A Note On Consumption Patterns in the Rural Areas of East Pakistan

by

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The main purpose of this paper is to present estimates of income elasticities for various commodity groups in East Pakistan. To date no such studies have been conducted in that province; and estimates made in other areas of the subcontinent have only limited applicability.

Analysis of consumption patterns is essential for development planning because priorities and investment targets have to be based on demand forecasts for different commodities. Forecasting demand requires, among other variables, reliable estimates of income elasticities. In addition, knowledge about elasticities can be useful in deciding taxation policies and other controls over consumption. Further, in countries like Pakistan where large quantities of surplus foods are imported under the United States PL 480 programme, knowledge of income elasticities and regional patterns of consumption is important to permit effective utilization of these imports for economic development.

SOURCES OF DATA

The source of our data is the third round of the National Sample Survey (NSS) carried out by the Pakistan Central Statistical Office during the first six months of 1961. The sample comprised 300 villages scattered all over East Pakistan[1]. In each selected village, eight families were interviewed which makes the size of the sample approximately 2,400 families. The information gathered in the survey related to family composition on the date of enquiry, consumption expenditure on various goods and services and income from various sources. The reference period for expenditures on nondurable goods and on services,

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[1] A similar NSS survey was conducted by the CSO in West Pakistan: income elasticities estimated from two different subsamples are reported in:

a) A.N.M. Azizur Rahman, "An Analysis of Family Budgets in West Pakistan", *Pakistan Development Review*, Summer 1963.

b) C. Beringer and Irshad Ahmed, *The Use of Agricultural Surplus Commodities for Economic Development in Pakistan.* Institute of Development Economics Monographs in the Economics of Development, No. 12 (in Press).

and for fixed income from wages and salaries was the month preceding the date of enquiry while expenditure on durable goods and agricultural incomes were reported for the preceding six months or a year.

As no data-processing equipment was available, we were unable to analyse the entire sample. Therefore, we selected a stratified subsample of 288 families in nine districts (Dacca, Mymensingh, Faridpur, Bakerganj, Chittagong, Rajshahi, Dinajpur, Bogra and Khulna). Stratification and selection of the subsample was done on the basis of the available production statistics. The relevant statistics were per-capita production of rice (in maunds) and per-capita acreage under the cash crops (jute, cotton, sugarcane and tea). On this basis, a rough estimate of per-capita agricultural income in various districts was made and the districts were grouped into three categories, *i.e.*, *i*) districts of average agricultural-income, *ii*) districts of high agricultural-income, and *iii*) districts of low agricultural-income. Three districts were selected from each of the three categories to achieve a fairly uniform geographical coverage of the province. A random sample of four villages was then selected from each district. Our subsample consisted, therefore, of 288 families in 36 villages[2].

The NSS schedules provided separate information for 56 items of food, 34 items of clothing, 25 items of housing-and-household accessories and 14 items of miscellaneous consumption. To get a meaningful grouping, we condensed this information into the following categories and subcategories:

I. Food
   - *i*) Cereals, baked products and pulses
   - *ii*) Milk, ghee, fats, and oils
   - *iii*) Meat, fish, eggs and poultry
   - *iv*) Vegetables and fruits
   - *v*) Sugar and gur
   - *vi*) Miscellaneous food, drinks and tobacco

II. Clothing and footwear

III. Other nonfood items

IV. Net change in inventories

Since NSS schedules did not give a direct estimate of current income, we applied the following equation:

$$Y = C_p + S_p + dI + R+W+G$$

2 Out of these, eleven schedules were either blank or information recorded in them was so incomplete that they had to be deleted.

TABLE I

DISTRIBUTION OF PER-CAPITA MONTHLY INCOME ON VARIOUS CONSUMPTION ITEMS AND SAVINGS

Commodity group \ Income range	Rs. 0—9.99	Rs. 10—14.99	Rs. 15—19.99	Rs. 20—24.99	Rs. 25—29.99	Rs. 30—34.99	Rs. 35—39.99	Rs. 40 & more	Rs. Total
Income	8.63	13.17	17.67	22.49	27.59	32.60	37.27	60.98	26.63
Total expenditure	9.73	13.05	18.03	22.26	26.96	32.09	36.37	53.05	25.77
Total savings	—1.09	0.12	—0.36	00.23	0.62	0.51	0.90	7.92	0.86
Total food	7.29	10.06	13.51	16.10	18.91	21.49	24.77	31.19	17.76
Total nonfood items	2.43	2.99	4.52	6.16	8.07	10.60	11.60	21.87	8.01
Cereals, baked products and pulses	5.82	7.92	10.03	11.31	12.26	12.62	14.40	16.24	11.54
Milk, ghee, fats and oils	0.16	0.31	0.57	0.98	1.50	2.26	2.75	3.73	1.40
Meat, fish, eggs and poultry	0.19	0.56	0.99	1.46	1.90	1.99	2.53	3.70	1.65
Vegetables and fruits	0.28	0.42	0.63	0.69	0.97	1.26	1.38	2.29	0.95
Sugar and gur	0.21	0.07	0.17	0.32	0.45	0.69	0.88	1.76	0.49
Miscellaneous food, drink and tobacco	0.64	0.79	1.12	1.33	1.83	2.68	2.80	3.47	1.76
Clothing and footwear	0.45	0.11	1.00	1.37	1.56	1.80	2.30	3.46	1.54
Other nonfood items	1.98	2.30	3.52	4.80	6.50	8.81	9.30	18.41	6.47

(Source: Computed from National Sample Survey, third round, 1961).

TABLE II

PERCENTAGE DISTRIBUTION OF PER-CAPITA MONTHLY INCOME OVER VARIOUS CONSUMPTION ITEMS AND SAVINGS

Commodity group \ Income range	Rs. 0—9.99	Rs. 10—14.99	Rs. 15—19.99	Rs. 20—24.99	Rs. 25—29.99	Rs. 30—34.99	Rs. 35—39.99	Rs. 40 & more	Rs. Total
Income	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total expenditure	112.6	99.2	102.1	99.0	97.8	98.4	97.6	87.0	96.8
Total savings	—12.6	0.8	—2.1	1.0	2.2	1.6	2.4	13.0	3.2
Total food	84.4	76.4	76.5	71.6	68.5	65.9	66.5	51.1	66.7
Total nonfood items	28.2	22.7	25.6	27.4	29.2	32.5	31.1	35.9	30.1
Cereals, baked products and pulses	67.4	60.1	56.8	50.3	44.4	38.7	38.7	26.6	43.3
Milk, ghee, fats and oils	1.9	2.4	3.2	4.3	5.4	6.9	7.4	6.1	5.3
Meat, fish, eggs and poultry	2.2	4.2	5.6	6.5	6.9	6.1	6.8	6.1	6.2
Vegetables and fruits	3.2	3.2	3.6	3.1	3.5	3.9	3.7	3.8	3.6
Sugar and gur	2.4	0.5	1.0	1.4	1.6	2.1	2.4	2.9	1.8
Miscellaneous food, drink and tobacco	7.4	6.0	6.3	5.9	6.6	8.2	7.5	5.7	6.8
Clothing and footwear	5.2	5.2	5.7	6.1	5.7	5.5	6.2	5.7	5.8
Other nonfood items	23.0	17.5	19.9	21.3	23.6	27.0	24.9	30.2	24.3

(Source: Computed from National Sample Survey, third round, 1961).

TABLE III

PERCENTAGE DISTRIBUTION OF TOTAL CONSUMER EXPENDITURE ON VARIOUS COMMODITY GROUPS

Region / Commodity group	East Pakistan		West Pakistan[a]		India[b]		Ceylon[c]		Japan[c]	
	per cent of		per cent of		per cent of		per cent of		per cent of	
	Total expen-diture	Food expen-diture	Total expen-diture	Food expen-diture	Total expen-diture	Food expen-diture	Total expen-diture	Food expen-diture	Total expen-diture	Food expen-diture
Total expenditure	100.0		100.0		100.0		100.0		100.0	
Total food	68.9	100.0	63.2	100.0	67.1	100.0	65.3	100.0	52.7	100.0
Cereals, baked products and pulses	44.8	65.0	29.7	48.0	40.4	60.2	28.3	43.3	30.3	57.5
Milk, ghee, fats and oils	5.4	7.8	18.3	29.0	10.2	15.2	3.9	6.0	5.7	10.8
Meat, fish, eggs and poultry	6.4	9.3	3.0	4.7	2.4	3.6	6.7	10.3	5.1	9.7
Vegetables and fruits	3.7	5.4	2.5	4.0	—	—	7.6	11.6	3.8	7.2
Sugar and gur	1.9	2.8	6.2	9.8	2.8	4.2	4.6	7.0	—	—
Misc. food, drink and tobacco	6.8	9.9	3.5	5.5	11.3	16.8	14.2	21.7	7.8	14.8
Clothing and footwear	6.0	—	11.0	—	9.6	—	8.0	—	9.7	—
Other nonfood items	25.1	—	25.8	—	23.3	—	26.3	—	37.60	—

a) *The Use of Agricultural Surplus Commodities for Economic Development in Pakistan, op. cit.*
b) J. Roy and S. K. Dhar, "A Study on the Pattern of Consumer Expenditure in Rural and Urban India", *Studies on Consumer Behaviour.* (Calcutta: Statistical Publishing Society, for Indian Statistical Institute, 1959), p. 58.
c) F.A.O., *Review of Food Consumption Surveys.* (Rome: Food and Agriculture Organization, 1958).

INTERNATIONAL COMPARISONS

Table III shows percentage distribution of total expenditure on various commodity groups along with percentage distribution of total food expenditure on various food items in the two wings of Pakistan and a few selected foreign countries. It is apparent that the percentage share of expenditure on cereals is nowhere as high as it is in East Pakistan. The high weight of cereals in the family budgets of East Pakistani rural people is an indication of their low level of consumption.

There is a marked difference in the consumption of cereals, milk, ghee, fats and oils, sugar and gur, and clothes in the two wings of Pakistan. Expenditure on cereals in East Pakistan forms about 45 per cent of total expenditure and 65 per cent of food expenditure while it is only 30 and 48 per cent respectively in West Pakistan. However, the physical quantity of cereals consumed is not much different for the people of East Pakistan and West Pakistan[4] despite the high price of rice in relation to the price of other consumption items in East Pakistan[5]. In East Pakistan, only about 5 per cent of total expenditure and about 8 per cent of food expenditure goes for milk, ghee, fats and oils, while the average rural family in West Pakistan uses as much as 18 per cent of its total expenditure and 29 per cent of its food expenditure for these items.

The difference in the consumption of sugar and gur between the two wings is also significant: in East Pakistan it is 2 per cent of total expenditure and 3 per cent of food expenditure compared to 6 per cent of total expenditure and 10 per cent of food expenditure in West Pakistan.

Because of climatic differences in the two wings, consumption of clothing and footwear would be expected to be different. A typical West Pakistani rural person spends 11 per cent of his total expenditure on clothing and footwear, while his counterpart in East Pakistan does not spend more than 6 per cent on these items.

ESTIMATION OF INCOME ELASTICITY

We limited ourselves to discrete estimates of income elasticities; no continuous functions were fitted. To estimate average income-elasticity, we divided

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[4] Per-capita availability of cereals averaged 14.6 ounces per day in West Pakistan as compared to 15.3 ounces in East Pakistan during 1951-60. S.U. Khan, "A Measure of Economic Growth in East and West Pakistan", *Pakistan Development Review*, Autumn 1961, pp. 52-53.

[5] Average wholesale price of wheat in West Pakistan was Rs. 16.42 per maund and that of rice in East Pakistan was Rs. 29.65 per maund in 1960/61 whereas the prices of other consumption items in the two wings were approximately same. S.U. Khan and Rafique A. Khan, "A Note on the Wholesale Price Index in 1960-61", *Pakistan Development Review*, Winter 1961, pp. 75-77.

the sample into two income groups of Rs. 0—24.99 and Rs. 25-and-above (mean income for the total sample is Rs. 26.63). Mean per-capita expenditure on various commodity groups and mean per-capita income were calculated for these two income groups[6]. Average income-elasticities for various commodity groups were then estimated using the following equation[7]:

$$ey = \frac{\Delta X}{\Delta Y} \cdot \frac{Y}{X}$$

where ey = Average income-elasticity

ΔX = Change in mean per-capita expenditure on any commodity group from the lower income-group to the higher income-group

ΔY = Change in mean per-capita income from the lower income-group to the higher income-group

X = Mean per-capita income in the lower income-group

Y = Mean per-capita expenditure on any commodity group in the lower income-group

The results are shown in Table IV along with similar estimates for West Pakistan and for India.

TABLE IV

AVERAGE INCOME-ELASTICITY FOR VARIOUS COMMODITY GROUPS

Commodity groups	East Pakistan	West Pakistan[a]	India[b]
Total expenditure	0.88	—	—
Food expenditure	0.67	0.75	0.85
Total nonfood expenditure	1.48	—	—
Cereals, baked products and pulses	0.34	0.47	0.75
Milk, ghee, fats and oils	2.45	1.08	1.37
Meat, fish, eggs and poultry	1.25	1.19	0.90
Vegetables and fruits	1.24	0.70	—
Sugar and gur	2.83	0.94	0.77
Miscellaneous food, drink and tobacco	1.22	—	—
Clothing and footwear	0.97	0.80	—
Other nonfood items	1.62	—	—

a) *The Use of Agricultural Surplus Commodities for Economic Development in Pakistan, op. cit.*

b) A.J. Coale and E.M. Hoover, *Population Growth and Economic Development in Low Income Countries.* (Princeton, N.J.: Princeton University Press, 1958), p. 124.

6 Mean per-capita income is Rs. 18.15 and Rs. 36.15 for income groups of Rs. 0—24.99 and 25-and-above respectively. Mean per-capita income and consumption is 'simple arithmetic mean' of the income and consumption of families falling into these income groups.

7 T. W. Schultz, *The Economic Organization of Agriculture.* (New York: McGraw Hill Book Co., Inc., 1953) pp. 54 and 69.

For an average rural consumer in East Pakistan, this suggests that, for each percentage increase in income, the percentage change in the consumption of milk, ghee, fats, oil, meat, fish, eggs, poultry, vegetables, fruits, sugar and gur is higher than the corresponding percentage change for his counterpart in rural India and rural West Pakistan. It does not, however, mean that the absolute amount spent on these items out of each additional rupee of income is higher in East Pakistan than elsewhere.

To get some idea of the variation in elasticities for different levels of income, we estimated elasticities for two subgroups, one in the lower income-range and the other in the higher income-range. For this purpose, the data were divided into three monthly per-capita income groups namely Rs. 0—19.99, Rs. 20—29.99 and Rs. 30.00-and-above. The number of observations in each income groups was approximately equal. The resulting elasticity estimates are shown in Table V.

TABLE V

INCOME ELASTICITIES FOR VARIOUS COMMODITY GROUPS IN LOWER AND HIGHER INCOME-RANGES

Commodity group	Lower income-range	Higher income-range
Total expenditure	0.90	0.86
Food expenditure	0.76	0.62
Total nonfood expenditure	1.37	1.46
Cereals, baked products and pulses	0.48	0.28
Milk, ghee, fats and oils	2.79	1.76
Meat, fish, eggs and poultry	1.78	0.81
Vegetables and fruits	0.93	1.30
Sugar and gur	2.71	2.52
Miscellaneous food, drink and tobacco	1.03	1.18
Clothing and footwear	1.19	0.94
Other nonfood items	1.43	1.59

Elasticities for total food and individual food-groups (except vegetables and miscellaneous food-groups) decrease as the level of income goes up. Elasticity for clothing and footwear behaves in the same way as that for the most food items; while opposite is the case for other nonfood items. Also, the elasticities for clothing and footwear are lower than those for other nonfood items. The elasticities for milk, ghee, fats and oils are higher than those for meat, fish, eggs and poultry in both income ranges.

INTERDISTRICT VARIATIONS

We have noted previously that the sample which underlies this study was stratified so as to include an equal number of districts with high, average and low agricultural productivity. Stratification was done on the basis of available official production statistics; the purpose was to ascertain: firstly, whether the districts having low per-capita agricultural income are also the districts of low per-capita total income; and secondly, whether the family-expenditure-survey data would also have a tendency to show lower family consumption in districts with low agricultural productivity per person. The results of this comparison are shown in Table VI.

TABLE VI

PER-CAPITA MONTHLY INCOME, SAVINGS, AND EXPENDITURE ON VARIOUS COMMODITY GROUPS IN LOW- AND HIGH-INCOME DISTRICTS

Commodity groups	Low-income districts				High-income districts			
	On NSS basis		On production basis		On NSS basis		On production basis	
	Mymensingh Bakerganj Bogra Rajshahi Dinajpur		Bakerganj Chittagong Khulna Dacca Mymensingh		Dacca Chittagong Faridpur Khulna		Faridpur Bogra Rajshahi Dinajpur	
	(Rs.)	(%)	(Rs.)	(%)	(Rs.)	(%)	(Rs.)	(%)
Income	22.11	100.0	27.00	100.0	32.05	100.0	26.16	100.0
Total expenditure	21.26	96.2	26.84	99.4	31.18	97.3	24.43	93.4
Saving	0.84	3.8	0.16	0.6	0.87	2.7	1.73	6.6
Food	15.22	68.8	18.59	68.9	20.82	65.0	16.73	64.0
Nonfood	6.05	27.4	8.25	30.6	10.36	32.3	7.70	29.6
Cereals, baked products and pulses	10.70	48.4	12.09	44.8	12.54	39.1	10.85	41.5
Milk, ghee, fats and oil	0.98	4.4	1.32	4.9	1.91	6.0	1.50	5.7
Meat, fish, eggs and poultry	1.37	6.2	1.70	6.3	1.98	6.2	1.58	6.0
Vegetables and fruits	0.61	2.8	1.09	4.0	1.34	4.2	0.77	2.9
Sugar and gur	0.26	1.2	0.59	2.2	0.74	2.4	1.42	5.4
Miscellaneous food, drink and tobacco	1.30	5.9	1.80	6.7	2.28	7.1	1.67	6.4
Clothing and footwear	1.26	5.7	1.66	6.1	1.86	5.8	1.39	5.3
Other nonfood items	4.78	21.6	6.60	24.4	8.48	26.5	6.31	24.1

It appears that Chittagong, Khulna and Dacca districts which were classified as below average on the basis of production statistics turned out to be above average on the basis of NSS income-data, while Bogra, Rajshahi and Dinajpur districts which were classified as above average on production basis were found out to be below average on NSS income-basis. This divergence is explained by the fact that the districts of Chittagong, Khulna and Dacca are relatively more industrialized. In these districts, many families report income from nonagricultural employment along with income from agricultural production. In Bogra, Rajshahi and Dinajpur districts, although per-capita acreage under cash crops (which was one of our criteria for including these districts in the above-average category) is high, per-acre yield of cash crops may be low so that income from cash crops and, therefore, per-capita income is low in these districts. Moreover, income in these districts is lower relative to the income in districts with nonagricultural employment and not to the income in districts with purely agricultural employment. In other words, these districts have gone down in ranking because some low-agricultural-productivity districts, having a very significant nonagricultural employment, have occupied the higher ranks.

This analysis shows that the districts with low per-capita agricultural incomes are not necessarily also the districts of low per-capita total income. Agriculturally depressed areas show higher per-capita incomes than prosperous agricultural regions because of significant nonagricultural employment in the former regions.

Consumption patterns between districts with low and high per-capita agricultural production seem to be constant. It indicates that consumption is not dependent upon the level of agricultural production as such: districts with low per-capita agricultural production are not necessarily districts of low per-capita consumption. Because of nonagricultural income, per-capita income and, therefore, per-capita consumption is high in some low-agricultural-productivity districts. This pattern of consumption implies that East Pakistan can be looked as a single planning unit where policies regarding consumption requirements can be based on a single estimate of average elasticity.

The rate of saving is higher in the relatively more productive agricultural districts. This suggests that saving as a ratio of income is high for those people who derive their income mainly from agricultural produce compared to those who obtain a major part of their income from fixed salary or wages. Farmers being uncertain about their production, save for bad days even if their income is low while salary and wage earners who receive a fixed regular income do not need to be concerned to the same extent. This leads to the conclusion that,

under East Pakistan conditions, the saving function is significantly influenced by the degree of income uncertainty.

SOME QUALIFICATIONS

What is the meaning of income elasticities estimated for a subsistence sector which receives very little of its total income as money income?

The consumption pattern of a person is determined by his income, his preferences, availability of commodities and their prices. Assuming prices and preferences to be constant[8], income and availability of goods become the principal factors in determining the consumption pattern. Since total consumption of rural families in East Pakistan consists mostly of self-produced goods, their consumption behaviour with respect to income may not be the same as it is for those who receive cash income and who fulfill their consumption requirements from a much wider choice of available goods and services. Moreover, the product or 'income' of farmers is received once or twice a year while consumption is a continuous process. Farmers consume from a given stock of product over a period of time and not from a regular flow of income. As a result their consumption behaviour may be subject to significant seasonal variation. More of one item may be consumed when its stocks have been accumulated and vice-versa[9]. Given the limited range of choice presently available to the rural consumers, it is also likely that a change to 'income in cash' in the course of economic development will have a significant impact on the consumption patterns and, therefore, reduce the predictive value of the income-elasticity estimates.

Our study is based on cross-section data which may limit its predictive value in an environment where rapid economic and social changes are taking place. It may not be true, for example, that a man whose income rises after, say, ten years, will behave like one whose income is now at that level; factors other than income may be more important in shaping his consumption pattern at that time.

In this study, use of per-capita figures has been made. If the composition of family in respect of age, sex and number of dependent changes with change in income, the use of per-capita figures may distort the actual level of consumption. In some studies, an 'equivalent adult consumer unit' has been used to

[8] Our study relates to a point of time and prices and preferences are constant at a point of time. We also assume them to be constant in different regions of the province.

[9] This problem may be tackled by focussing attention on annual expenditures and annual income, which are, of course, difficult to obtain from rural people who do not have any records of their family budgets.

correct this distortion, particularly in food consumption[10]. As our study dealt not only with food items but also with other items of consumption and as the family composition did not differ significantly between income groups, it was felt that in our case the conversion of the data to 'adult consumer unit' was not warranted.

We have used value figures in this study. This raises the problem of price differentials between districts and their influence on the consumption pattern. In the case of East Pakistan, it is reasonable to assume that these interdistrict price-differentials are minor. In the absence of reliable price statistics, any correction would, in any case, have been arbitrary.

10 *See*, for example:

a) S.T. Prais, "Non-Linear Estimates of Engel Curve", *Review of Economic Studies*, Vol. XX(2), 1952, pp. 90-91.

b) *Population Growth and Economic Development in Low Income Countries, op. cit.*

c) R. Stone, *The Measurement of Consumer's Expenditure and Behaviour in the U.K.: 1920-38*, Vol. I. (London: Cambridge University Press), p. 312.

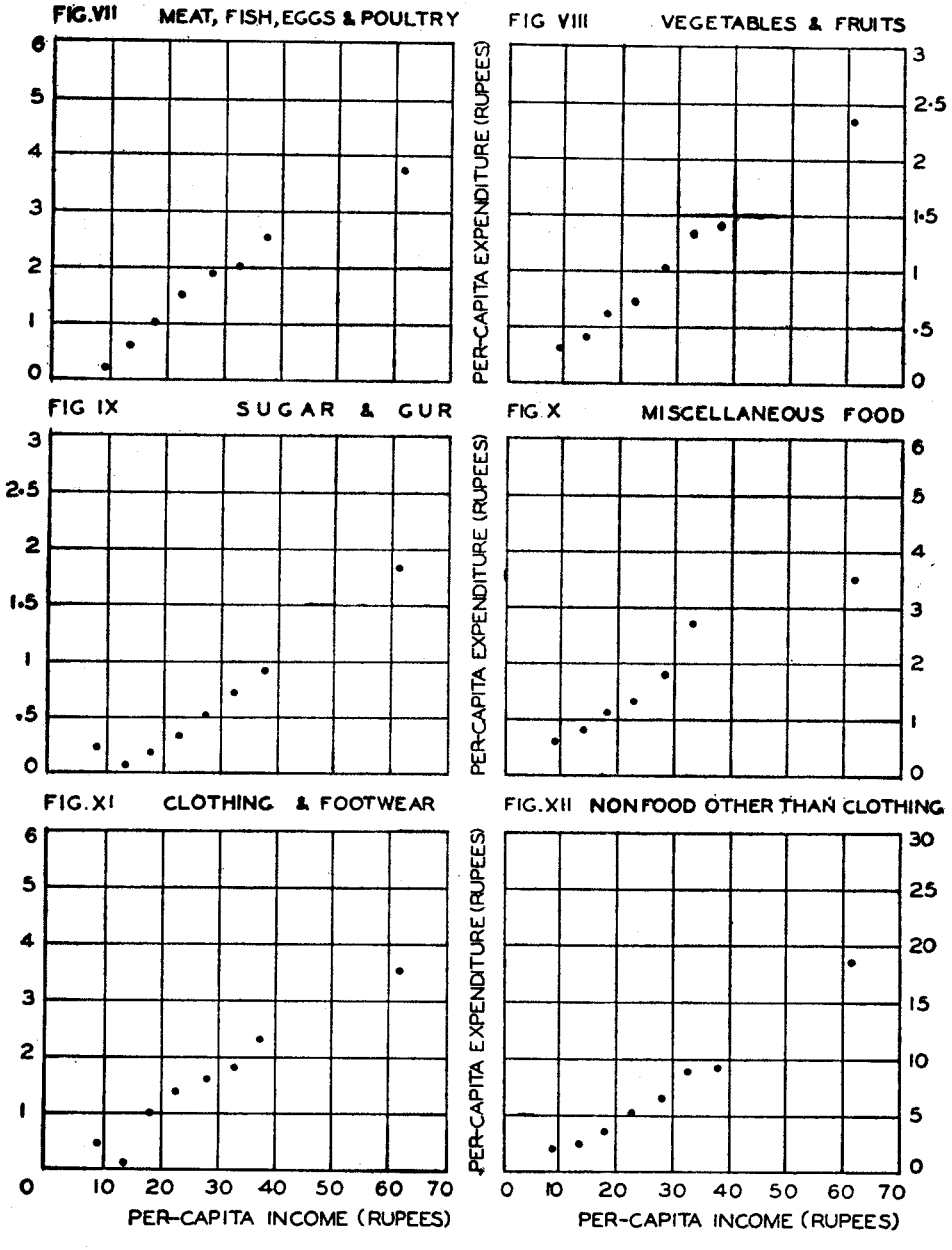
FIG.VII MEAT, FISH, EGGS & POULTRY
FIG VIII VEGETABLES & FRUITS
FIG IX SUGAR & GUR
FIG.X MISCELLANEOUS FOOD
FIG.XI CLOTHING & FOOTWEAR
FIG.XII NONFOOD OTHER THAN CLOTHING
PER-CAPITA EXPENDITURE (RUPEES)
PER-CAPITA INCOME (RUPEES)
0 10 20 30 40 50 60 70

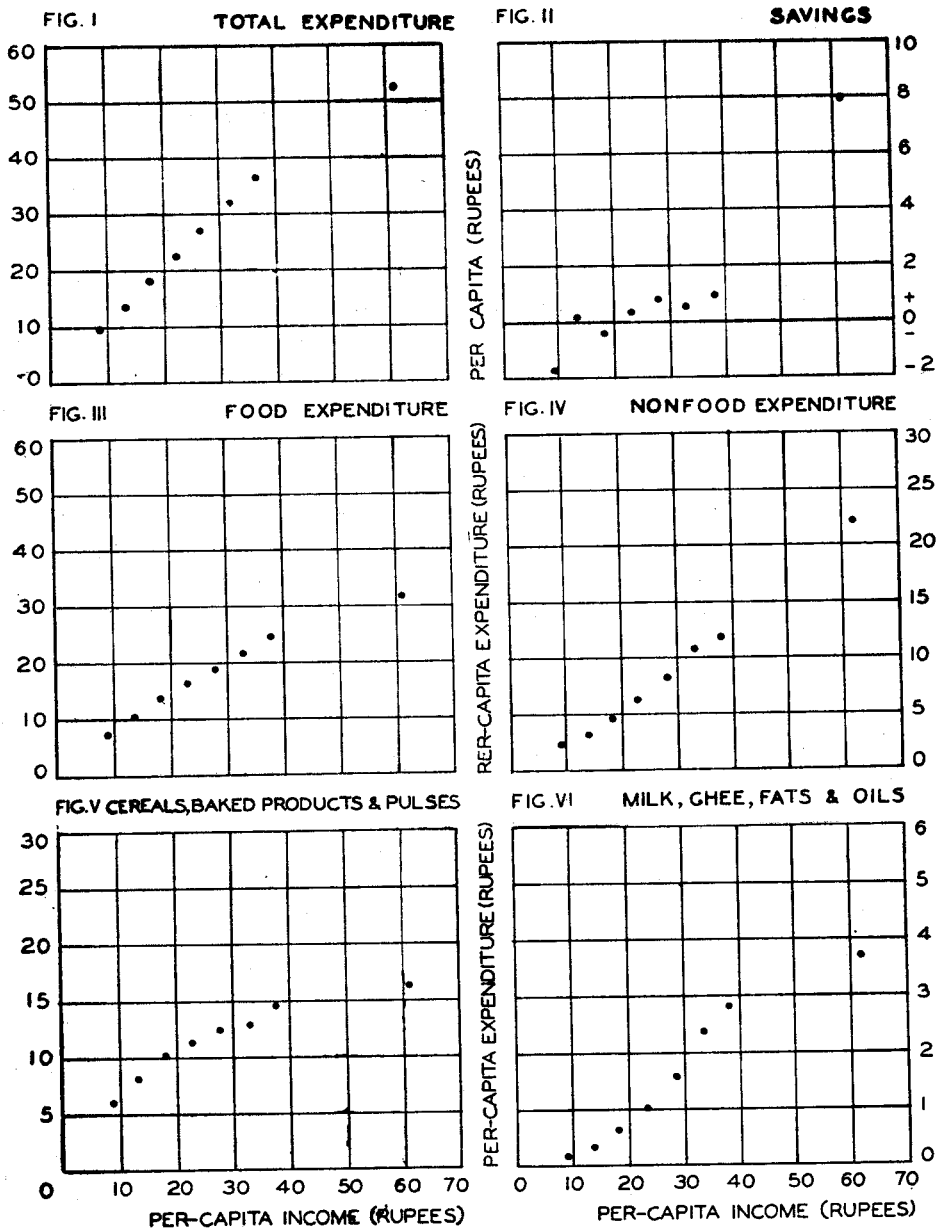
FIG. I
TOTAL EXPENDITURE
60
50
40
30
20
10
0
FIG. II
SAVINGS
PER CAPITA (RUPEES)
10
8
6
4
2
+
0
-
-2
FIG. III
FOOD EXPENDITURE
60
50
40
30
20
10
0
FIG. IV
NONFOOD EXPENDITURE
PER-CAPITA EXPENDITURE (RUPEES)
30
25
20
15
10
5
0
FIG. V CEREALS, BAKED PRODUCTS & PULSES
30
25
20
15
10
5
0
10 20 30 40 50 60 70
PER-CAPITA INCOME (RUPEES)
FIG. VI
MILK, GHEE, FATS & OILS
PER-CAPITA EXPENDITURE (RUPEES)
6
5
4
3
2
1
0
0 10 20 30 40 50 60 70
PER-CAPITA INCOME (RUPEES)