Vol XXXII
No. 3

ISSN 0019-5014

CONFERENCE
NUMBER

JULY-
SEPTEMBER
1977

INDIAN JOURNAL OF AGRICULTURAL ECONOMICS

INDIAN SOCIETY OF
AGRICULTURAL ECONOMICS,
BOMBAY

ECONOMICS OF NUTRITION WITH SPECIAL REFERENCE TO THE PUNJAB STATE

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It is now well recognized that the quantity and quality of diet directly affect the size, weight, stature and stamina of individuals. In recent years, nutrition experts have come up with some evidence of the existence of a positive relationship between the level of nutrition and quality of mental performance.[1] So the level and composition of nutrition largely determines the productivity of individuals. Unfortunately, however, there is widespread undernutrition and malnutrition in developing countries which can lead to steady degeneration—mental and physical—of a vast multitude of human beings.[2] In the formulation of a policy to improve the nutritional condition of the people, it is essential that the actual amount and types of food consumed by the different age, sex, occupational, social or economic groups are ascertained. Then only a change for the better can be brought about in the dietary habits of the people through education, increased production and/or imports of food or a judicious and equitable distribution of the same through rational and planned state intervention. In light of the overwhelming importance of the subject, it would be useful (*a*) to examine the nature of the nutrition problem from the regional level, (*b*) to examine the shifts (*i*) in the pattern of consumer expenditure, (*ii*) in the concentration of food, non-food and total consumer expenditure, and (*iii*) in the expenditure elasticities for different commodity groups over time in Punjab and (*c*) to suggest policy measures for overcoming the problem of undernutrition and malnutrition.

GLOBAL PERSPECTIVE

Population Growth and Food Production

The genesis of the nutrition problem lies in the race between population growth and food production. Table I presents the comparison between annual rates of growth of population and food production in different regions of the world over the period 1952-62 and 1962-72.[3] It would be seen that for the world as a whole, the growth rate of food production declined sharply from 3.1 per cent in period 1 to 2.7 per cent in period 2, whereas the growth rate of population declined slightly from 2.0 per cent to 1.9 per cent. Further,

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1. Joaquin Cravioto and Elsa R. de Licardie, "The Effect of Malnutrition on the Individual," in Alan Berg, Nevin S. Scrimshaw and David L. Call (Eds.): Nutrition, National Development and Planning, MIT Press, Cambridge, Massachusetts, 1973, pp. 9-11.

2. V. M. Dandekar and Nilakantha Rath: Poverty in India, Indian School of Political Economy, Poona, 1971; B. N. Ganguli and D. B. Gupta: Levels of Living in India, S. Chand & Co., New Delhi, 1976, p. 44; Radha Sinha: Food and Poverty—The Political Economy of Confrontation, Croom Helm Ltd., London, 1976; and M. Ramamurthy: Poverty and Supply of Wage Goods in Tamil Nadu, Madras Institute of Development Studies, Sangam Publishers, Madras-1, 1974.

3. Sinha: *op. cit.*, and Food and Agriculture Organization of the United Nations: Population, Food supply and Agricultural Development, Rome, 1975.

TABLE I—ANNUAL RATES OF GROWTH OF POPULATION AND FOOD PRODUCTION

(*per cent*)

Regions	1952-62		1962-72	
	Population	Food production	Population	Food production
North America	1.8	1.9	1.2	2.4(2.2)
Western Europe	0.8	2.9	0.8	2.2(2.3)
Eastern Europe and U.S.S.R. ..	1.5	4.5	1.0	3.5
Oceania	2.2	3.1	2.0	2.7(3.0)
Other developed countries ..	1.3	5.0	1.3	3.5
Developed regions	1.3	3.1	1.0	2.7
Africa	2.2	2.2	2.5	2.7(2.4)
Latin America	2.8	3.2	2.9	3.1(2.8)
Near East	2.6	3.4	2.8	3.0(3.2)
Far East	2.3	3.1	2.5	2.7(2.5)
Asian Centrally Planned countries	1.8	3.2	1.9	2.6(2.7)
Developing regions	2.4	3.1	2.5	2.7
World	2.0	3.1	1.9	2.7
India*	2.15	4.56	2.48	3.32
Punjab*	2.16	6.36	2.17	13.64

Based on (1) FAO: Population, Food Supply and Agricultural Development, *op. cit.*, Table 1, p. 2. Figures in brackets represent the growth rates between 1962 and 1974 for region where the inclusion of 1973 and 1974 changes the trend rate of growth. (2) Economic and Statistical Organisation, Punjab, Statistical Abstracts of Punjab, Government of Punjab, Chandigarh.

* The figures for India and Punjab are for the period 1951-61 and 1961-71.

whereas in the developed regions both the rate of growth of population and food supply have witnessed declines from 1.3 per cent and 3.1 per cent in period 1 to 1.0 per cent and 2.7 per cent respectively in period 2, it is alarming to observe that in the developing regions, the rate of growth of population increased from 2.4 per cent in period 1 to 2.5 per cent in period 2, against the back-drop of sharply declining growth rate in food production from 3.1 per cent to 2.7 per cent over the two periods. This puts into sharp focus the emerging Malthusian spectre of population outstripping food supplies in spite of all the talk about the green revolution.

Turning to the Indian situation, it may be noted from Table I that the growth rate of foodgrain production declined from 4.56 per cent over the period 1951-61 to 3.32 per cent over the period 1961-71, whereas the growth rate of population increased from 2.15 per cent to 2.48 per cent over the same period. Against the background of a poor performance of Indian agriculture, Punjab State stepped up its rate of growth of foodgrains pro-

duction sharply from 6.36 per cent in period 1 to 13.64 per cent in period 2 with just a marginal increase in population growth rate from 2.16 per cent in period 1 to 2.17 per cent in period 2. So, Punjab has been contributing conspicuously to the success of procurement efforts to feed the public distribution system in the deficit States. Besides, the Government of India has been importing huge quantities ranging upto a maximum of 10.34 million tonnes in the 'sixties (1966) and 7.30 million tonnes in the 'seventies (1975) to augment domestic food supplies.

Energy and Protein Supply

The latest UN estimates given in Table II indicate that the per capita food availability at the world level in 1969-71 was 4 per cent higher than the requirement despite the fact that some of the major grain surplus countries like the U.S.A., Canada and Australia were subsidising the farmers to leave some of their land uncultivated.[4] The average energy intake in the developed

TABLE II—AVERAGE ENERGY AND PROTEIN SUPPLY* (1969-71)

Region	Energy (kcal. per capita per day)	Protein (gm. per capita per day)	Energy (percentage of requirement)
North America	3320	105.2	126
Western Europe	3130	93.7	123
Eastern Europe and U. S. S. R.	3260	99.3	127
Oceania	3260	108.1	123
Other developed market economies	2550	79.1	108
Total developed countries	3150	96.4	123
Africa	2190	58.4	94
Latin America	2530	65.0	105
Near East	2500	69.3	102
Far East	2080	50.7	94
Asian Centrally Planned countries	2170	60.4	92
Total developing countries	2200	57.4	95
World	2480	69.0	104
India	1985	53.0	83
Punjab	2832	84.0	118

* The figures relate to protein and energy content of the food available at the retail level after making allowance for storage and marketing losses and waste.

Source: (1) United Nations World Food Conference: Assessment of the World Food Situation *et. op. cit.*, Table 9,0.58.

(2) National Institute of Nutriton: Diet Atlas of India, Indian Council of Medical Research, Hyderabad, 1971.

4. United Nations World Food Conference: Assessment of the World Food Situation, Rome 1974 (mimeo,).

countries during the above noted period was 23 per cent more than the requirement, while in the developing countries it was 5 per cent less than the requirement. The average energy intake in India was 17 per cent less than the requirement. However, for Punjab State it was 18 per cent more than the requirement of 2400 calories per capita per day. It would also be seen from Table II that the protein situation was more satisfactory than is generally thought. The actual protein intake of 96.41 grams per capita per day in the developed countries was more than twice the requirement of 40 to 50 grams and even in the developing countries the actual per capita intake of 57.4 grams was more than the requirement. Further, the average protein intake in India was 53 grams which fully meets the requirement and for Punjab it was 84 grams per capita per day which was much in excess of the requirement. Thus it is not an overall shortage at the global level that accounts for widespread hunger and malnutrition. It has been contended that if only 2 per cent of the average annual world cereal production during the last decade was assured to the malnourished in addition to what they already get, much of the malnutrition in the world would be eliminated. Therefore, persistence of widespread hunger and malnutrition can mainly be attributed to the fact that the poor nations, states and people are unable to meet their basic human needs, while the rich continue to enjoy the lion's share of world's food resources. The average daily calorie intake in the developed countries in 1969-71 was 3150 as against only 2200 in the developing countries. The average protein intake was 96 grams in developed countries as compared to only 57 grams in the developing ones. The average calorie intake was 2832 in Punjab as compared to 1468 in Tamil Nadu. Similarly, the average protein intake was 98 grams in Madhya Pradesh as compared to 36 grams in Tamil Nadu.

PERSPECTIVE OF THE PUNJAB STATE

Shifts in Per Capita Consumer Expenditure

Table III shows the changing pattern of consumption in the Punjab State over the period 1961-62 to 1971-72 on the basis of the National Sample Survey 17th, 19th, 22nd and 26th Rounds (State Sample). The shifts in the consumption pattern in Punjab upto 1964-65 were examined in another study.[5] It would be seen from Table III that the percentage expenditure on cereals and cereal substitutes has been continuously on the decline from about 30 per cent in 1961-62 to 21.46 per cent in 1971-72 in the rural areas and from 22 per cent to 17.55 per cent over the same period in the urban areas. There was a slight increase in the percentage expenditure on pulses in both the rural and urban areas and a relative constancy in the percentage expenditure on milk and milk products and sugar over this period. There was also a decline

5. Amarjit Singh and Haramol Singh, "Changing Consumption Pattern in Punjab: Projections of Consumer Demand for 1973-74," *Economic and Political Weekly*, Vol. VI, No. 50, December 11, 1971.

TABLE III—PER CAPITA CONSUMPTION EXPENDITURE IN PUNJAB IN ABSOLUTE AND PERCENTAGE TERMS FOR A PERIOD OF 30 DAYS

Items	17th Round (1961-62)				19th Round (1964-65)				22nd Round (1967-68)				26th Round (1971-72)			
	Per capita expenditure (Rs.)		Percentage expenditure		Per capita expenditure (Rs.)		Percentage expenditure		Per capita expenditure (Rs.)		Percentage expenditure		Per capita expenditure (Rs.)		Percentage expenditure	
(1)	Rural (2)	Urban (3)	Rural (4)	Urban (5)	Rural (6)	Urban (7)	Rural (8)	Urban (9)	Rural (10)	Urban (11)	Rural (12)	Urban (13)	Rural (14)	Urban (15)	Rural (16)	Urban (17)
Cereals	6.84	6.02	30	22	8.58	7.46	27.30	23.57	10.24	9.75	23.08	20.73	10.59	10.68	21.46	17.48
Cereal substitutes ..	0.11	0.10	00	00	0.01	0.00	0.02	—	—	—	—	—	—	0.04	—	0.07
Pulses	0.59	0.69	2	2	1.08	1.00	3.44	3.16	1.45	1.75	3.27	3.72	1.50	1.66	3.05	2.72
Milk and milk products	5.43	4.88	24	18	7.12	5.06	22.65	15.99	11.46	9.74	25.82	20.71	11.76	10.68	23.85	17.48
Gram					0.07	0.02	0.23	0.06	0.06	0.03	0.13	0.06	0.06	0.05	0.13	0.08
Edible oils					1.00	1.77	3.18	5.59	0.95	2.01	2.15	4.28	1.25	2.50	2.52	4.08
Meat, eggs and fish ..					0.22	0.35	0.70	1.10	0.37	0.54	0.84	1.16	0.60	0.87	1.23	1.43
Vegetables									1.11	1.57	2.49	3.34	1.41	2.06	2.86	3.37
Fruits and nuts ..	3.60	6.03	16	22	0.92	1.47	2.94	4.63	0.26	0.65	0·58	1.38	0.29	1.45	0.59	2.38
Sugar					2.77	2.03	8.81	6.34	5.79	4.02	13.05	8.54	4.27	3.89	8.65	6.36
Salt and spices ..					0.61	0.57	1.94	1 79	0.79	0.90	1.77	1.91	1.14	1.20	2.31	1.95
Beverages and refreshments ..					0.92	1.56	2.92	4.94	1.03	1.48	2.31	3.14	1.69	2.80	3.41	4.60
Food: Sub-total ..	16.57	17.72	72	64	23.29	21.29	74.11	67.26	33.51	32.45	75.49	68.97	34.57	37.88	70.06	62.00
Fuel and lighting ..	1.66	1.84	7	7	1.80	2.23	5.73	7.05	2.23	2.90	5.02	6.17	2.52	3.71	5.10	6.08
Clothing	1.98	2.05	9	7	2.57	2.01	8.18	6.35	3.12	1.87	7.03	3.98	4.05	4.27	8.21	7.00
Pan, tobacco and intoxicants					0.42	0.66	1.35	2.09	0.97	0.56	2.18	1.19	1.43	1.07	2.90	1.75
Footwear									0.90	0.72	2.02	1.53	1.11	1.03	2.25	1.68
Miscellaneous ..	2.71	6.08	12	22	2.41	4.84	7.66	15.29	3.40	6.33	7.66	13.45	4.87	10.02	9.88	16.41
Rent and taxes ..									0.04	1.82	0.08	3.86	0.15	2.01	0.31	3.29
Pet animals									0.12	0.01	0.27	0.02	—	—	—	—
Durable goods ..					0.93	0.62	2.95	2.95	0.11	0.39	0.25	0.83	0.63	1.10	1.29	1.79
Non-food : Sub-total	6.35	9.97	28	36	9.13	10.36	25.87	32.73	10.88	14.59	24.51	31.03	14.76	23.21	29.94	38.00
All items	22.92	27.69	100	100	31.43	31.65	100.00	100.00	44.39	47.04	100.00	100.00	49.32	61.09	100·00	100.00

Note:—Figures for 17th Round of NSS relate to composite Punjab and those for other rounds to reorganized Punjab.
Source: National Sample Survey, 17th, 19th, 22nd and 26th Rounds (State Sample), Punjab.

TABLE IV—CONCENTRATION IN FOOD, NON-FOOD AND TOTAL CONSUMER EXPENDITURE, 1964-65 AND 1971-72

Per capita monthly expenditure class (Rs.)	Cumulative percentage				Cumulative percentage				Cumulative percentage				Cumulative percentage			
	Persons				Consumer expenditure on food items				Consumer expenditure on non-food items				Total consumer expenditure			
	1964-65		1971-72		1964-65		1971-72		1964-65		1971-72		1964-65		1971-72	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
8-11	0.44	0.38	—	—	0.16	0.13	—	—	0.09	0.12	—	—	0.14	0.13	—	—
11-13	1.86	4.34	—	—	0.81	1.80	—	—	0.60	0.89	—	—	0.76	1.53	—	—
13-15	4.65	9.58	—	—	2.11	4.66	—	—	1.65	1.99	—	—	1.99	3.85	—	—
15-18	11.86	20.05	1.55	0.84	6.38	10.73	0.64	0.35	4.04	4.60	0.21	0.12	5.76	8.86	0.51	0.26
18-21	22.25	29.11	3.12	3.24	13.73	17.10	1.35	1.45	8.06	8.21	0.65	0.54	12.23	14.38	1.14	1.10
21-24	33.57	38.56	8.34	3.47	22.23	24.60	4.15	1.58	14.73	13.29	1.96	0.58	20.32	21.17	3.49	1.19
24-28	51.37	52.29	12.37	7.66	38.06	35.75	6.30	4.38	26.24	23.48	3.98	1.38	34.94	32.07	5.60	3.22
28-34	71.47	71.77	31.34	16.46	55.04	20.04	10.56	42.57	40.58	13.21	4.47	54.73	50.77	17.99	8.27	8.27
34-43	84.71	86.27	46.21	35.83	74.19	32.13	11.52	56.90	60.45	21.09	13.65	70.35	70.25	28.84	9.67	9.67
43-55	93.19	91.06	73.04	54.82	87.91	81.57	58.63	30.30	74.56	67.94	44.85	26.81	83.64	77.70	54.51	26.63
55-75	97.75	96.87	88.78	74.91	95.41	91.39	77.81	55.13	86.67	82.84	68.15	45.36	93.18	88.64	74.92	49.55
75 and above ..	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Gini ratios					0.186	0.233	0.207	0.301	0.386	0.431	0.369	0.372	0.239	0.292	0.256	0.356

in the percentage expenditure on edible oils from 3.18 in 1964-65 to 2.52 in 1971-72 in the rural areas and from 5.59 to 4.08 per cent in the urban areas over this period. The percentage expenditure on meat, eggs and fish increased from 0.70 to 1.23 in the rural areas and from 1.10 to 1.43 in the urban areas over the same period. Similarly, the percentage expenditure on fruits, vegetables and nuts increased from 2.94 to 3.45 in the rural areas and from 4.63 to 5.75 in the urban areas over the period 1964-65 to 1971-72. Further, there was an increase in the percentage expenditure on beverages and refreshments from 2.92 to 3.41 in the rural areas, but there was a decline in the percentage expenditure on this item from 4.94 to 4.60 in the urban areas over the period.

Concentration in Consumer Expenditure

Table IV depicts the shifts in the concentration of food, non-food and total consumer expenditure over the period 1964-65 to 1971-72. It would be seen from the table that there has been an increase in the concentration of food and total consumer expenditure, whereas there has been a decline in the concentration of non-food expenditure in both the rural and urban areas. Further, it can also be seen that the concentration in consumer expenditure—food, non-food, and total—is uniformly higher in the urban areas as compared to the rural areas.

Shifts in the Level of Nutrition

In order to examine the shifts in the level of nutrition over time in the Punjab State, we have adopted the composite index of nutrition based on three components, *viz.*, (*i*) calories per person derived from cereals and cereal substitutes, (*ii*) protein intake as indicated by the percentage expenditure on pulses, meat, eggs and fish, etc., and (*iii*) percentage of non-cereal food expenditure to total food expenditure.[6] Indicator (*i*) shows the quantity of food intake and indicator (*ii*) is used as a proxy for protein intake on the assumption that milk and milk products, pulses, meat, fish, eggs, etc., constitute the principal sources of protein. We assume that the smaller the share of these items, the lower the protein intake. Further, in the absence of adequate data on the quantities of non-cereal items of food, indicator (*iii*) is supposed to take into account both the quantity and quality of nutrition. Indicator (*i*) reflects to some extent the lack of many vitamins, minerals and proteins in the diet, so indicator (*iii*) takes care of this aspect. The three sub-components have been assigned the weights of 0.25, 0.25, and 0.50 respectively, although the choice of these weights is highly subjective and debatable.

The results of the exercise are presented in Table V. It would be seen that the composite index of nutrition for the rural areas increased to 100.50

6. Ganguli and Gupta: *op. cit.*

in 1964-65 and to 105.50 in 1967-68 and then declined marginally to 104 in 1971-72. Similarly, the composite index of nutrition for the urban areas declined marginally to 98.50 in 1964-65 and increased to 107.50 in 1967-68 and again declined slightly to 106.25 in 1971-72. However, it would be useful to look into the shifts in the sub-components over the study period. The calorie intake has been generally on the decline in both the rural and urban areas.[7] Calorie intake was calculated as follows: Per capita expenditure on cereals was deflated by wheat prices to get the physical quantities which were further converted into calories on the basis of standard ICMR food value tables. There has been a sharp decline in calorie intake in the rural areas, which may be due to two reasons: first, the shift in the consumption pattern of the richer strata of the ruralites towards non-cereal foods, and second the destitution of the poorest strata of rural society compelling them to reduce their calorie intake. In the urban areas, there has been a marginal reduction in the calorie intake from 1695 to 1592 which is a welcome trend as it represents a lowering of the dependence on cereal food. As regards shifts in proteinous foods, it would be seen that the percentage expenditure on this category has declined marginally in the rural areas and increased significantly in the urban areas. The percentage expenditure on non-cereal food has witnessed an increase from 58 to 69 in the rural areas and from 65 to 72 in the urban areas over the period 1961-62 to 1971-72.

TABLE V—INDEX OF NUTRITION

Year	Calorie intake		Percentage expenditure on milk and milk products, meat, eggs and fish		Percentage expenditure on non-cereal food to total		Index of nutrition	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
1961-62	1903 (100)	1695 (100)	35.53 (100)	28.87 (100)	58.00 (100)	65.00 (100)	100.00	100.00
1964-65	1730 (91)	1488 (88)	32.89 (93)	30.55 (106)	63 (109)	65 (100)	100.50	98.50
1967-68	1626 (85)	1557 (92)	35.15 (99)	34.59 (120)	69 (119)	71 (109)	105.50	107.50
1971-72	1557 (82)	1592 (94)	34.10 (96)	31.46 (109)	69 (119)	72 (111)	104.00	106.25

Figures within brackets indicate index numbers with 1961-62 base.

7. Economic and Statistical Organisation, Punjab: Statistical Abstract of Punjab, 1976, Government of Punjab, Chandigarh, 1977, p. 505; and W. R. Aykroyd, C. Gopalan and S. L. Balasubramaniam: The Nutritive Value of Indian Foods and the Planning of Satisfactory Diets, Indian Council of Medical Research, Hyderabad, 1966, p. 52.

Shifts in Expenditure Elasticities

Having examined the nutrition situation at the world and State levels, it would be useful to study the nature of demand for food. Due to lack of data on income, we compute expenditure elasticities as a rough approximation to income elasticities on the basis of National Sample Survey State Sample data for 19th Round (1964-65) and 26th Round (1971-72). The following functional forms were tried for determining the nature of relationship between expenditure on specific commodities as a function of total consumer expenditure.

$\text{Log } y = a + b \log x$	double log—LL
$\text{Log } y = a + b \log x$	semi-log—SL
$\text{Log } y = a - b/x$	log inverse—LI
$\text{Log } y = a - b/x + c \log x$	log-log inverse—LLI

The relative merits of various functions tried in this study are extensively discussed in the economic literature and it is not proposed to repeat the same here again. In this analysis, log-log inverse (LLI) function was found to be leading in performance. According to this function, the income elasticity is income increasing if b is less than zero and income decreasing if b is greater than zero.[8] The semi-log (SL) and double log (LL) were also found good in certain cases. Table VI shows the expenditure elasticity along with R^2 values and form of the function selected. The demand for cereals, pulses, vegetables, fruits and nuts, sugar, salt and spices, fuel and lighting and consumer durables was found to be generally inelastic in both the rural and urban areas in 1964-65. The demand for edible oils, meat, eggs and fish, beverages and refreshments, *pan*, tobacco and intoxicants and clothing was found to be elastic in 1964-65. However, there has been a transformation in the nature and magnitudes of these elasticities in 1971-72 as compared to 1964-65. The demand for pulses, milk and milk products, fruits and vegetables, clothing and durable goods has become more elastic in both the rural and urban areas, whereas the demand for cereals, edible oils, beverages and refreshments, *pan*, tobacco and intoxicants, and fuel and lighting has become less elastic over this period. The demand for meat, eggs and fish did not reveal any perceptible change in the rural areas, however, it has become less elastic in the urban areas. There was a disparate behaviour in the demand for sugar also as the expenditure elasticity declined in the rural areas and increased in the urban areas over the study period. On the whole, the demand for food items has become more elastic in the rural areas and less elastic in the urban areas, whereas the demand for non-food items has become less elastic in the rural and more elastic in the urban areas.

8. Devendra B. Gupta: Consumption Patterns in India, Tata McGraw-Hill, New Delhi, 1973, p. 38.

TABLE VI—EXPENDITURE ELASTICITIES FOR DIFFERENT COMMODITY GROUPS (VALUE TERMS), 1964-65 AND 1971-72

Sr. No.	Commodity groups	1964-65						1971-72					
		Rural			Urban			Rural			Urban		
(1)	(2)	n (3)	R^2 (4)	Model (5)	n (6)	R^2 (7)	Model (8)	n (9)	R^2 (10)	Model (11)	n (12)	R^2 (13)	Model (14)
1.	Cereals	0.451	0.970	LLI	0.291	0.832	LLI	0.328	0.733	SL	0.143	0.765	LLI
2.	Pulses	0.512	0.999	LLI	0.284	0.940	LLI	0.731	0.945	SL	0.451	0.867	LLI
3.	Milk and milk products	0.087	0.551	LLI	0.972	0.844	LLI	1.586	0.966	LLI	1.437	0.949	LLI
4.	Edible oils	1.231	0.981	LLI	1.051	0.990	LLI	0.784	0.790	LL	0.931	0.985	LLI
5.	Meat, eggs and fish	1.935	0.611	LLI	1.723	0.690	SL	1.931	0.558	SL	1.507	0.961	LLI
6.	Vegetables	0.641	0.813	LLI	1.062	0.923	LLI	0.648	0.854	SL	0.698	0.960	LLI
7.	Fruits and nuts							1.555	0.843	LLI	2.310	0.982	LLI
8.	Sugar	0.761	0.974	LLI	0.528	0.728	LLI	0.648	0.920	SL	0.689	0.938	LLI
9.	Salt	0.641	0.948	LLI	0.737	0.920	SL	0.196	0.176	LLI	0.594	0.836	LLI
10.	Spices							0.697	0.946	SL	0.419	0.907	LLI
11.	Beverages and refreshments	1.095	0.974	LLI	1.693	0.965	LLI	0.698	0.441	LLI	0.758	0.844	LLI
12.	Food items	0.754	0.992	LLI	0.774	0.984	LLI	0.839	0.992	LLI	0.228	0.995	LLI
13.	*Pan*, tobacco and intoxicants	1.795	0.923	LLI	1.286	0.575	LLI	1.468	0.826	LLI	1.082	0.731	LLI
14.	Fuel and lighting	0.566	0.954	LLI	0.675	0.806	SL	0.462	0.763	LLI	0.791	0.962	SL
15.	Clothing	1.740	0.912	LLI	1.594	0.880	SL	1.845	0.953	LLI	2.573	0.934	LLI
16.	Durable goods	0.591	0.938	LLI	2.432	0.926	LLI	1.832	0.649	LLI	2.573	0.852	LLI
17.	Non-food items	1.523	0.984	LLI	1.442	0.968	LLI	1.454	0.971	LLI	1.561	0.982	LLI

CONCLUSION

From the foregoing analysis, it follows that the problem of nutrition is basically an economic problem and needs to be tackled from different angles. At the international level, developed countries which are surplus in food and are restricting their production through subsidies to farmers for keeping their lands vacant, need to be more considerate to their unfortunate brethren in the poor food deficit countries. However, the developing countries which are deficit in food or are barely keeping a balance between food production and population growth should accord higher priorities to programmes of agricultural development and at the same time must rationalise their population policies to restrict the growth of numbers. Besides, there is an increase in the concentration of consumer expenditure on food which may be primarily due to concentration of wealth and income in the hands of a few.[9] This needs to be checked through policies aimed at not only fairer distribution but also through more rational incomes policy so that the poor can produce or buy adequate food. This involves provision of opportunities for productive employment and equitable distribution of income and wealth. Further, the expenditure elasticities provide an idea about the nature of the demand for different commodity groups. These can be used in conjunction with some assumptions regarding the growth of population and income to project the demand for the future and efforts can be made to adjust the supplies to the projected demand for different commodity groups.

9. J. W. Mellor, "Nutrition and Economic Growth," in Alan Berg, Nevin S. Scrimshaw and David L. Call (Eds.): Nutrition, National Development and Planning, *op. cit.*, pp. 70-74.