

Minimum Needs of Poor and Priorities Attached to Them

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From an examination of the NSS data covering 1951-1991 and taking the cereal consumption deprivation as a measure of poverty the authors present an estimate of poverty in India without using the dubious concept of the poverty line. They argue that there is no need to have a poverty line to measure the degree of poverty of any community or group of vulnerable households. The method developed here reveals that cereals constitute the commodity group that occupies the top position in the hierarchy of needs, both in rural and urban areas. Next item of priority, both for rural and urban areas, is fuel and light and not clothing partly because one cannot make a 'roti' out of wheat without the cooking fuel.

If the misery of our poor be caused not by the laws of nature, but by our institutions, great is our sin

– Charles Darwin, *Voyage of the Beagle*

I Introduction

ALLEVIATION of poverty has become one of the most important items on the policy agenda of many a government, particularly in the developing countries. Economic research so far has concentrated on the issue of measuring and monitoring the extent of poverty, rather than on the issues of designing the appropriate poverty alleviation programmes. Designing such programmes requires some insights into who the poor are – for whom such programmes must be designed, and what their needs are. The view of a major segment of the economics profession on these two issues has been that all those who are below the poverty line are the poor who need poverty alleviation programmes, and that their needs are based on the common perception of hierarchy of needs, such as food, clothing, shelter, health, education, etc. There are two problems associated with these economists' views. First, the idea of identifying the poor by the poverty line is neither acceptable to the policy-makers nor is it feasible, as the poor do not have a regular and stable source of income. Also it is not based on good scientific and objective reasoning. Second, there is no clear-cut empirical evidence that the hierarchy of needs corresponds to the oft-repeated slogan 'food-shelter-clothing' or 'roti-kapada-aur makan'.

These priorities may vary from community to community, and from place to place. The ordering of needs depends on the circumstances facing the people. For example, for people living in colder climates and on forest slopes, clothing and shelter may be more important than for people who live on the plains with a more favourable climate. Similarly, the food habits may vary

from place to place. Hence, what one needs is a measure of consumption deprivation that is commodity specific and community specific. The economists have, in our opinion, put undue emphasis in defining first who the poor are and then defining their poverty. It is our view that it is more meaningful and useful to define poverty as consumption deprivation, which is the opposite of welfare, and then to decide, on a case by case basis, who ought to be the beneficiaries of any poverty alleviation scheme.¹ The choice of the beneficiaries should depend on social, economic, political, and administrative considerations. The targeting of the poverty alleviation schemes, in terms of the commodities for which subsidies are needed and the people who ought to receive those subsidies, should be region-specific. From this perspective, and given that the notion of poverty is basically relative, it is even preferable to call such schemes as welfare-improving schemes rather than poverty alleviation schemes.

The new United Front government announced its commitment to a 'Common Minimum Programme'. What the UDF and the prime minister seem to imply by this term is a minimum needs programme, as there can be a consensus (and hence the word 'common') on such minimum needs. This concept of minimum programme raises several interesting economic policy issues. It is suggestive, from the attitude of the new government, that the new government's focus has shifted from poverty alleviation to providing the minimum needs. This change in policy focus is quite consistent with the line of research we have been engaged in for the past few years on poverty measurement. We have been arguing that poverty has to be measured as commodity-specific consumption deprivation of a community, without any reference to an arbitrarily and subjectively chosen poverty line. The identification of the poor has to be based, we argue,

not on a difficult to measure income, but on socially, politically, and administratively, and unambiguously determined criteria. This suggestion of ours is also quite consistent with the actual practice. It may be noted that the really poor have very irregular employment and income, and hence it is difficult to measure their incomes to check the eligibility for a poverty alleviation programme.²

This is the line of work we have been doing. In this connection we needed to identify those commodities, called necessities, in terms of which we need to assess the consumption deprivation. The identification of the most essential commodity, whose consumption saturates at the lowest income posed no problem, and it turned out to be cereals. The budget share of this commodity at the limiting income is the highest. Hence, we measured poverty through cereal consumption deprivation. But as the economy develops and the welfare of people in general improves, people move on to consume the next item on the hierarchical ladder of commodities, often by even lowering the consumption of cereals. One way of monitoring the course of economic development is to see how the consumption pattern has changed over the years in terms of bringing into consumption commodities which were on a higher rung of the ladder of commodity hierarchy. Providing to the poor only cereals at affordable prices is not enough if such cereals have to be cooked in order to consume, and if the poor have difficulty in procuring the cooking fuel. These comments suggest that there is a need to have a detailed investigation into commodity groups other than cereals that enter into the priority list of consumers.

In order to get some empirical insights into the hierarchy of needs among the households, and how this pattern has altered over years, we had examined the consumption pattern from the National Sample Survey data for various rounds, starting from the 3rd round

to the 46th round, covering the period 1951-1991. It is the purpose of this article to share our findings with the readers and to suggest some policy implications of our findings in designing the 'minimum needs programmes' for the vulnerable sections of the household sector.

The plan of the paper is as follows. Section II presents very briefly the method we use to examine the consumption expenditure data of the NSSO employing a new form of Engel curve. In Section III we present the levels of cereal-based consumption deprivation for rural and urban India for various rounds of NSS. These are our alternate measures of poverty, based on cereal consumption deprivation. In Section IV we develop a method for determining the hierarchy of consumption needs and apply this method to the NSSO data. Finally, in Section V we present the important policy implications suggested by our method and our findings.

II Relation between Quantity Consumed of a Commodity and Income: Engel Curve

As income is difficult to measure, and as there are no reliable estimates of household income levels, we proxy income of a household by the total expenditure of that household. In this section we are therefore concerned about the relationship between expenditure on a specific commodity or commodity group and the total expenditure. Such a relationship is known as the Engel curve. This relationship can assume different forms. Three very commonly assumed forms are depicted in Figure. Type I relation shows that the consumption of that type of commodity increases with income but at a

decreasing rate. Type II curve shows that the consumption of this type of commodity increases with income, but at a constant rate. Type III curve shows that the consumption of this type of commodity increases with income, but at an increasing rate.

Per cent change in the consumption of a commodity for a 1 per cent change in income is called the income elasticity of demand for that commodity. For Type I commodities the income elasticity is less than one. One very commonly used mathematical form for the Engel curves of all the three types is:

$$\text{Log } c_i = \gamma + \eta \log y_i \quad \dots(2.1)$$

where c_i is the mean consumption in expenditure class i and y_i is the mean income in the same expenditure class. In this form the income elasticity of demand for the commodity defined above turns out to be η , which is assumed to be constant. It is quite likely that for necessities such as food, the income elasticity of demand is not only less than unity but it may also decrease with increase in income, i.e., the per cent increase in consumption of food per 1 per cent increase in income may decrease as income increases. The above functional form cannot take care of this possibility.

It is the analogy between the equilibrium relations in kinetic models of catalysis in biochemistry and the above Type I Engel curve of economics that had provided the major impetus for our research on consumption analysis and poverty by an interdisciplinary team consisting of a biochemist, an economist, and three applied statisticians. In fact the Engel curve is an equilibrium relation between the two flow variables, expenditure on a specific commodity and the total expenditure, and hence this analogy is

quite appropriate. The saturation kinetic models in biochemistry use a hyperbolic relation of the following type to represent the kinetic equilibrium:

$$c_i = Vy_i / \{K + y_i\} \quad \dots (2.2)$$

When we fitted equations (2.1) and (2.2) to the NSSO data we found that (2.2) always gave a better fit than (2.1). When we say better fit, the criteria we used to compare the two models are: (i) coefficient of determination, R^2 , and (ii) randomness of errors with a Gaussian distribution. It is also interesting to note that the income elasticity of demand for specification given by (2.2) does vary with income and decrease with an increase in y_i , a desirable property cited above.

In this study we used model (2.2) for determining the hierarchical basic minimum needs. We used the same model in our studies on poverty through consumption deprivation. Some properties of this Engel curve are worth noting, and these are given below:

(1) Dividing both the numerator and the denominator of the right hand side of (2.2) by y_i we get:

$$c_i = V / \{K/y_i + 1\} \quad \dots (2.3)$$

From equation (2.3) we note that as y_i tends to infinity c_i tends to V . Thus, V can be interpreted as the saturation level of consumption. $(V - c_i)/V$ is the proportional shortfall in consumption from the saturation level, and it lies between 0 and 1. We had proposed that, for any community, the mean proportional shortfall of consumption of a basic necessity such as cereals from its saturation level be taken as a poverty index of that community [see Gore, Kumar, Paranjpe, Sastry, and Sitaramam 1994, 1996 and Kumar, Gore, and Sitaramam 1996].

(2) Dividing both the right and the left hand sides of (2.2) by y_i we get:

$$c_i/y_i = V / \{K + y_i\} \quad \dots (2.4)$$

Since income and consumption move together we can assume that c_i/y_i tends to a constant as y_i tends to zero. From equation (2.4) it follows that this limit is V/K . Thus, V/K can be interpreted as the proportion spent on the commodity, or the budget share of the commodity, at limiting (or low levels of) income.

(3) From equation (2.3) we get:

$$V/c_i = K/y_i + 1 \text{ or } (V - c_i)/c_i = K/y_i \quad \dots (2.5)$$

From equation (2.5) it follows that $y_i = K$ when $c_i = V/2$.

Thus, the parameter K may be interpreted as that level of income at which consumption is at half-saturation level. Hence, parameter K

TABLE 1: NON-LINEAR LEAST SQUARES ESTIMATES OF ENGEL CURVE PARAMETERS (V AND K) FOR CEREAL CONSUMPTION: INDIA 1960-61 TO 1990-91

NSS Round	Period	Rural			Urban		
		V	K	R ²	V	K	R ²
16th	1960-61	19.207	23.030	0.9916	9.645	9.11	0.9569
17th	1961-62	24.267	41.157	0.9265	9.363	9.87	0.9519
18th	1963-64	16.598	21.417	0.9878	8.628	8.95	0.9520
20th	1965-66	23.338	31.157	0.9955	7.6371	8.00	0.8333
21st	1966-67	19.863	24.584	0.8481	8.844	10.87	0.8992
22nd	1967-68	18.704	27.398	0.9953	9.225	12.25	0.9404
24th	1969-70	16.165	21.397	0.9925	9.413	12.06	0.9399
27th	1972-73	18.053	24.404	0.9903	8.733	9.46	0.8910
28th	1973-74	19.122	25.492	0.9854	10.794	14.97	0.9302
32nd	1977-78	12.340	16.217	0.9872	7.968	11.05	0.9463
38th	1983	11.830	16.120	0.9840	8.044	11.98	0.9668
42nd	1986-87	10.584	15.989	0.9757	6.767	11.54	0.9401
43rd	1987-88	10.043	13.898	0.9693	6.406	9.29	0.9339
44th	1988-89	9.701	12.470	0.9767	6.038	7.48	0.9524
45th	1989-90	8.114	9.718	0.9432	5.968	7.87	0.9356
46th	1990-91	9.033	13.216	0.9242	5.998	9.74	0.9575

Note: The V and K estimates are in rupees per capita per month (in 1960-61 prices). V and K are first estimated separately for each NSS Round. The tabulated values above are V and K adjusted for price changes between rounds.

Source: Estimated using NSSO data.

is often called the half-saturation constant.

(4) The equilibrium quantity consumed depends directly on the forward rate constant V (need) and inversely on the backward rate constant K (cost). The proportion of income spent on a necessity (commodity) decreases with increasing income.

The hyperbolic Engel curve was fitted to the Indian data on household consumption published by the NSSO. The model was fitted using non-linear least squares method of estimation. This method requires an initial guess of the unknown parameters. Although the programme usually has certain default-values for the initial guesses, the convergence to the final estimates would be faster, and we can also be reasonably sure of a global minimisation of the error sum of squares, if the initial guesses are chosen carefully. Hence, we provided, as initial guesses estimates derived from the following linearised version of the model:

$$1/c_i = 1/V + (K/V)(1/y_i) \quad \dots (2.6)$$

$1/c_i$ was regressed on $1/y_i$, and the reciprocal of the intercept estimate is taken as the initial guess of V, while the ratio of the slope estimate to the intercept estimate is taken as the initial guess of K.

III

Poverty without Poverty Line: Measure of Poverty Based on Cereal-Based Consumption Deprivation

The concept of poverty line has been a very controversial and subjective concept, which had placed economic research on poverty in a very shaky and vulnerable position. We had argued elsewhere [Gore, Kumar, Paranjpe, Sastry, and Sitaramam 1994, 1996 and Kumar, Gore and Sitaramam 1996] that the identification of the poor can be made on the basis of commodity-specific consumption deprivation among different vulnerable groups of people, those groups having been identified by a priori criteria such as rural landless labourers, unemployed or seasonally employed persons, female headed households with dependent children, etc. Our method did not require a poverty line level of income for either identifying the poor or for measuring poverty.

The beneficiaries of poverty alleviation programmes are also normally and actually chosen by criteria other than a poverty line level income. If the poor are so identified for the poverty alleviation programmes, by criteria other than poverty level income, then it makes no sense to measure their degree of poverty through a measure that depends on an arbitrarily chosen poverty line. Such a procedure of applying the traditional measure of poverty (based on a poverty line), when used to monitor the poverty alleviation

programmes, would give erroneous conclusions as the measured poverty could exclude some of the actual beneficiaries whose incomes could be above the poverty line. Hence what is needed in this connection is an insight into the commodity-specific consumption deprivation among a variety of vulnerable groups of people, identified by some policy relevant criteria. If it is desired to choose between alternate groups so as to exclude the creamy layers from the benefits of the poverty alleviation programmes one can measure the commodity-specific consumption deprivation for such alternate groups and choose, for implementing the poverty alleviation programmes, that group which has more consumption deprivation than others.

We used the NSS data for the computation of the new poverty index that does not use the poverty line. The consumer expenditure data for cereal expenditure, and total expenditures by various total expenditure classes for various NSS rounds starting from 16th round (1960-61) to the 46th round (July 1990-June 1991) were used. The commodity-specific poverty indices for India for the period 1960-61 to 1990-91 were computed using the method described in Section II. Engel curves of type (2.2) were fitted separately for each year (round), and separately for rural and urban India using non-linear least squares method of estimation employing RATS computer software.

The estimates of saturation consumption (V) for cereals, were deflated with the food component of consumer price index (CPI) while the estimates of K were deflated by the overall consumer price index. For rural households the CPI for agricultural labourers was used whereas for urban households a weighted average of CPI for non-manual workers and industrial workers was used along the lines suggested by Minhas et al (1987), by giving them weights of 0.625 and 0.375, respectively. This deflation was carried out to make the parameters V and K comparable over time.

There is a hierarchy of needs, the cereals being the first and most essential commodity. The estimates of V and K (adjusted for changes in food prices and overall prices), for cereal consumption are presented in Table 1. Trend lines fitted to the estimates of V and K show that there is a secular decline in both. This could imply that over time households started substituting non-cereal and non-food items for cereals. This could be due to increased availability over time of non-cereal and non-food items. The estimates of V in Table 1 are almost uniformly larger for the rural data compared to the urban. The explanation given above, viz, an increase in availability of non-cereal options (in urban areas) possibly explains this pattern as well.

TABLE 2: PROPORTION OF TOTAL EXPENDITURE SPENT ON CEREALS AT LIMITING INCOME (V and K), INDIA: 1960-61 TO 1990-91

Year	Cereal	
	Rural	Urban
1960-61	0.8340	1.0586
1961-62	0.5896	0.9490
1963-64	0.7750	0.9639
1965-66	0.7491	0.9542
1966-67	0.6949	0.8135
1967-68	0.6827	0.7529
1969-70	0.7555	0.7804
1972-73	0.7398	0.9233
1973-74	0.7501	0.7209
1977-78	0.7609	0.7212
1983	0.7339	0.6715
1986-87	0.6620	0.5861
1987-88	0.7226	0.6889
1988-89	0.7779	0.8075
1989-90	0.8350	0.7586
1990-91	0.6835	0.6158

Note: V and K are first adjusted for price changes between rounds and then V and K was calculated.

Source: Estimated from Engel Curves using NSSO data.

TABLE 3: ESTIMATES OF POVERTY MEASURED THROUGH CEREAL CONSUMPTION DEPRIVATION: WITH SEPARATE ENGEL CURVES FOR EACH ROUND

Year	Rural	Urban
1961-62	0.6838	0.3015
1963-64	0.5918	0.2816
1965-66	0.6459	0.2734
1966-67	0.5998	0.3202
1967-68	0.6460	0.3577
1969-70	0.5519	0.3188
1972-73	0.5749	0.2744
1973-74	0.5641	0.3638
1977-78	0.4757	0.3118
1983	0.4541	0.3123
1986-87	0.4260	0.2875
1987-88	0.3768	0.2533
1988-89	0.3628	0.2122
1989-90	0.3007	0.2142
1990-91	0.4428	0.3133

TABLE 4: ESTIMATES OF POVERTY THROUGH CEREAL CONSUMPTION DEPRIVATION: WITH POOLED OR COMMON ENGEL CURVE FOR ALL ROUNDS

Year	Rural	Urban
1960-61	0.5766	0.3195
1961-62	0.5759	0.3132
1963-64	0.5981	0.3119
1965-66	0.5980	0.3261
1966-67	0.6045	0.3124
1967-68	0.6269	0.3244
1969-70	0.5875	0.2907
1972-73	0.5814	0.2938
1973-74	0.5567	0.2890
1977-78	0.5769	0.2954
1983	0.5577	0.2801
1986-87	0.4238	0.2873
1987-88	0.3768	0.2442
1988-89	0.3628	0.2122
1989-90	0.3007	0.2142

As mentioned earlier (refer to equation (2.4) and the comment below that equation) the proportion of expenditure on the specific commodity (cereals) turns out to be $V/(K+y)$ and this becomes V/K as income tends to zero. Thus V/K is the limiting proportion of expenditure on cereals. Table 2 presents estimates of V/K for cereals.

An interesting aspect to note is that this V/K ratio for cereals or "proportion spent on cereals at limiting income" has been higher in the urban India up to 1970 than in rural India. But from 1970 onwards (except for 1972-73) this proportion is less in urban India than in rural India. This seems to be partly due to the green revolution. This may also be partly due to the PDS being more urban-oriented as V/K showed a declining secular trend in urban area only. The overall constancy of V/K for cereal consumption in rural India also justifies using cereal consumption deprivation for measuring poverty, as most of the commonly understood poor (agricultural labourers and marginal farmers) live in rural areas and the proportion of total expenditure that they spend on cereal consumption expenditure is very high being 0.75 on an average and stable.

Table 3 presents the poverty indices based on the cereal-based consumption deprivation.³ The poverty estimates of Table 3 show a time trend in this poverty index. The cereal-based poverty index clearly demonstrates that there is a higher incidence of poverty in rural India and that the difference between rural and urban poverty has reduced between 1960-61 and 1990-91. It must be mentioned that the urban and rural poverty indices given here are based on different saturation norms (V_s). Hence we cannot strictly compare the rural and urban poverty indices. The maximum cereal consumption differs between rural and urban areas, partly because the commodity spectra available are different in rural and urban areas. We can, however, talk about the rate of decrease in poverty between urban and rural poverty and note that this decrease is much more in rural areas than in urban areas.

The poverty index presented here is based on deprivation from saturation norm that is specific to each data set. Since this saturation norm (i.e., estimated V) is different for each year as well as for urban and rural samples, comparison of the poverty indices needs a careful explanation. If our concern is about consumers' feeling of consumption deprivations from their own saturation point (this may be termed 'felt-deprivation' derived from the concept of felt need) then the comparisons of above indices are alright. Our measure of poverty is a relative measure relative to the maximum expenditure on cereals, which differs between rural and urban areas. While we may, under certain circumstances, be

TABLE 5A: SEQUENCE IN WHICH COMMODITY GROUPS APPEAR, ALONG WITH THEIR BUDGET SHARES AT LIMITING INCOMES (ADJUSTED V/K , PRESENTED IN PARENTHESES): RURAL

Years	Round No	C1	C2	C3	C4
Apr 1951-Mar 1954	3	CE(.71)	FL(.0567)	CL(.0435)	EO(.0197)
Apr 1952-Sep 1952	4	CE(.68)	CL(.0512)	FL(.051)	EO(.0109)
Dec 1952-Mar 1953	5	CE(.65)	FL(.0717)	CL(.0595)	EO(.0145)
May 1953-Sep 1953	6	CE(.75)	FL(.0404)	CL(.0375)	
Oct 1953-Mar 1954	7	CE(.99)	FL(.0018)	MEF(.00074)	
Jul 1954-Mar 1955	8	CE(.89)	FL(.0253)	EO(.0085)	MEF(.0076)
May 1955-Nov 1955	9	CE(.82)	FL(.044)	EO(.0108)	
Dec 1955-May 1956	10	CE(.58)	FL(.042)	MEF(.034)	
Aug 1956-Feb 1957	11	CE(.87)	FL(.0234)	EO(.009)	MEF(.0234)
Mar 1957-Aug 1957	12	CE(.89)	FL(.0233)	MEF(.0073)	EO(.0055)
Sep 1957-May 1958	13	CE(.78)	FL(.0346)	MEF(.0167)	EO(.011)
Jul 1958-Jun 1959	14	CE(.83)	FL(.0345)	MEF(.0113)	EO(.0085)
Jul 1959-Jun 1960	15	CE(.79)	FL(.042)	MEF(.0134)	EO(.0077)
Jul 1960-Aug 1961	16	CE(.83)	FL(.0442)	MEF(.0128)	EO(.0105)
Sep 1961-Jul 1962	17	CE(.63)	FL(.071)	MEF(.017)	EO(.0148)
Feb 1963-Jan 1964	18	CE(.77)	FL(.0445)	P and P(.0276)	
Jul 1964-Jun 1965	19	CE(.75)	FL(.0525)	SU(.03)	P and P(.0245)
Jul 1965-Jun 1966	20	CE(.75)	FL(.0518)	S and S(.0229)	VEG(.02)
Jul 1966-Jun 1967	21	CE(.72)	FL(.0568)	S and S(.0334)	VEG(.0252)
Jul 1967-Jun 1968	22	CE(.76)	FL(.053)	S and S(.0264)	VEG(.0216)
Jul 1969-Jun 1970	24	CE(.82)	FL(.0356)	SPI(.0194)	VEG(.018)
Jul 1970-Jun 1971	25	CE(.84)	FL(.0333)	VEG(.016)	SPI(.0158)
Oct 1972-Sep 1973	27	CE(.8)	FL(.0398)	VEG(.0144)	SPI(.014)
Oct 1973-Jun 1974	28	CE(.83)	FL(.0322)	VEG(.0157)	EO(.125)
Jan 1983-Dec 1983	38	CE(.81)	FL(.0435)	VEG(.0232)	P and P(.0131)
Jul 1986-Jun 1987	42	CE(.72)	FL(.0632)	VEG(.036)	EO(.0308)
Jul 1987-Jun 1988	43	CE(.78)	FL(.0459)	VEG(.0286)	P and P(.0182)
Jul 1988-Jun 1989	44	CE(.82)	FL(.0392)	VEG(.0243)	P and P(.018)
	45	CE(.91)	FL(.0175)	VEG(.0126)	EO(.008)

TABLE 5B: SEQUENCE IN WHICH COMMODITY GROUPS APPEAR, ALONG WITH THEIR BUDGET SHARES AT LIMITING INCOMES (ADJUSTED V/K , PRESENTED IN PARENTHESES): URBAN

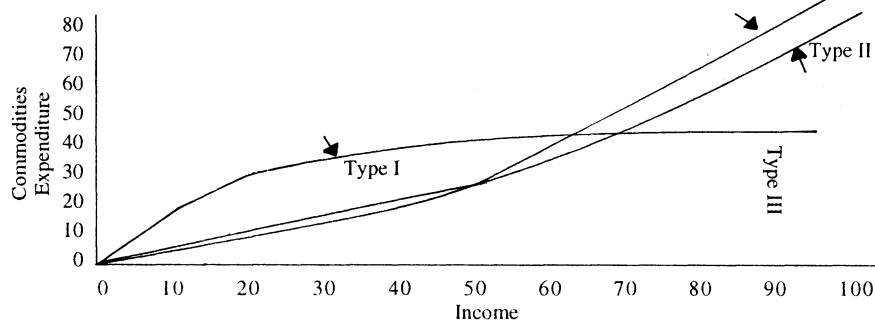
Years	Round No	C1	C2	C3	C4
Apr 1951-Mar 1954	3	CE(.83)	FL(.1263)	CL(.0187)	EO(.0151)
Apr 1952-Sep 1952	4	CE(.77)	CL(.0303)	FL(.026)	EO(.0138)
Dec 1952-Mar 1953	5	CE(.68)	FL(.0478)	CL(.033)	MEF(.0204)
May 1953-Sep 1953	6	CE(.98)	FL(.0028)	CL(.0024)	RE(.0009)
Oct 1953-Mar 1954	7				
Jul 1954-Mar 1955	8	CE(.9)	FL(.0139)	EO(.007)	MEF(.0063)
May 1955-Nov 1955	9	CE(.78)	FL(.0304)	EO(.0154)	SU(.0143)
Dec 1955-May 1956	10	CE(.87)	FL(.0174)	EO(.0089)	SU(.0074)
Aug 1956-Feb 1957	11				
Mar 1957-Aug 1957	12				
Sep 1957-May 1958	13				
Jul 1958-Jun 1959	14				
Jul 1959-Jun 1960	15	CE(.83)	FL(.0273)	EO(.0142)	SU(.0119)
Jul 1960-Aug 1961	16				
Sep 1961-Jul 1962	17				
Feb 1963-Jan 1964	18				
Jul 1964-Jun 1965	19	CE(.86)	SU(.0252)	FL(.0197)	P and P(.0161)
Jul 1965-Jun 1966	20				
Jul 1966-Jun 1967	21	CE(.92)	FL(.0122)	S and S(.0112)	SU(.0061)
Jul 1967-Jun 1968	22	CE(.87)	FL(.0204)	S and S(.0161)	PAN(.0065)
Jul 1969-Jun 1970	24	CE(.88)	FL(.0182)	SPI(.0156)	EO(.0109)
Jul 1970-Jun 1971	25	CE(.86)	FL(.0208)	SPI(.0168)	VEG(.0133)
Oct 1972-Sep 1973	27				
Oct 1973-Jun 1974	28	CE(.84)	FL(.0224)	PAN(.0055)	SALT(.0013)
Jan 1983-Dec 1983	38	CE(.75)	FL(.0442)	VEG(.0228)	SPI(.0175)
Jul 1987-Jun 1988	43	CE(.73)	FL(.0389)	EO(.0297)	M and P(.0272)
Jul 1988-Jun 1989	44	CE(.92)	FL(.0103)	VEG(.0088)	M and P(.0082)
	45	CE(.87)	FL(.0199)	VEG(.0143)	EO(.0127)

Abbreviations used :-

CE	: Cereals	MEF	: Meat, Egg and Fish
FL	: Fuel and Light	S&S	: Salt and Spices
EO	: Edible Oil	P&P	: Pulses and Products
CL	: Clothing	M&P	: Milk and Products
SU	: Sugar	F&N	: Fruits and Nuts
VEG	: Vegetables	SPI	: Spices
PAN	: Pan, Tobacco and Int	RE	: Rents

Note: For some rounds when V/K estimate is outside the plausible range they are omitted.

FIG 1: TYPES OF ENGEL CURVES



justified in making temporal comparisons within rural and urban areas separately, it is not quite proper to make comparisons between urban and rural poverty indices.⁴

To shed more light on this problem we deflated the expenditure data of each NSS Round with the appropriate price index and examined to see if there is a long-run stable Engel curve that fits the data with a single V that can be used in computing the poverty index for each round. It was felt that urban and rural consumption patterns are not comparable anyway. Hence two separate long-run Engel curves were estimated, one for the rural areas and another for the urban areas.

Table 4 presents the poverty indices based on the assumption that there is a common Engel curve for all the rounds of NSS after adjusting the data for price level changes from year to year. These estimates seem to suggest that rural poverty had increased in India from 1960-61 to 1967-68 and then recorded a secular decline until 1989-90. There is again a sharp increase in rural poverty in 1990-91. An examination of urban poverty indices of Table 4 suggests that the urban poverty more or less remained stable until 1967-68 and then registered a slight decline and thereafter remained stable until 1989-90. Like rural poverty urban poverty also registered a sharp increase in 1990-91.

IV

Prioritisation of Household Needs

When the above Engel curve was fitted to the various groups of commodities for which NSSO presents its expenditures we observed that only for some of them, particularly cereals, the fit was good. In some cases Type II and Type III curves of the Figure seemed more appropriate. If the Engel curve for cereals has a Type I shape it follows that the expenditure on a commodity group consisting of all other commodities should have an Engel curve of Type III. Noting that the expenditure on cereals forms a major portion of total expenditure by a household we felt that the slope of the curve in some cases could be imperceptible if the curve is drawn against total expenditure, and

that it may be perceptible if it is plotted against budget available after deducting the expenditure on cereals. This in fact turned out to be the case.

The above observation suggested that there could be a hierarchy of household needs among the poor, the intensity of need being the greatest for cereals. Once the cereals need is fulfilled the household may spend a part of the remaining income on a commodity, expenditure on which saturates next. Having met the expenditures on the two most important items the household may move on to spend on the third item, from the remaining income, and so on.

We tested this model of needs-hierarchy using the NSSO data from 1951-1991, viz, from the third round to the 45th round. After fitting the Engel curve of model (2.2) for cereals we asked the question which of the remaining groups of items takes the second position in terms of saturating next, with the best fitting hyperbolic relation plotted against the remaining part of the total expenditure. Having thus chosen the second most needed item, separately for each round and separately for rural and urban samples, we asked the question likewise – what item, out of the remaining items, would qualify to take the third position, and so on.

Our findings are reported in Tables 5A, 5B, and 6. In Tables 5A and 5B we present the sequence in which commodity groups appear along with their budget shares at limiting income (V/K values). In Table 6 we present the frequency with which a commodity is selected (out of a total of 29 rounds) as one of the top five priority items. From these results it appears that next to cereals comes the category 'fuel and light', the major component of that being possibly the cooking fuel. After fuel and light comes 'edible oil'. After edible oil comes 'meat, egg, and fish' in rural areas and 'sugar' in urban areas.

The parameters 'V' and 'K' estimated at each stage refer to the situation where the independent variable of the non-linear Engel curve is the 'remaining total expenditure', after the expenditures on commodities of earlier stages are subtracted from the total expenditure. The V/K at each stage needs to be adjusted to express expenditure on that commodity as proportion of the total

expenditure at the limiting income. The adjusted V/K are presented in the parentheses in Tables 5A and 5B. From these adjusted V/K figures it becomes quite clear that fuel and light occupies a high position next to cereals in terms of budget share at limiting incomes.

V

Policy Implications of Our Results

It is our view that as a part of its common minimum programme the present UDF government must design programmes aimed at improving the welfare of the vulnerable sections of the community (households). Such programmes must not be looked upon as poverty alleviation programmes of the traditional variety with questionable, dubious and outdated methods of defining and measuring poverty. Instead, we propose that a new thrust be given to poverty alleviation through minimum needs programmes. In designing these programmes the vulnerable groups may be chosen from a set of alternative groups through criteria other than the poverty line, criteria based on social, political, and administrative considerations aided by our measure of consumption deprivation. What we mean by this is that among a set of alternate groups chosen a priori according to sociological, economic, political and administrative criteria one group may be chosen as the beneficiary group for the government's programme on the basis of the criterion of having the highest level of commodity-specific consumption deprivation.

From the findings reported in the previous section on the hierarchy of needs it becomes quite apparent that after cereals the next most important commodity group is fuel and light, which includes cooking fuel. After these two comes the group edible oils. In view of these results it can be suggested that in revamping the PDS the new government should omit the creamy layer from the PDS beneficiary list and spend more on providing cooking

TABLE 6: FREQUENCY WITH WHICH A COMMODITY WAS SELECTED IN FIRST FOUR PRIORITY ITEMS ACCORDING TO ADJUSTED V/K

Items	Rural	Urban
Cereals	29	18
Fuel and Light	29	18
Edible Oil	15	9
Clothing	4	4
Sugar	1	5
Vegetables	12	4
Pan, Tobacco	0	2
Meat, Egg and Fish	10	2
Salt and Spices	3	2
Pulses and Products	5	1
Milk and Products	0	2
Spices	3	3
Rents	0	1
Salt	0	1

fuel and edible oil to the vulnerable groups through PDS.

We also feel that more detailed analysis needs to be done along the lines proposed here to assess the commodity-specific consumption deprivation among different vulnerable groups in order to design proper welfare-improving government programmes based on the minimum needs approach. The poverty line and the traditional poverty measures based on the poverty line can be dispensed with altogether.

While fuel and light have been clubbed together in this analysis of NSSO data there are other studies that have examined the role of cooking fuel (fuel wood, charcoal and kerosene) in household consumption. In particular we may refer to the work of Reddy and Reddy (1985) that examined cooking fuel consumption by a sample of households in Bangalore city. A similar survey of cooking fuel consumption in rural North India was undertaken by NCAER (1978). The study of Reddy and Reddy clearly shows the importance of consumption of cooking fuel among low-income households even in highly urbanised areas such as Bangalore. The long lines of the urban poor to get kerosene is a pathetic sight we confront today, even after the government permitted the import and sale of kerosene by private parties. One strong implication of our study is to highlight the importance of cooking fuel for the poor households.

Another major policy implication of our study is that in the currently prevailing attitude of giving primacy to local bodies in designing and monitoring the poverty alleviation programmes the targeting of the programmes in terms of the choice of the beneficiaries and the choice of commodities must be specific to each local community. Our research emphasises this point and also provides a method of choosing these targets for each local community.

Although we used the NSS data and presented our results for the country as a whole we emphasise that this sort of exercise has to be done at disaggregated levels, possibly at the district, taluk, and village or (urban) block levels. The NSS type of data which has very few observations at such levels of disaggregation are not suitable for this purpose. We hope our study will drive home the need to generate data bases at grass roots level to design and monitor social welfare programmes. We also hope that the various NGOs which are actively engaged in social welfare schemes all over the country will come together to develop standardised data bases at the village and block levels.

In short, we hope that this study of ours will convince both the researchers and the policy makers that the concept of poverty line can be dispensed with. We also hope that our study will form the beginning of

worthwhile social science policy research through research studies on consumption deprivation at the village and block levels.

Notes

[This work is based on an ongoing research by these authors on measurement of poverty without using a poverty line. The authors' new method for measuring poverty is based on commodity-specific consumption deprivation, the commodities chosen being the most essential basic needs. This is a radically different method, compared to the highly discredited traditional methods that employ a questionable and subjective poverty line. The interested reader may refer to Gore, Kumar, Paranjpe, Sastry, and Sitaramam (1994 and 1996) and Kumar, Gore and Sitaramam (1996). This research was initiated by V Sitaramam at the National Institute of Nutrition several years ago in collaboration with J G Sastry. It is now being continued by Sitaramam, during the last two and a half years, in association with Gore, Krishna Kumar and Paranjpe. The authors thank S Subramanian and Vinod Vyasulu for their comments on an earlier draft of this paper. Krishna Kumar thanks Sushant Mallick, G Nagaraju, and N S Manjula for their research assistance.]

- 1 It is our view that an attention to semantics and linguistics is quite useful here. The economists' focus so far has been on the 'focus axiom' that requires the noun 'poverty' to be associated with the substantivised adjective 'poor', or the associated noun 'the poor'. The English language, however, gives the noun 'poverty' a position that does not necessarily depend on the identification of 'the poor'. In other words the English language does not say that poverty is only what 'the poor' possess. The Webster's New Collegiate Dictionary gives three different meanings to the word poverty. (1) the state of one who lacks a usual or socially acceptable amount of money or material possessions; (2) scarcity or dearth; (3) debility due to malnutrition. The second meaning refers to deprivation and that is what we wish to emphasise.
- 2 It is trivial that there should be a direct relation between unemployment and poverty. This relationship is vividly brought out in terms of published official statistics for urban areas in selected Indian States by Vyasulu and Vani (1996).
- 3 We have shown in another paper that the poverty index we propose satisfies all the major axioms that such an index should satisfy (axioms such as those proposed by Sen (1976), and Kakwani (1980)) except the focus axiom. We argued that there is no need to have the focus axiom if we define poverty first without defining who the poor are [see Gore, Kumar, Paranjpe, Sastry, and Sitaramam 1994 and 1996]. The proofs that the poverty index satisfies all the major axioms were based on the observation that the index is the mean of deprivation, which is expressed as a function of income, the mean being taken with respect to the income distribution [Kumar 1993].
- 4 The problem here is quite similar to the problem of real income comparisons posed by Samuelson. One can make Scitovsky type of comparisons between rural and urban poverty measures by substituting urban saturation levels

of consumption for rural households and rural saturation levels for urban households, and then comparing them as transferable public expenditure equivalents.

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Editors

Mahendra Prasad Singh
Rekha Saxena

1996

KALINGA PUBLICATIONS
10A, Pocket I, Phase I,
Mayur Vihar, Delhi - 110091

ISBN 81-85163-75-8 Rs. 550.00