
- Calculated by ISI Planning Unit on the basis of data from 13th round of NSS.

The Commission on the basis of data about distribution of income and consumption concluded that 60 per cent of the total population in 1960-61 had a level of consumption lower than Rs. 25 per capita per month and about 30 per cent less than Rs. 15 per capita per month.

In fifth* Five Year Plan the same norm of poverty

* Fifth Plan (1974-79) defined poverty line as Rs. 40.6 at 1972-73 prices.

line was accepted. But in view of the considerable rise in prices which had taken place, the respective Five Year Plans expressed the poverty line at current year prices.

(Estimates are not available).

3.3.3 Sixth Five Year Plan (1978-83)

3.3.3.1 Poverty line

However, the Sixth Five Year Plan (1978-83) had changed this method of defining poverty line. The Planning Commission defined a poverty line on the basis of recommended nutritional requirements of 2400 calories per person per day for rural areas and 2100 calories per person per day for urban areas.

The poverty line in money terms was defined as the mid-point of the monthly per capita expenditure class having a daily calorie intake of 2400 per person per day in rural areas and 2100 in urban areas. Thus, expenditure on non-food items was also considered in the poverty line. (Note that this method was earlier employed by Prof. Dandekar and Rath (1971).

3.3.3.2 Data source and estimates

The Commission used the distribution of consumer expenditure for 1973-74 obtained from the data of 20th round of NSS and worked out poverty lines in money terms as Rs.61.8 and Rs. 71.3 per capita per month for rural and urban areas respectively at 1976-77 prices. The Commission estimated on this basis that 47.85 per cent of rural, 40.71 per cent of urban and 46.33 per cent of total population were below

poverty line in 1977-78. The total number of poor was estimated to be 290 millions of which 160 millions were below 75 per cent of the poverty line.

3.3.3.3 Projections

The Commission had also made projections* about the percentage of poor population below the poverty line for 1982-83, and 1987-88. These projections along with estimates for 1977-78 are shown in the Table No. 3.3.B.

Table 3.3.B.: The percentage of population below the poverty line

<u>Serial No.</u>	<u>Percentage of Population</u>					
	<u>Below Poverty Line</u>			<u>Below 75% of Poverty Line</u>		
	1977-78	1982-83	1987-88	1977-78	1982-83	1987-88
Rural	47.85	38.70	27.28	26.42	19.39	11.88
Urban	40.71	35.33	26.23	22.34	18.35	12.26
All India	46.33	37.95	27.04	25.55	19.16	11.97

Source: Draft Sixth Five Year Plan, pg.50

3.3.4 Sixth Plan (1980-85)

The Sixth Plan (1980-85) followed the same base as followed by the Plan (1978-83) but recalculated poverty line at 1979-80 prices. The plan calculated per capita monthly expenditure of Rs. 76 in rural areas and Rs. 88 in urban areas as poverty lines.

3.3.4.1 Estimates

On this basis it was estimated that in 1977-78 251.66 million of rural population (that is 50.82 per cent) and 51.10 million of urban population (i.e. 38.19 per cent)

* The Commission had made projections on the basis of certain assumptions about changes in capital-output ratio, redistribution programmes, grow rate of population etc. (which is not the focus of this chapter).

was below poverty line. The total population below poverty line was 302.76 million (i.e. 48.13 per cent).

It was estimated that in 1979-80 259.6 million of rural population (i.e. 50.7 per cent) and 57.2 million (40.3 per cent) of urban population was below poverty line. The total number below poverty line was 316.8 million (i.e. 48.4 per cent of total).

3.3.4.2 Projections

The Sixth Plan (1980-85) also made projections about estimate of poverty for 1984-85. These projections were made into two separate categories. In the first category the same pattern of distribution of income as in 1979-80 has been assumed. In the second category effective implementation of special poverty eradication programmes such as IRDP, MREP, etc. was taken for granted. In other words redistribution of income was taken into account. The projections for 1984-85 without redistribution and with redistribution are shown in the Table No. 3.3.C.

Table 3.3.C. : No. of poor population (in million)
in 1984-85

	<u>Without Redistribution</u>		<u>With Redistribution</u>	
	<u>No. in mill.</u>	<u>Per cent</u>	<u>No. in mill.</u>	<u>Per cent</u>
Rural	233.97	40.47	166.02	30.0
Urban	55.21	33.71	49.14	30.0
All India	279.18	38.93	215.16	30.0

Source: Compiled from Draft Sixth Five Year Plan (1980-85), Table No. 3.36 and 3.37, pg. 52.

As shown in the above table it was estimated that in 1984-85 through effective implementation of poverty eradication programmes the percentage of poverty can be brought down upto 30 per cent in 1984-85.

But the 1981 census figures revealed that the rate of growth of population was much higher than expected earlier. Accordingly, the Planning Commission in its Mid-Term Appraisal of the Sixth Five Year Plan revised its estimates for 1979-80. The number of persons below the poverty line in 1979-80 was estimated to be 339 million instead of 316 million according to earlier estimates.

3.3.5 Seventh Plan (1985-90)

In the recent document of the Seventh Five Year Plan it is estimated that in 1983-84 40.4 per cent of the rural 28.1 per cent of the urban and 37.4 per cent of the total population was living in poverty.

In short it can be observed that the percentage of population, living below a minimum living, was about 40 per cent according to different plan documents. (Unavailability of detailed information about the procedure, followed by Planning Commission, for estimating poverty, further discussion on it is not possible.)

3.4 Minhas' estimates

B.S. Minhas (1970) had estimated the percentage of population below a minimum level of living during fifties and sixties for rural India. It is proposed to review the

procedure that Minhas had used for estimating poverty.

3.4.1 For the purpose of separating total population into poor and non-poor, Minhas had used the recommendations of a Study Group which recommended private consumer expenditure of Rs. 20 per capita per month or Rs. 240 per capita per year.

Minhas had also used another norm of Rs. 200 per capita per year (i.e. Rs. 200 as a poverty line) for estimating the percentage of poor population.

For estimating the poverty percentages Minhas had employed the N.S.S. data on distribution of private consumer expenditure during 1956-57 to 1967-68. All the data on distribution of private consumer expenditure according to decile groups of population is available at current prices (Table 3.4.A).

3.4.2 In order to estimate the percentage of poor population, norm of poverty line and data on distribution of private consumer expenditure must be available in the prices for the same year. For the time series data two methods can be adopted. ✓

3.4.2.1 In the first method if data on distribution of private consumption expenditure is available at current prices then in order to estimate the percentage of poor population for number of years, norm of poverty line which is accepted at base year prices can be expressed in current prices using suitable price index numbers. (This method has

Table 3.4.A.: Percentage share of total consumption expenditure by
Fractile Groups: Rural India

<u>Fractile group</u> (1)	<u>1956-57</u> (2)	<u>1957-58</u> (3)	<u>1960-61</u> (4)	<u>1961-62</u> (5)	<u>1963-64</u> (6)	<u>1964-65</u> (7)	<u>1967-68</u> (8)
Poorest 5%	1.36	1.37	1.46	1.35	1.51	1.47	1.48
5-10	1.89	1.88	1.94	1.87	2.07	2.01	2.02
10-20	4.67	4.67	4.80	4.84	5.07	4.99	5.01
20-30	5.75	5.62	5.80	5.71	6.14	6.07	6.08
30-40	6.70	6.61	6.74	6.81	7.15	7.05	7.09
40-50	7.74	7.66	7.65	7.94	8.17	8.11	8.13
50-60	8.91	8.75	8.77	9.16	9.33	9.3	9.29
60-70	10.35	10.11	9.99	10.59	10.72	10.67	10.68
70-80	12.21	11.98	11.71	12.53	12.43	12.45	12.46
80-90	15.11	14.84	14.78	15.43	15.08	15.18	15.15
90-95	9.55	9.48	9.53	9.69	9.27	9.36	9.37
Richest 5%	15.76	17.04	16.82	14.08	13.06	13.33	13.24
Concentration ratio	0.32	0.32	0.31	0.31	0.29	0.29	0.29

Note: The different rounds of NSS used for approximating the financial years are given below:

1956-57 - 11th and 12th rounds (August 56-February 57, March-Aug.57).

1957-58 - 13th round (September 57-May 58).

1960-61 - 16th round (July 60-June 61).

1961-62 - 17th round (September 61-July 62).

1963-64 - 18th round (February 63-January 64).

1964-65 - 19th round (July 64-June 65).

1967-68 - 22nd round (July 67-June 68).

Source: Minhas (1970), pg. 98

been followed by Bardhan, Dandekar-Rath (1971) etc.).

3.4.2.2 In the second method norm of poverty line at a base year prices can be kept unchanged. But the data on distribution of private consumption expenditure which is available at current year prices can be converted into base year prices using suitable price indices. This method was employed by Minhas in his study.

3.4.3 Minhas had used the data on distribution of private consumer expenditure for the years 1956-57, 1957-58, 1960-61, 1961-62, 1963-64, 1964-65 and 1967-68 which is available at current year prices. In the Table 3.4.A. percentage share of total consumption expenditure by fractile groups of population for different years is shown.

In order to convert the data given in Table No. 3.4.A. at base year prices i.e. 1960-61 prices, Minhas had used estimates of per capita private consumption expenditure (all India) at 1960-61 prices (derived by S.G. Tiwari). The estimates, which are applicable for all India, are given in last but one line of the Table No. 3.4.B.

The estimates of rural per capita consumption expenditure have been worked out by applying NSS ratio of rural to urban consumption and population figures for 1960-61. These estimates of per capita consumption expenditure in rural areas in 1960-61 prices are shown in the last line of Table 3.4.B.

Using these estimates together with the percentage

Table 3.4.E.: Average per capita consumption by fractile groups at 1960-61 prices (Rs.): Rural India.

<u>Fractile group</u> (1)	<u>1956-57</u> (2)	<u>1957-58</u> (3)	<u>1960-61</u> (4)	<u>1961-62</u> (5)	<u>1963-64</u> (6)	<u>1964-65</u> (7)	<u>1967-68</u> (8)
Poorest 5%	63	66	75	69	74	78	81
5-10	88	91	100	96	102	107	110
10-20	108	113	124	124	125	133	137
20-30	133	137	150	147	152	161	166
30-40	155	161	174	175	177	188	194
40-50	180	186	197	204	202	216	222
50-60	207	213	226	235	230	248	254
60-70	240	246	258	272	265	284	292
70-80	283	291	302	322	307	331	240
80-90	351	361	381	396	372	404	414
90-95	443	461	492	498	458	498	512
Richest 5%	731	828	868	724	645	709	723
Total population (millions)	399	407	434	445	468	480	514
Rural population (millions)	331	336	356	363	382	391	416
Per capita consumption (Rs.) at 1960-61 prices:							
Total	252	258	275	277	269	284	292
Rural	232	243	258	257	247	266	273

Source: Minhas (1970), pg. 101

share of different fractile groups of population in the total consumption expenditure as given in the Table 3.4.A., Minhas had calculated per capita consumption in 1960-61 prices of each fractile group of population year by year. In the main body of the Table 3.4.B. these estimates are shown.

3.4.3.1 Using the poverty lines, as mentioned above, on the basis of linear interpolation, Minhas had estimated the percentage of poor population below these two alternative norms. These estimates are presented in the Table No. 3.4.C.

Table 3.4.C. : Percentage and numbers of people below minimum level of living: Rural India

Year (1)	Below Rs. 240 per annum		Below Rs. 200 per annum	
	% (2)	Millions (3)	% (4)	Millions (5)
1956-57	65.0	215	52.4	173
1957-58	63.2	212	50.2	169
1960-61	59.4	211	46.0	164
1961-62	56.4	206	43.6	159
1963-64	57.8	221	44.2	169
1964-65	51.6	202	39.3	154
1967-68	50.6	210	37.1	154

Source: Minhas (1970), pg. 102.

From the Table No. 3.4.C. it can be seen that the number of poor people below the minimum level of living of Rs. 240 has not changed significantly over the time period. While the number of poor people below the minimum level of

living of Rs. 200 has declined significantly from 173 millions to 154 millions over the same time period.

It can be observed that in case of both the norms of Rs. 240 and Rs. 200 the percentage of poor population declined steadily. The percentage of poverty declined from 65 per cent in 1956-57 to 50.6 in 1967-68 using poverty line of Rs. 240 per capita per year. The percentage of poor population declined from 52.4 per cent in 1956-57 to 37.1 in 1967-68 using poverty line of Rs. 200 per capita per year.

3.5 Bardhan's estimates

P.K. Bardhan (Bardhan 1970, 1971a, 1971b) had estimated the percentage of poor population in the rural India during the period 1960-61 to 1968-69. It is proposed to review the method that Bardhan had used to estimate the percentage of poor population.

3.5.1 Bardhan had used two alternative definitions of minimum level of living or poverty line. The first definition is based on the recommendations of the Study Group and the second one is based on balanced diet approach.

The distinguished Study Group recommended Rs. 20 per capita per month as a minimum level of living. Considering lower level of rural prices and differences in consumption pattern Bardhan had accepted minimum level of living as Rs. 15 per capita per month at 1960-61 prices for rural India. (The same norm was used by / ^{Dandekar-Rath} (1971)).

In order to estimate, the percentage of poor

population Bardhan had accepted the poverty line of Rs. 20 per capita per month in current prices. (That is first method in 3.4.2).

The price index that can be used for such a purpose (i.e. to express poverty line in current prices) must consider the change in prices of the goods and services that normally form part of the consumption basket of the poorer section of the society along with weights that are attached to each one of the item. Bardhan found price index for agricultural labourers as a suitable one for expressing Rs. 15 at 1960-61 prices into current prices (for estimating number of poor population). (See Minhas-Bardhan debate in 3.5.3)

These index numbers are constructed on the basis of rural retail prices collected by NSS (See NSS reading) and are shown in line one of the Table No. 3.5.A.

Table 3.5.A. : Percentage of rural people below Rs.15 per month at 1960-61 prices on the basis of NSS data and Agricultural labour price index.

(1)	<u>1960-61</u> (2)	<u>1964-65</u> (3)	<u>1967-68</u> (4)	<u>1968-69</u> (5)
1. Consumer price index	100	144	200	196
2. Current value of goods worth Rs. 15 at 1960-61 prices (Rs.)	15.0	21.6	30.0	29.4
3. Percentage of rural people below Rs. 15 at 1960-61 prices	38.0	45.0	53.0	54.0

Source: Bardhan (1974), pg. 267.

It can be seen from the above table that during the period 1960-61 to 1968-69 consumer price index for agricultural labourers (which represents rural poor) increased from 100 in 1960-61 to 196 in 1968-69. Naturally it can be observed that the poverty line (i.e. current value of Rs. 15 at 1960-61 prices) increased from Rs. 15 in 1960-61 to Rs. 29.4 in 1968-69 prices.

For estimating the magnitudes of poverty, Bardhan had used NSS data on distribution of private consumer expenditure, for the year 1960-61, 1964-65, 1967-68 and 1968-69. This data is available at current year prices.

3.5.1.1 Using that data and poverty lines as given in the second line of the Table 3.5.A. Bardhan had calculated the percentage of poverty on the basis of linear interpolation. These estimates are shown in the last line of the Table 3.5.A.

It can be seen from the above table that the percentage of poverty increased steadily from 38 per cent in 1960-61 to 54 per cent in 1968-69. This shows an increasing trend in the percentage of poor population. (Even though Bardhan denies any conclusion about trend on the basis of his estimates).

3.5.2 Bardhan had also considered alternative poverty norm which is based on Balanced Diet approach. In the balanced diet approach minimum requirement of different nutritional elements such as proteins, vitamins is recommended

along with minimum level of calorie requirement. In order to derive these recommended nutrients, number of food items with their respective quantities are recommended (See Chapter 2).

The Nutrition Advisory Committee of Indian Council for Medical Research (ICMR) recommended minimum calorie and protein requirements for the Indian population. ICMR recommended 2700 calories and 55 gms. of proteins as minimum requirements for an average Indian adult engaged in moderate activity.

Central Government Pay Commission (1957-59) after taking into account these recommendations suggested a minimum diet for an adult in moderate activity as shown in the Table 3.5.B. Bardhan had taken into account this minimum diet and calculated the cost of this minimum diet using rural retail prices for the respective years.

Table 3.5.B.: Cost of minimum diet.

<u>Item</u>	<u>Amount in Ozs. per day</u>	<u>Cost in Rs. per month</u>	
		<u>1960-61</u>	<u>1967-68</u>
Cereals	16	6.04	14.30
Pulses	3	1.51	4.21
Vegetable	6	0.90	1.43
Milk	4	0.93	1.75
Sugar and Gur	1.5	0.62	2.17
Edible Oils	1.25	2.20	4.18
		<u>12.20</u>	<u>30.28</u>

Source: Bardhan (1970a), pp. 134-135.

From the Table No. 3.5.B. it can be seen that Bardhan had calculated the cost of minimum diet as Rs. 12.20 in 1960-61 and Rs. 30.28 in 1967-68.

Above requirements are for an average adult. These requirements undergo change for the populations in different age, sex groups. An average Indian person is usually taken as equal to 0.81 adult unit. Considering this proportion cost of minimum diet per capita for rural areas will be equivalent to Rs. 9.88 in 1960-61 and Rs. 24.53 in 1967-68.

This cost of minimum diet cannot be called as poverty line because even at very low levels of income, individuals have to spend at least some part of their total consumption on items other than food i.e. non-food items (i.e. items providing shelter, clothing etc.).

This non-food component can be calculated on the basis of observed average ratio of food to non-food component for poorer section of the society. (As any suitable norm to calculate desirable level of non-food items is not available). The average ratio of food to non-food items was 0.251 in 1960-61 and 0.202 in 1967-68 for the bottom 50 per cent of the population (on the basis of NSS data).

Using these ratios Bardhan had calculated (the blown up) estimates of per capita expenditure based on the cost of minimum diet above. He had calculated rural minimum level of living (i.e. poverty line) as Rs. 12.36 in 1960-61

and Rs. 29.49 in 1967-68 (See Bardhan (1970)).

3.5.2.1 Using these two poverty lines (in practice Bardhan had used slightly lower figures) along with NSS data on distribution of private consumer expenditure, Bardhan had estimated in 1960-61 about 38 per cent of the total population and in 1967-68 54 per cent of the total population was living below a minimum level of living.

On the basis of these two methods, using different approaches, Bardhan had concluded that there has been considerable rise in the percentage of rural population living below a minimum level of living during 1960-61 to 1967-68.

3.5.3 Minhas-Bardhan debate

B.S. Minhas and P.K. Bardhan had estimated the percentage of population living below a minimum level of living during the period 1960-61 to 1968-69 (Minhas has estimated since 1956-57). Not only their estimates about magnitude of poverty differ significantly but the direction in which they change is also different.

Here it is proposed, to discuss the nature of controversy between these two economists about the percentage of poor population, and poverty line, data source, methodology that they had used which led Minhas (1970, 1971a, 1971b) and Bardhan (1970, 1971a, 1971b) to arrive at different set of conclusions.

As already discussed in Para No. 3.1 of Chapter 3,

the estimates of poverty may differ due to differences in (i) Poverty line, (ii) Data source, (iii) Methodology.

3.5.3.1 Minhas had used two alternative norms of poverty line in terms of private consumption expenditure of Rs. 240, and Rs. 200 at 1960-61 prices per capita per year. Bardhan had also used two norms of poverty line in terms of private consumption expenditure of Rs. 15 per capita per month at 1960-61 prices (i.e. Rs. 180 per capita per year) and Rs. 12.36 per capita per month at 1960-61 prices (i.e. Rs. 148.32 per capita per year).

The different poverty lines, used by Minhas and Bardhan is one of the reasons of arriving at different estimates of poverty.

But the major difference in their estimates lies in the data source and the price index that they have used. (To express either data itself or the poverty line into current prices for estimating poverty percentages).

3.5.3.2 For estimating the poverty percentages Bardhan had totally relied on NSS data on distribution of private consumer expenditure. On the other hand Minhas had combined NSS data on distribution of private consumption expenditure and per capita private consumption expenditure estimates derived by National Accounts data.

The NSS data on distribution of private consumer expenditure is collected through direct interview method, while the National Accounts estimates are derived by

residual* method.

Naturally the estimates of per capita private consumption expenditure determined by these two different agencies through two different methods are bound to differ (which had led them to two different sets of data). Here it is not proposed to discuss the validity (limitations) of a particular data source but to point out only the factors that has led Minhas and Bardhan to arrive at different sets of conclusions.

Another important difference in the procedure that was followed by Minhas and Bardhan is choice of price index.

Minhas, in order to deflate data had used G.N.P. price deflater while Bardhan for inflating poverty line had used Agricultural labour price index. Bardhan had advocated the use of price index for agricultural labourers on the grounds that this better reflects changes in prices of the goods and services that are normally consumed by poorer sections of the society.

3.5.3.4 In short we observe that estimates of poverty of Minhas and Bardhan differs widely in its magnitude and direction due to use of different poverty lines, data source and price index numbers.

* Per capita private consumption expenditure =
$$\frac{\text{National Income} - \text{Govt. Consumption} - \text{N.D.C.F. (Investment)} + (\text{Imports} - \text{Exports})}{\text{T. population}}$$

3.6 Ojha's estimates

P.D. Ojha had estimated the percentage of poor population for the years 1960-61 to 1967-68. It is proposed here to discuss the procedure that Ojha had followed for estimating poverty.

3.6.1 Ojha accepted a norm of 2250 calories as minimum requirement per capita per day for Indian population. These minimum calorie requirements are to be derived from entire diet comprising cereals, pulses, sugar, milk, fruits, meat, etc. For the year 1960-61, data on average calorie value of consumption on food items for each expenditure group is not available. Hence, Ojha assumed that out of recommended calorie requirement, 80 per cent must be obtained from foodgrains (cereals and pulses) in rural areas and 66 per cent for urban areas. (The basis of this assumption is not provided).

In quantitative terms, he estimated that in order to obtain recommended calories, i.e. 2250 per capita per day, foodgrains consumption of 518 grams per capita per day for rural areas and 432 grams per capita per day for urban areas was necessary. For measuring the incidence of poverty, Ojha has used these norms as poverty lines.

The National Sample Survey (NSS) Report on consumer expenditure in its sixteenth round (1960-61) gives the data in terms of quantity of foodgrains consumed per capita for various expenditure groups for a period of 30 days, as shown in the Table No. 3.6.A.

3.6.2 This data is compared with the estimated norm or poverty line, i.e. 518 grams of foodgrains per capita per day for rural areas and 438 grams for urban areas. The difference in terms of quantity of foodgrains actual consumption and quantity necessary to derive recommended calorie intake (i.e. 518 and 432 gms.) represents nutritional deficiency. Individuals having such a nutritional deficiency are called poor. The deficiency upto 10 per cent of the total is ignored by Ojha while estimating poverty. (No explanation of this assumption is provided by Ojha).

Using the above-mentioned norm of 518 grams for rural areas and 438 grams for urban areas, Ojha estimated that out of the total rural population of 355 millions, 184 millions (about 52 per cent) could be considered as poor. Of the total urban population of 75 millions, he estimated that six millions, i.e. about 8 per cent could be considered as poor.

3.6.3 Ojha also estimated the incidence of poverty for 1967-68. But for the year 1967-68, data in terms of consumption of food grains was not available. Data of the share of different fractile groups in total consumption for 1967-68 was available. (Draft Fourth Five Year Plan - 1969-74, pg. 33).

After computing the data^{for 1967-68*} Ojha converted it into 1960-61 prices using foodgrains price index. The percentage change in expenditure in rupees was used to derive the

* Draft Fourth Five Year Plan, p. 31.

quantity consumed reported for 1960-61.

In order to estimate the percentage of poor population, for 1967-68 Ojha used the same norm, (i.e. poverty line), which is 518 grams per capita per day for rural areas and 438 grams per capita per day for urban areas in 1960-61. He has estimated the incidence of poverty in 1967-68 for rural areas only as shown in the Table No. 3.6.B.

Table 3.6.B. : Index of poverty: 1967-68 (Rural)

	<u>Levels of Expenditure per capita per month (in Rupees)</u>	<u>Foodgrains consumption per capita per day (in grammes)</u>	<u>Nutritional Norm per capita per day (in grammes)</u>	<u>Nutritional Deficiency</u>		<u>Population (in millions)</u>
				<u>Quantity (grammes)</u>	<u>Per cent (3 to 2)</u>	
		(1)	(2)	(3)	(4)	(5)
1.	11.83	252	518	-266	-51.4	20.6 (5)
2.	16.19	287	518	-231	-44.6	20.6 (5)
3.	20.25	337	518	-181	-34.9	41.3 (10)
4.	24.40	330	518	-188	-36.3	41.3 (10)
5.	30.49	379	518	-139	-26.8	82.6 (20)
6.	40.02	414	518	-104	-20.1	82.6 (20)
7.	49.96	471	518	- 47	- 9.1	41.3 (10)
8.	60.72)	481	518	- 37	- 7.1	82.6 (20)
9.	90.63)					
10.	Total number of persons at poverty levels (vertical columns 1 through 6)					289.0 (70)

Note: Figures in brackets in column 5 are percentages to total rural population.

Figures of expenditure per capita are at current prices.

Source: Ojha (1970), pg.24.

By using the above mentioned norm, Ojha estimated that in 1967-68, out of 412 millions of rural population, 289 millions i.e. 70 per cent of the total was living in poverty. The estimate of poverty percentage for 1960-61 was 52 per cent.

On the basis of estimates of poverty for 1960-61 and 1967-68, Ojha came to the conclusion that the percentage of rural poverty increased substantially during the period mentioned above.

3.6.4 We can make following observations on the basis of above discussion.

(1) Ojha's assumption of 80 per cent and 66 per cent calories out of total calorie requirement must be obtained from foodgrains (in rural and urban areas respectively) is debatable. No explanation of this assumption is provided. In fact NSS 26th round (1971-72) reveals that when households achieve per capita calorie intakes of 2250 about 84 per cent and 70 per cent of total calories are derived from foodgrains in rural and urban areas respectively.

(2) While calculating per capita consumption of foodgrains in 1967-68, Ojha has considered percentage change in income only. But in reality consumption pattern may undergo change, due to changes in relative prices, tastes etc.

(3) Ojha has deflated the figures of per capita consumption of foodgrains (for rural areas only) by 26.4 per cent on the grounds of over reporting errors in NSS data.

This has helped him to arrive at overestimated figures of poverty percentages.

(4) Calorie deficiency upto 10 per cent was ignored. No explanation is provided. We can observe that this criterion was also not used accurately. (For instance cut off point in 1960-61 is at 11.0 per cent and 12.7 per cent nutritional deficiency for rural and urban areas respectively.

3.7 Dandekar-Rath's estimates

Prof. V.M. Dandekar and N. Rath (1971) reviewed in depth the state of low standard of living of the Indian population during sixties and examined possible alternative solutions to improve prevailing state of living. It is proposed here to examine the estimates of poverty worked out by Dandekar-Rath in order to assess low standard of living of the Indian population.

3.7.1 Dandekar-Rath for the purpose of measuring poverty considered a calorie intake norm of 2250 per capita per day for the Indian population as suggested by Nutritional Experts (Remember that Ojha had based his poverty line on the same norm).

The NSS 16th round (1960-61) gives the data on per capita consumption of foodgrains for each expenditure group (viz. 0-3, 3-11, etc.). This data for rural and urban areas is shown in the Table No. 3.7.A.

We observe from the Table 3.7.A. that per capita consumption of foodgrains increases as we move from lower

Table 3.7A. : Per capita daily consumption of foodgrains and substitutes at different consumption levels (1960-61).

<u>Monthly per capita Expenditure (Rs.)</u>	<u>Per capita daily consumption of foodgrains and substitutes (gms)</u>	
	<u>Rural</u> (2)	<u>Urban</u> (3)
(1)		
0-8	356	332
8-11	480	377
11-13	560	388
13-15	616	412
15-18	625	418
18-21	675	445
21-24	705	485
24-28	690	506
28-34	781	498
34-43	858	511
43-55	890	564
55 and above	1133	511
All classes	652	466

Source: Derived from NSS 16th round, Report No. 138, Table No. 1.9.0 and 2.9.0

Figures in Col. 2, 3 are calculated as
 per capita daily consumption = $\frac{933}{30}$ x Per capita monthly
 of foodgrains consumption in seers.

1 Seer = 933 gms.

expenditure groups to higher expenditure groups. This occurs at a faster rate in rural areas as compared to urban areas.

Dandekar-Rath after observing rural and urban consumption patterns estimated that in 1960-61 in order to secure minimum requirement of 2250 calories per capita per day, foodgrains consumption of 616 grams for rural areas and 490 grams for urban areas was necessary. This consumption of foodgrains was expected to derive 2033* and 1617 calories in rural and urban areas respectively. Remaining calories were expected to be derived from items other than foodgrains (i.e. milk, meat, vegetables etc.). (In urban areas at every expenditure level more calories are derived from items other than foodgrains due to different consumption patterns).

Dandekar-Rath did not use poverty line as amount of foodgrains in grams per capita per day as calculated above. (Remember that Ojha defined his poverty line as 518 grams and 490 grams per capita per day). They found out an expenditure level at which consumption of foodgrains reached 616 grams and 490 grams for rural and urban areas respectively. In other words they calculated their poverty lines as an expenditure level at which households on an average secure minimum calorie requirement of 2250 per capita per day (For

* 3.3 calories can be derived (on an average) from one gram of foodgrain.

Thus $616 \times 3.3 = 2,033$

$490 \times 3.3 = 1,617$

further explanation see Dandekar (1981, 1982).

From the Table No. 3.7.A. we observe that in rural areas the per capita daily consumption of foodgrains and substitutes reaches 616 grams for households with per capita monthly expenditure of Rs. 13-15 or per capita annual expenditure of Rs. 170.0.* Hence poverty line for rural areas was consumption expenditure of Rs. 170.0 per capita per annum.

3.7.2 In order to estimate the magnitudes of poverty it is necessary to calculate the percentage of population living below expenditure level of Rs. 170.0 (i.e. poverty line). The Table No. 3.7.B. gives the distribution of total population according to broad expenditure groups.

3.7.3 The poverty line falls in the expenditure group Rs. 13-15. Hence all the population in the expenditure groups below Rs. 13-15 plus half of the population in the expenditure group Rs. 13-15 will form the poor population (Dandekar (1981)).

Dandekar-Rath, on the basis of the above procedure, calculated that in 1960-61, 33.12 per cent of the total rural population was living in poverty.

3.7.4 We observe from the Table 3.7.A. that in urban areas the per capita daily consumption of foodgrains reaches 490 grams for households with per capita monthly expenditure

* Poverty line is calculated by using method of linear interpolation.

Table 3.7.B. : Percentage distribution of estimated number of persons by monthly per capita expenditure classes in rural and urban areas (1960-61).

<u>Monthly per capita expenditure (Rs.)</u> (1)	<u>Percent of population</u>	
	<u>Rural</u> (2)	<u>Urban</u> (3)
0-8	6.38	2.15
8-11	11.95	5.49
11-13	9.88	7.19
13-15	9.82	6.86
15-18	13.79	10.71
18-21	11.44	11.40
21-24	9.03	9.68
24-28	7.72	11.03
28-34	7.66	9.34
34-43	5.93	9.61
43-55	3.12	7.04
55 and above	3.28	9.50
All classes	100.00	100.00

Source: The NSS 16th round, Report No. 138.
Col. (2) is taken from Table 1.4.0 and
Col. (3) from Table 2.4.0 of the NSS data.

of Rs. 21-24 or per capita annual expenditure of Rs. 271.0. On the basis of this poverty line Dandekar-Rath calculated that, in 1960-61, 48.64 per cent of the total urban population was living below the poverty line.

The second working group (1962) had recommended the poverty line as per capita consumer expenditure of Rs.20

per month or Rs. 240 per annum. Dandekar-Rath observed that their rural poverty line (i.e. Rs. 170.0) was much lower as compared to Rs. 240 while urban poverty line (i.e. Rs. 271.0) was higher as compared to the poverty line of Rs. 240 recommended by the Study Group (1962).

3.7.5 In the light of these differences Dandekar-Rath revised their estimates of poverty line as Rs. 180 and Rs. 270 per capita per annum for rural and urban areas respectively. Using these revised figures of poverty lines Dandekar-Rath calculated that, in 1960-61, about 40 per cent of rural and 50 per cent of urban population was living in poverty.

3.7.6 Prof. Dandekar-Rath also estimated the percentage of poverty for 1968-1969 i.e. the beginning year of the Fourth Five Year Plan. It is proposed here to review in brief the procedure which they had followed for estimation of poverty, for 1968-69.

3.7.7 According to official estimates the per capita private consumer expenditure in 1968-69 (i.e. National Income Series) was Rs. 488.4. In order to obtain its distribution into different expenditure classes of the rural and urban populations, Dandekar-Rath used rural and urban population figures of 1968-69* and the distribution of the total consumer expenditure in 1967-68.

* 'Report of Population Projections' (1968)

Distribution of total consumer expenditure (in percentage terms) according to different expenditure groups for 1967-68 is given in the following Table No. 3.7.C.

Table 3.7.C. : Per capita annual consumption expenditure and shares of different sections of rural and urban populations for 1967-68 (at 1960-61 prices)

<u>Section of population</u>	<u>Per capita consumption in 1967-68</u>		<u>Per cent of total consumption expenditure</u>	
	<u>Rural</u>	<u>Urban</u>	<u>Rural</u>	<u>Urban</u>
(1)	(2)	(3)	(4)	(5)
0-5	74.8	78.2	1.39	1.07
5-10	102.0	112.4	1.89	1.54
10-20	126.5	145.7	4.71	3.99
20-30	153.4	183.3	5.71	5.02
30-40	179.0	220.1	6.66	6.03
40-50	205.3	259.5	7.64	7.11
50-60	236.2	304.4	8.79	8.34
60-70	269.8	358.9	10.04	9.83
70-80	316.3	441.6	11.77	12.10
80-90	399.2	580.2	14.86	15.96
90-95	514.8	789.8	9.58	10.82
95-100	908.6	1330.0	16.51	18.22
All sections	268.6	364.9	100.00	100.00

Source: Col. 2, 3 are taken from the Table 2.7 of "Poverty in India", pg. 33.

Col. 4, 5 are calculated by using figure in Col. 2 and 3.

Share in total consumption of a section = $\frac{\text{Per capita consumption of that section}}{\text{Per capita consumption for all sections}} \times \frac{\text{Class interval}}{100}$

Assuming the same pattern of distribution of total consumption expenditure for 1968-69 as revealed in 1967-68 and Rs. 484.4 as per capita consumer expenditure in 1968-69, Dandekar-Rath calculated distribution of private consumer expenditure for different section of rural and urban populations. This distribution of consumption expenditure for 1968-69 is shown in Table No. 3.7.D.

Table 3.7.D. : Per capita consumption of different sections of rural and urban populations in 1968-69.

<u>Sections of population</u>	<u>Per capita consumption in Rs.</u>	
	<u>Rural</u> (2)	<u>Urban</u> (3)
(1)		
0-5	127.2	133.1
5-10	173.4	191.3
10-20	215.0	248.0
20-30	260.8	311.9
30-40	304.3	374.6
40-50	349.0	441.6
50-60	401.5	518.0
61-70	458.7	610.8
70-80	537.7	751.5
80-90	678.6	987.4
90-95	875.1	1344.1
95-100	1544.6	2263.4
All sections	456.6	621.0

Source: Col. 2 and 3 are taken from Table 3.6 of "Poverty in India", pg. 47.

3.7.8 For estimating the poverty percentage for 1960-61, Dandekar-Rath used the poverty line of Rs. 180 and Rs. 270 (at 1960-61 prices) for rural and urban areas respectively. In view of rise in prices (the cost of living for rural/urban population has increased) Dandekar-Rath raised their poverty line using cost of living index for rural and urban areas separately.

On the basis of these cost of living indices they calculated Rs. 324 and Rs. 486.00* as poverty lines for rural and urban areas respectively at 1968-69 prices.

3.7.9 Using method of linear interpolation Dandekar-Rath calculated, that in 1968-69, about 40 per cent of rural population and 50 per cent of urban population was living in poverty.

In short we conclude that Dandekar-Rath found that during the period 1960-61 to 1968-69 the percentage of rural and urban poverty had not undergone any significant change.

3.8 Sukhatme's estimates

Prof. Sukhatme P.V. (1965 and 1977a/^{1977b}and V.K.R.V. Rao (1977) followed the method which was earlier used by Dandekar-Rath (1971) for estimating the percentage of poverty. But both of them arrived at the estimates which are almost half of the estimates calculated by Dandekar-Rath. It is proposed here to examine one by one the methodologies followed by them.

3.8.1 Sukhatme used the recommendations of WHO/FAO (1973)

about calorie requirements for the Indian population which is 2750 calories per consumer unit. (Actual norm is slightly higher than 2750 calories). But Sukhatme advocated that 2750 calories is an average calorie requirement in healthy and active subjects of "reference" type and hence should not be considered as a minimum below which a person should be considered as undernourished.

3.8.2 Let us see how Sukhatme explains difference between average calorie requirement and minimum calorie requirement and to what minimum calorie norm does he arrive. He stated that calorie requirement of individuals is different due to two types of variations. (i) Inter-individual variation in calorie requirement (or energy need), (ii) Intra-individual variation in calorie requirement.

3.8.2.1 Inter-individual variation means that the energy intake* of even normally healthy and active individuals with similar body weight and occupation varies. This implies that some individuals are more efficient machines in using given food intake than others.

3.8.2.2 Intra-individual variation means that energy intake of an individual engaged in similar activity and maintaining body-weight varies from day to day (or even week to week). Summing up, the daily, weekly or monthly energy intake of individuals will show variation even if all of them are

* It is difficult to calculate variations in requirement and hence variations in energy intake are considered.

healthy and active.

3.8.3 A statistical measure of such a variation is the 'Standard Variation'. Sukhatme (1978) placed the value of standard deviation of an individual's requirement as 450 calories. The NSS 26th Round (on the basis of which Sukhatme has estimated percentage of poverty) data is given on energy intake of households which are group of individuals or consumer units. The average size of a household can be considered as 4.0 consumer units (In fact it is 4.29. For convenience such an adjustment is made). The standard deviation in calorie requirement per consumer unit of a household will be $450/\sqrt{4} = 225$ calories.

Sukhatme further states that if "m" is the average or mean requirement per consumer unit and "s" is the standard deviation of it then "m - 2s" should be considered as minimum calorie requirement below which population can be considered as undernourished.

3.8.4 If m is 2750 calories and s is 225 calories as calculated above then naturally $m - 2s = 2750 - 2 \times 225 = 2300$ calories. Hence norm of calorie requirement in Sukhatme's procedure comes to be 2300 calories per consumer unit.

Following the same method as used by Dandekar-Rath, Sukhatme calculated an expenditure level consistent with 2300 calories per consumer unit (Dandekar-Rath used 2812.5 per consumer unit or 2250 per person) and calculated the percentage of population living below poverty line.

3.8.5 On the basis of NSS 26th Round data (1971-72) Sukhatme calculated, that in 1971-72 about 20 per cent of the rural population and 25 per cent of the urban population was living in poverty. (These estimates are half of Dandekar-Rath's estimates).

In brief, we observe that due to lower level of calorie intake norm (i.e. 2300 per consumer unit unlike Dandekar-Rath's 2812.5 per consumer unit) Sukhatme arrived at very low estimates of poverty. They are almost half of Dandekar-Rath's estimates. (Sukhatme 81a, 81b).

3.9 V.K.R.V. Rao's estimates

Prof. V.K.R.V. Rao (1977) has estimated the percentage of population living below a minimum level for the year 1971-72. It is proposed here to review the methodology that we had followed for estimating the poverty percentages.

3.9.1 Rao used the calorie intake norm as recommended by W.H.O./F.A.O. (1973). WHO/FAO recommended calorie norm for India as 2780 per day per consumer unit (i.e. an adult in age group 25-35 years). Considering the distribution of population according to age and sex, there are about 0.8 consumer units per person. Hence the norm of 2780 calories per consumer unit is equivalent to 2224 calories per person. But for measurement of poverty Prof. Rao has chosen a calorie intake norm of 2300 per consumer unit or 1900 per person. (Rao has not explained why he has chosen such a different norm. Note that this norm was used by Sukhatme (1977)).

In the NSS 26th round (1971-72) data on consumer expenditure is cross-classified by monthly expenditure per consumer unit and calorie intake per day per consumer unit. Rao has used the same method as followed by Dandekar-Rath (1971) i.e. finding out an expenditure level consistent with calorie intake norm and treating all the population below this level as poor.

3.9.2 Let us see with the help of NSS 26th Round data (1971-72) to what estimates did Rao arrive due to the calorie intake norm as used by him i.e. 2300 per consumer unit. The NSS 26th Round data (1971-72) on consumer expenditure for rural households (All India) is given in Table No. 3.9.A.

In the first column of the table 3.9.A. different expenditure groups and in the last column their corresponding average calorie intake per consumer unit are shown.

3.9.3 Rao considered calorie intake norm of 2300 and hence his poverty line (consistent with calorie norm of 2300) falls in between the expenditure groups 21-24 and 24-28.*

Using the same method as used by Dandekar-Rath, Rao arrived at the estimates of poverty of 17.9* per cent in 1971-72.

But if had he used the calorie intake norm of 2780 per consumer unit (as suggested by WHO/FAO) his poverty line would have fallen in between the expenditure groups 28-34 and 34-43. In this case poverty line expenditure would be Rs. 31.87 and he would have arrived at the estimates of poverty of 37.09 per cent (which are not much different from

* Estimate of poverty is expressed in terms of percentage of poor households (not persons).

Table 3.9.A. : Average calorie intake per day per consumer unit for rural households by monthly expenditure class (1971-72)

<u>Monthly Expenditure per consumer unit</u> (Rs.) (1)	<u>Number of Households</u> (2)	<u>Average No. of consumer units per household</u> (3)	<u>Average calorie intake per day per consumer unit</u> (4)
00-15	444	4.99	1493
15-21	1207	4.74	1957
21-24	813	4.78	2287
24-28	1174	4.51	2431
28-34	1748	4.44	2734
34-43	2028	4.20	3127
43-55	1655	4.08	3513
55-75	1319	3.70	4016
75-100	598	3.31	4574
100	482	2.84	6181
All classes	11468	4.29	

Source: NSS 26th round (1971-72).

the estimates of Dandekar-Rath for 1960-61). For details see Dandekar-Rath (1981).

In short from the above discussion we conclude that during 1960-61 and 1971-72 the percentage of poverty has not come down drastically (as revealed by Rao's estimates) but they have remained more or less constant. Rao's estimates are seriously under-estimated because of his inappropriate choice of calorie intake norm (of 2300 instead of 2780 per consumer unit).

3.10 Augmented poverty line of the Seventh Finance Commission

One of the limitations of the methods followed so far in the concept of poverty line is that it is based on private consumption and do not take into account the amount of public consumption goods and services like education, health, water supply, sanitary services, etc. provided free of charge by the Government to the households. The Seventh Finance Commission (1978) sought to rectify this in its Report submitted in 1978.

In order to determine the amount of transfers that can be made to different states, the Seventh Finance Commission calculated the percentage of poor population in different States. For finding out the percentage of poor population in different States. For finding out the percentage of poor population they used the concept of "Augmented Poverty Line (APL) by including per capita monthly expenditure on (i) Health and family planning, (ii) Water supply and sanitation, (iii) Education, (iv) Administration of police, justice, courts, (v) Roads and (vi) Social welfare, to the per capita monthly private consumer expenditure.

The Commission calculated the percentage of poor population for all the States in 1970-71 using statewide Augmented Poverty Lines (SAPL). These are calculated by the following method.

3.10.1 Choosing the All India poverty line

The Seventh Finance Commission based its measure

of poverty line on the Dandekar-Rath norm of Rs. 15 per capita monthly expenditure for rural areas and Rs. 22.5 for urban areas (at 1960-61 prices) and not on the Planning Commission's norm of Rs. 18.9 for rural areas and Rs. 25/- for urban areas (at 1960-61 prices).

3.10.2 State specific poverty lines

At the second step, the Seventh Finance Commission converted the All India Rural and Urban Poverty Norms into State Specific Poverty Norms (at 1960-61 prices) by using estimates of State Price Indices for Rural and Urban areas separately. These price indices for rural and urban areas are given in the Table No. 3.10.A.

For the rural areas, the State index numbers of rural consumer prices in 1960-61 prepared by Bardhan were utilised (Col. 3 of Table 3.10.A). For the urban areas State index numbers for the working class consumer prices were utilized (Col. 4 of Table 3.10.A).

Multiplying the all India poverty norm for rural areas (i.e. Rs. 15) and urban areas (i.e. Rs. 22.5) by their respective State specific price indices (rural and urban areas separately) the Commission arrived at State specific poverty lines as shown in Col. 2 and 3 of Table 3.10.D.

For example, for Maharashtra, state specific poverty lines for rural and urban areas at 1960-61 prices are Rs. 16.01 and Rs. 21.79 respectively. They are calculated as:

$$X: 310/16: (B22), 2.18$$

$$215800$$

$$\text{Rs. } 16.01 = \text{Rs. } 15 \times 106.5/100$$

$$\text{Rs. } 21.79 = \text{Rs. } 22.5 \times 96.84/100.$$

$$\text{i.e. State specific poverty line at 1960-61 prices} = \text{Respective poverty line (rural or urban)} \times \text{Respective price index (rural or urban)} / 100$$

3.10.3 Adjusting State Specific Poverty Lines to 1970-71 prices

In order to calculate rural State Specific Poverty Lines in the prices of 1970-71, the Consumer Price Index Numbers for agricultural labour (CPIAL) and for urban areas consumer price index number for working class were utilised. The price index number for rural and urban areas are shown in the Table No. 3.10.B. The State Specific Poverty Lines for rural and urban areas at 1970-71 prices are shown in Cols. 4 and 5 (Table 3.10.D).

For example, for Maharashtra, State Specific Poverty Lines for rural and urban at 1970-71 prices are Rs. 30.72 and Rs. 39.72 respectively. They are calculated as:

$$\text{Rs. } 30.72 = \text{Rs. } 16.01 \times 192/100$$

$$\text{Rs. } 39.72 = \text{Rs. } 21.79 \times 182.24/100$$

$$\text{i.e. State specific poverty line at 70-71 prices} = \text{Respective poverty line at 60-61 prices} \times \text{Respective price index 1960-61 as a base} / 100$$

3.10.4 Augmented poverty lines

The NSS data only covers household consumer expenditure. In order to get a more inclusive measure of welfare or deprivation, an estimate of the benefit of public

Table 3.10.A. : State relative price indices for rural and urban price levels in 1960-61

<u>Sr. No.</u>	<u>State</u>	<u>Index of consumer price for the rural poor in each State with all India average price for the same group as 100 (1960-61)</u>	<u>State relative urban price index for industrial workers with All India average as 100 *</u>
1	2	3	4
1.	Andhra Pradesh	102.4	101.65
2.	Assem	108.6	100.53
3.	Bihar	105.5	97.93
4.	Gujarat	119.9	97.20
5.	Haryana	106.0	97.82
6.	Karnataka	104.1	100.63
7.	Kerala	107.6	99.19
8.	Madhya Pradesh	93.8	103.22
9.	Maharashtra	106.5	96.84
10.	Orissa	96.8	97.78
11.	Punjab	106.0	99.07
12.	Rajasthan	98.0	99.83
13.	Tamil Nadu	109.3	98.76
14.	Uttar Pradesh	96.4	99.88
15.	West Bengal	120.3	98.91
	All India	100.0	100.00

Source: Poverty and income distribution in India (Ed)-1974 by T.N. Srinivasan, P.K. Bardhan, Article on "On the incidence of poverty in Rural India in the Sixties" By Pranab K. Bardhan, page 277, Table 3 Col. 2.

* Derived from the Statewise average of Index Numbers for three years 1961-63 as shown in

Table 3.10.B. : Consumer price index numbers

<u>Sr. No.</u>	<u>State</u>	<u>CPI of Agri- cultural Labourer*</u> (Base: 1960- 61 = 100)	<u>CPI of Working Classes**</u> (Base 1960 = 100)				
			1961	1962	1963	Average 1961-63	1971
1.	Andhra Pradesh	171	104.54	108.48	113.29	108.77	187.69
2.	Assam	203	102.64	106.31	113.91	107.62	178.10
3.	Bihar	206	101.76	103.92	108.67	104.78	191.30
4.	Gujarat	173	102.00	104.00	105.99	104.00	180.03
5.	Haryana	194	102.00	104.00	108.00	104.67	193.00
6.	Karnataka	188	104.24	107.52	111.25	107.67	192.94
7.	Kerala	214	103.13	106.25	109.00	106.13	196.13
8.	Madhya Pradesh	198	106.28	110.98	114.09	110.45	189.23
9.	Maharashtra	192	100.91	104.38	105.56	103.62	182.26
10.	Orissa	212	98.76	101.29	113.81	104.62	187.05
11.	Punjab	194	102.00	106.00	110.00	106.00	191.00
12.	Rajasthan	173	105.41	107.82	107.22	106.82	186.22
13.	Tamil Nadu	174	103.25	106.55	107.21	105.67	171.26
14.	Uttar Pradesh	183	101.71	106.36	109.53	105.80	191.82
15.	West Bengal	206	100.82	105.42	112.04	105.83	181.29
	All India	192	104.00	107.00	110.00	107.00	184.00

* Source: Indian Labour Journal, Labour Bureau, Ministry of Labour, Government of India, Aug., 1977, Vol.18, No. 8, Table 8.1.2.2.

** Calculated from the Centrewise index numbers given in the above mentioned reference Table 8.1.1.2 and weighting diagram for the Centres obtained from NSS office.

expenditure was added to the private consumer expenditure norm for calculating 'The Augmented Poverty Line', for rural and urban areas separately.

The per capita monthly expenditure by each State Government under the six items of expenditure mentioned above, as shown in the Table No. 3.10.C was taken into account for calculating 'Augmented Poverty Line' (APL). To the State Specific Poverty Lines calculated at 1970-71 prices (Cols. 4 and 5 of Table 3.10.D) the maximum per capita monthly public expenditure for any State in India in 1970-71 was added. (The figure was Rs. 4.12 at 1970-71 prices).

This modified State Specific Poverty Norm is called as "Augmented Poverty Line" (APL), (Cols. 6 and 7 of Table 3.10.D).

Since the distribution of this public expenditure as between different expenditure classes was not available, the actual per capita monthly public expenditure for each State was added to actual per capita monthly private consumer expenditure for each class for each State.

For example for the Maharashtra State per capita public expenditure on above mentioned items was Rs. 3.29. This expenditure was added in to average per capita private consumer expenditure of each expenditure group.

3.10.5 The Seventh Finance Commission has used the NSS data on Consumer Expenditure for 1970-71 (in the modified form as mentioned above) and State Specific Poverty Lines

Table 3.10.C. : Statewise public expenditure (Revenue + Capital) on selected items of expenditure - 1970-71

Sr. No.	States	Total Education	Total Medical * Public Health & Family Planning	Total social security	Adminis- tration of justice, jail & police	Roads	Total Col.2 to Col.6	Per capita public expenditure	
								Annual	Per month
	1	2	3	4	5	6	7	8	9
1.	Andhra Pradesh	620,502	308,747	92,051	186,716	89,907	1,297,923	29.84	2.49
2.	Assam	251,421	92,512	-	108,051	136,748	588,732	40.26	3.36
3.	Bihar	484,781	234,120	42,256	208,370	134,013	1,103,540	19.58	1.63
4.	Gujarat	423,634	272,935	-	162,635	203,249	1,062,453	39.80	3.32
5.	Haryana	185,314	93,775	-	48,966	102,484	430,539	42.90	3.58
6.	Karnataka	537,870	234,825	22,475	119,614	136,394	1,051,178	35.88	2.99
7.	Kerala	601,179	222,127	39,226	98,502	94,759	1,055,793	49.46	4.12
8.	Madhya Pradesh	494,727	269,656	99,319	194,837	118,672	1,177,211	28.26	2.36
9.	Maharashtra	981,089	491,065	-	380,581	134,426	1,987,161	39.42	3.29
10.	Orissa	236,433	144,384	-	91,711	62,450	534,978	24.38	2.03
11.	Punjab	301,168	123,263	-	100,613	95,811	620,855	45.82	3.82
12.	Rajasthan	415,858	272,841	19,703	129,100	68,593	906,095	35.17	2.93
13.	Tamil Nadu	725,408	335,103	65,554	205,769	93,001	1,424,835	34.58	2.88
14.	Uttar Pradesh	753,696	410,833	-	328,931	222,631	1,716,091	19.43	1.62
15.	West Bengal	646,232	308,104	3,205	292,750	104,139	1,354,430	30.57	2.55

* Including Water Supply and Sanitation.

Source: Combined Revenue and Finance Accounts 1970-71.

Note: Figures in Cols. 2 to 7 in Rs. '000 and in Col. 8 and 9 in Rs. only.

Table 3.10.D. : Stepwise data base for derivation of poverty percentage (Statewise) - 1970-71

Sl. No.	States	State Specific Poverty Lines		Augmented poverty lines (APL)		Percentage of population below (APL)		Number of persons below APL		Total number of persons below APL Rural + Urban Col.10 + Col.11	Ratio of all persons below APL	Poverty percentage	Rank		
		1960-61 Rural	1960-61 Urban	1970-71 Rural	1970-71 Urban	1970-71 Rural	1970-71 Urban	1970-71 Rural	1970-71 Urban						
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	Andhra Pradesh	15.50	22.87	26.51	42.92	30.68	47.09	45.63	57.14	16015212	4801204	20817416	47.85	7.52	7
2.	Assam	16.31	22.63	33.09	40.30	37.26	44.47	33.95	22.66	4527548	292138	4819686	32.95	1.74	13
3.	Bihar	15.80	22.03	32.55	42.14	36.72	46.31	64.78	57.53	32856029	3241221	36097250	64.06	13.03	2
4.	Gujarat	16.80	21.87	29.06	39.37	33.23	43.54	44.21	46.61	8488751	3494119	11982870	44.88	4.33	11
5.	Haryana	15.90	22.01	30.85	42.65	35.02	46.82	20.43	45.36	2432051	804214	3236265	32.24	1.47	14
6.	Karnataka	15.60	22.64	29.33	41.42	33.50	45.59	48.85	51.29	10833425	3652921	14486346	49.44	5.23	9
7.	Kerala	16.10	22.32	34.45	43.78	38.62	47.95	61.82	64.44	11053988	2233780	13287768	62.25	4.80	10
8.	Madhya Pradesh	14.10	23.22	27.92	43.94	32.09	48.11	56.99	60.15	19872043	4081037	23953080	57.50	8.65	5
9.	Maharashtra	16.01	21.79	30.72	39.71	34.89	43.88	46.67	38.07	16194967	5981258	22176225	43.99	8.01	6
10.	Orissa	14.51	22.00	30.74	41.15	34.19	45.32	69.18	49.20	13904640	907934	14812574	67.50	5.35	8
11.	Punjab	15.90	22.29	30.85	42.57	35.02	46.74	17.47	34.94	1805504	1123733	2929237	21.62	1.06	15
12.	Rajasthan	14.70	22.46	25.43	41.83	29.60	46.00	41.84	51.28	8870304	2330041	11200345	43.50	4.05	12
13.	Tamil Nadu	16.40	22.22	28.54	38.05	32.71	42.22	61.32	59.20	17619893	7390400	25010293	60.71	9.03	4
14.	Uttar Pradesh	14.51	22.25	26.54	42.70	30.71	46.87	48.02	64.88	36472413	8037721	44510134	50.38	16.07	1
15.	West Bengal	10.11	22.25	37.29	40.34	41.46	44.51	70.82	36.30	23614913	3981033	27595946	62.20	9.96	3
Total - All India		15.00	22.50	28.80	41.40										
												100.00	(15 States)		

(APL) as shown in Cols. 6 and 7 of Table 3.10.D. The Commission has calculated State Specific Poverty percentages for urban and rural areas by using the method of linear interpolation. The method followed by the Commission is as under:

Y = Cumulative percentage of persons at the cut off point (x)
i.e. augmented poverty line;

Y1 = Cumulative percentage of persons at the lower limit of the expenditure class in which the cut-off (x) falls;

Y2 = Cumulative percentage of persons at the upper limit of the expenditure class in which the cut-off point (x) falls;

x = Cut off point, i.e. the augmented poverty line;

x1 = Lower limit of the expenditure class in which x falls;
and

x2 = Upper limit of the expenditure class in which x falls,

then $Y = y_1 + \frac{y_2 - y_1}{x_2 - x_1} (x - x_1)$.

3.10.6 Poverty percentage

After estimating the State-wise rural and urban poverty ratios with reference to augmented poverty lines, the total number of persons below the augmented poverty line in each State (Cols. 10, 11 and 12 of Table 3.10.D) were calculated by applying the ratios to the 1971 Census population data.

The Commission also calculated "Poverty percentage" (Col. 14 of Table 3.10.D) which is, the percentage of the number of persons below the augmented poverty line in a State

to the total number of persons below the augmented poverty line in all the States.

From the Table No. 3.10.D. (Col. 13), we observe that in Orissa, the percentage of poverty ratio was the maximum, i.e. 67.50 per cent while in Punjab, the percentage of poverty ratio was minimum, i.e. 21.62 per cent.

Observations

The Finance Commission's attempt to include consumption of public goods and services while calculating poverty line seems to be more comprehensive. But following criticism can be made on the procedure of calculating the proportion of poor population using this method.

(1) The Finance Commission in order to calculate Augmented Poverty Line (APL) has considered maximum per capita expenditure on public consumption goods and services (listed above) in any state. But one does not know whether this expenditure can be considered as a minimum desirable one.

(2) In the absence of data regarding distribution of public expenditure according to different expenditure groups, the Commission has assumed equitable distribution of this expenditure. But such assumption is doubtful. Upper income groups in a society are in position to take the advantage of public goods and services. Hence it is likely that distribution of public consumption goods and services is inequitable in favour of upper income groups. (One can expect

distribution of this expenditure, similar to distribution of private consumer expenditure.) Hence Finance Commission estimates of poverty percentages can be underestimated.

(3) Consumption pattern over the time period especially among the states may undergo wide variations. Hence method of using price index numbers of the seventh Finance Commission is not appropriate (See Dandekar (1979)).

So far we have discussed a number of studies measuring the poverty. For such a purpose economists have used different definitions of poverty line. Amongst all studies the definition of poverty line calculating expenditure level consistent with 2250 calories per capita per day seems to be of much practical value, on account of following reasons. (This definition was used for the first time by Dandekar-Rath (1971) and later followed by Bardhan, Rao, Planning Commission, Seventh Finance Commission etc.)

1. This definition is expressed in terms of per capita consumer expenditure in rupees.* Naturally such a poverty line in monetary terms can clearly separate total population into poor and non-poor (for instance if the criterion of balanced diet itself is used then the existence of several norms such as proteins, vitamins etc. makes separation of total population into poor and non-poor difficult).

Secondly the poverty line in monetary terms can

* (Remember that criterion of 2,250 calories per capita is used to calculate expenditure level only).

provide an idea to the policy makers about the amount of income to be generated for eradication of poverty. (One can note that most of the economists have expressed their poverty line in monetary terms).

2. The distinguished Study Group (1962) had recommended a single poverty line of Rs. 20 per capita per month for country as a whole. (On which most studies on poverty have been based). But prices of the commodities and consumption pattern of population in different parts of the country is different. Hence use of a single poverty line, defining minimum level of living, is not appropriate.

The definition mentioned above helps to calculate poverty lines separately for rural and urban areas.* (If the data is available in detail i.e. in terms of per capita calorie intake or per capita consumption of foodgrains, then it is possible to calculate poverty lines even State-wise). In such a calculation, the problem of price indices (e.g. All India rural, urban price indices) can be by-passed.

Secondly most of the times economists choose a definition of poverty line at a base year prices and then raise it for subsequent years using suitable price index numbers for estimating poverty percentages. Once again the problems of price index numbers (such as changes in

* Recall that Dandekar-Rath have calculated poverty line for urban areas as Rs. 270 and Rs. 180 for rural areas in 1960-61.

consumption patterns, changes in quality of food items and use of a particular price index such as Laspeyres's, Fisher's Price Index)* can be by-passed if the data on per capita consumption of foodgrains or average calorie intake for different expenditure groups is available).

3.11 Limitations of poverty estimates

In our study we have discussed number of estimates of poverty made by different economists which helps us to understand the actual state of living of the population and to design suitable policy measures. But these estimates suffer from certain limitations which are explained one by one.

1. The estimates discussed so far are based on poverty line which excludes public consumption goods and services such as roads, water supply, medical facilities, etc. It is assumed that these services are freely provided by the Government. But it is not known whether these services are actually distributed to a desirable level (whatever may be its definition) among all sections of population. Hence most of the definitions of poverty lack in considering this component (i.e. public goods and services) of total consumption. (The Seventh Finance Commission has considered this approach but whose method is criticized on several accounts).

2. The estimates of poverty are with reference to certain minimum basic needs (i.e. minimum calories per

** "Below Poverty Line" Dandekar (1979).

person, balanced diet per person etc.). In India these minimum basic needs (and hence poverty line) are defined for country as a whole (e.g. for rural and urban India). But in India environmental conditions and physical structure of the populations of different states vary widely. Hence minimum basic requirements for populations of different states cannot be identical.

3. It is often suggested that instead of defining poverty line in terms of per capita consumer expenditure (as defined in most of the estimates of our study) one should use a number of socio-economic indicators like the calorie intake, level of literacy, infant mortality etc. It is suggested that a single composite index based on these indicators is able to measure quality of life of the population in a true sense. Even though it is true that it is very difficult to measure poverty using this approach (deprivation in a broader sense) its conceptual superiority cannot be ignored.

4. The studies pertaining to the measurement of poverty, are based on NSS data on distribution of consumer expenditure. But the reliability of NSS data is questionable. It is criticized by many economists that NSS data overestimates consumption of rich while under-estimates consumption of poor population (i.e. poverty percentages are overestimated).

Secondly NSS data are in terms of current prices and would require transformation in constant prices for

comparing them over different years. This raises the question of a suitable price deflator on which there is no consensus. Consumer price index numbers for agricultural labourers and industrial workers have been used in this connection. But it is likely that the fractile group specific consumption baskets are affected widely different as a result of price changes over time and hence corresponding price changes should need to be determined before inter-temporal comparisons of poverty are made.

5. The measure of poverty discussed in our study expresses the extent of poverty i.e. the percentage of poor population but it does not measure how many people live how much below poverty line. In other words our usual measure of poverty does not give any information on the intensity of poverty which is vitally important for planners in designing poverty alleviation programmes. The usual measures of poverty (i.e. poverty percentage) are also insensitive to decreases in income of the poor or transfer of income among them as well to transfers from the poor to the non-poor. Hence it is suggested that our usual measure of poverty i.e. head-count measure should be supplemented with measures calculating shortfall in expenditure of the poor from poverty line and a measure indicating inequality in distribution of consumer expenditure among poor. (Dandekar-Rath, Sen have expressed the necessity of this approach while measuring poverty).

CONCLUSION

Poverty in general can be defined as deprivation of certain sections of population from basic needs. But conceptually poverty can be studied with the help of two approaches, (i) Relative Poverty, (ii) Absolute Poverty.

The relative poverty approach deals with arranging the entire population in the ascending order of their income and then studying how the bottom sections of population fare relative to the rest of the society. Such a measure of poverty is unsuitable on several accounts. In the absolute poverty approach certain minimum basic needs which are considered essential by the society and are capable of being measured objectively, are determined. Such a basket of goods and services (which are regarded as essential) or amount of income (expenditure) to afford this basket is called 'poverty line'. The population lying below this line is called poor and this population as a percentage of total population is called 'poverty percentage'.

The Absolute Poverty line which states minimum basic needs itself depends upon several factors such as place, stage of development, the time for which it is made etc. Hence some of the economists like Peter Townsend do not accept distinction between absolute and relative poverty because the needs which are believed to be basic or absolute can be shown to be relative. But ultimately it can be

concluded that in the developing countries where the general standard of living is very low, index of Absolute Poverty is of much importance.

It is wellknown that human being have multiplicity of wants both material and non-material. The material or physiological needs includes item like food, clothing, shelter etc. which can be well defined for a given society. The non-material needs comprise elements like appropriate family atmosphere, fulfilment of cultural and religious aspirations, power, prestige, sense of security etc., are difficult to quantify and hence excluded from concept of poverty.

In India general standard of living of its population is very low and hence most of the poverty lines has been expressed in term of fulfilment of minimum amount of dietary requirements. In the Indian context four criterion can be considered for the definition of poverty line. (i) Percentage expenditure on food items, (ii) Calorie Value of food intake, (iii) Balanced diet, (iv) Balanced diet plus items for tolerable standard of living.

Percentage expenditure on food goes on declining as total expenditure of an individual increases. This universally observable phenomenon can be used for measuring poverty. WHO/FAO recommends minimum calorie requirements for populations of different countries which can be used as one of the criteria for defining poverty line. Balanced diet

approach gives importance to the composition of food items and recommends number of norms such as proteins vitamins at a desirable level. In India most of the definitions of poverty has been developed on these two criteria. The last approach (which is not used so far in India) to the poverty line considers that apart from balanced diet certain facilities such as education, water supply, recreation etc. has to be available upto a desirable (tolerable) level.

For measuring poverty, criterion itself can be used or its conversion into monetary terms can be used. It should be noted that even though they are highly correlated, they are not identical and hence produce different results if used for measuring poverty. Ultimately it can be concluded that for measuring poverty, poverty line must be able to separate clearly total population into poor and non-poor. For such a purpose poverty line in terms of per capita consumption (income) is useful.

The estimates of extent of poverty may differ due to differences in (i) time period, (ii) Data source, (iii) Period for which they are made, (iv) Methodology that is adopted. In India the pioneering attempt to measure poverty was made by Dadabhai Naoroji, which was followed later by the economists in the post-independence period. Most of the economists in India have used either criterion of balanced diet or calorie value of food intake. But instead of using criterion itself they have calculated an expenditure level

consistent with their criterion. In the process of such a conversion the composition of balanced diet (which is recommended) is lost.

The estimates of economists on extent of poverty are found to be different (even though they are for the same periods) by a wide margin. Prof. V.K.R.V. Rao had arrived at the estimates which are 17.9 per cent (for 1971-72) while Ojha had calculated 70 per cent of the population as poor (for 1967-68). Not only the estimates of different economists differ widely but in some cases the trends in movement of poverty are also found to be different.

For instance Ojha, Bardhan came to the conclusion that the percentage of poverty over the period 1960-61 to 1967-68 has increased considerably. While Minhas concluded that the percentage of poverty has declined steadily for the same period. On the other hand Dandekar-Rath came to the conclusion that percentage of poverty had not significantly changed over the period 1960-61 to 1968-69. Such a difference in estimates arises due to differences in poverty line, data source, methodology etc.

In spite of the controversies over selection of a poverty line and its proper application, most of the economists have come to the conclusion that about 40 per cent of the Indian population is living in poverty.(Table 3.11.A.)

It should be mentioned here that in India where standard of living of the population is very low, too much

efforts (especially academic controversies) should not be devoted in sophisticating the concept of poverty. While more efforts should be done on designing policies providing immediate relief to the poor.

Table 3.11.A. : Estimates of Poverty in India

	<u>Definition of Poverty Line</u>	<u>Period</u>	<u>Percentage of Population Poverty Line</u>	
			<u>Rural</u>	<u>Urban</u>
1. Planning Commission				
a) Sixth Five Year Plan (78-83)	Rs. 61.8 (Rural) Rs. 71.3 (Urban)	1977-78	47.85	40.71
b) Sixth Five Year Plan (80-85)	Rs. 76 (Rural) Rs. 88 (Urban)	1979-80	50.7	40.3
c) Seventh Five Year Plan (85-90)	-	1983-84	40.4	28.1
2. Minhas B.S.				
	Rs. 200	1960-61	46	-
		1964-65	39.3	-
		1967-68	37.1	-
3. Bardhan P.K.				
	Rs. 180	1960-61	38	-
	Rs. 353 (approx)	1968-69	54	-
4. Oja				
	518 gm. (Rural)	1960-61	52	-
	432 gm. (Urban)	1967-68	70	-
5. Dandekar-Rath				
	Expenditure level consistent with per capita 2250 calories			
	Rs. 180 (Rural)) 1960-61	40	50
	Rs. 271 (Urban)			
	Rs. 324 (Rural)) 1968-69	40	50
	Rs. 486 (Urban)			
6. Sukhatme P.V.				
	Expenditure level consistent with 2300 per consumer in it			
		1971-72	20	25

83-B

	<u>Definition of Poverty Line</u>	<u>Period</u>	<u>Percentage of Population Poverty Line</u>	
			<u>Rural</u>	<u>Urban</u>
7. V.K.R.V. Rao	Expenditure level consis- tant with 2300 per consumer in it	1971-72	17.9	-

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