CHAPTER III

EARLIER STUDIES : A BRIEF SURVEY

The best known of the early studies of the consumption-income relationship is that of Ernst Engel (1821-1896), a statistician in the government of Saxony. His name has become famous through the formulation of two laws, namely that the poorer a family, the greater the proportion of total spending which goes for food purchases. He inferred from this that the proportion spent on physical needs represents the material well-being of a people.[1] His other law states that luxury spending occurs only at a higher income level when the basic necessities have been met. Today the term Engel curve is used to denote families of curves which show the functional relationship between consumption of a good against income, other things being equal. There have been other pioneers in the field even before Engel.

[1] Vide W.W.Cochrane and C.S.Bell, The Economics of Consumption, Economics of Decision-Making in the Household, New York : McGraw Hill Publ., 1956, Chapter XI.

such as Gregory King and Le Play.[2]

More recent studies which have relevence to our work are those of Zimmerman and Houthakker. Carle Zimmerman, a sociologist, has given an exhaustive narrative of family budget studies done by early sociologists and the laws associated with their work.[3] Some of the laws are listed here along with the names of their propounders :

Engel :

(i) the greater the income, the smaller the relative percentage of outlay for subsistence.

(ii) the percentage of outlay on clothing is approximately the same whatever the income.

(iii) the percentage of outlay on rent, fuel and light is invariably the same, whatever the income.

(iv) as income increases in amount, the percentage of outlay on sundries becomes greater.

C.D.Wright :

(i) The proportions of expenditure for clothing are approximately the same under all income conditions.

(ii) With increasing income the proportion of expenditures for rent, fuel and light stay invariably the same.

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[2]For a historical sketch see : Carle C.Zimmerman, Consumption and Standard of Living, New York :D.Van Nostrand Co. Inc., 1936.

[3]Zimmerman, ibid.

E.Engel :

Officials spend a great deal more per adult unit for clothing than employees and labourers in the same income class.

R.C.Capen et al :

With increasing income the percentage for fuel, light and housing decreases.

H.Schwabe :

The lower the income, the higher is the proportion for rent and vice-versa. Rent is principally determined by income and not by social class.

E.Laspeyeres :

The lower the income, the higher are the proportions for rent within any given social class and vice-versa.

Albrecht :

Rentals of the upper economic classes follow Laspeyeres law, rentals of the middle economic classes follow Schwabe's law.

F.Luetge :

The expenditure for housing (rent, heat, light, upkeep and furniture) depends on social rank. The higher the social standing, the higher the relative expenditure on housing. Schwabe's law is less valid for salaried employees and false for officials.

Great impetus to consumption studies in modern times has been given by Prais and Houthakker.[4] They concentrated

[4] S.J.Prais and H.S.Houthakker, The Analysis of Family Budgets, Cambridge : University Press, 1955.

on some aspects of consumer behaviour such as the relationship between (i) expenditure on individual commodities and total expenditure or income (ii) quality variations in the consumption pattern (iii) household composition and unit consumer scales (iv) economiesof scale in consumption and (v) social, occupational and regional factors in expenditure pattern which can be investigated on the basis of a single (as opposed to a continuous) family budget inquiry.

Data were obtained from 10,800 working class households (all manual workers and those non manual workers whose annual income was less than £ 250.) and 1400 middle class households (belonging to the three groups civil servants, local government officials, teachers) with income about £ 250. p.a. A questionnaire with 150 items of which one third was approximately pertaining to food items was administered in person.

The hypothesis formulated was based on the following arguments ; House-hold size and income have influence on the levels of consumption, i.e. consumption per person depends on the level of income per person. Engel curves for house-holds of different sizes will be related according to the nature of the good. A good may be defined as a necessity or a luxury according as whether an increase in household size leads to an increase or decrease in its

consumption. Five functional forms were taken as models and their usefulness was tested. It was found that none of them were uniformly satisfactory. The double logarithmic function was found a fairly satisfactory description of the curvature found in most commodities except for difficulties of zero expenditure. The semilog function was satisfactory for most food stuffs.

The quality as measured by the average price paid, as well as the quantity of the commodity varied with the level of living of the household, i.e. with its income level, household size and composition. As income increased in addition to the purchase of better qualities of each variety there was also a significant shift towards the purchase of more expensive varieties of a commodity. The income elasticity of expenditure on food stuffs decreased with income and was inversely proportional to the income level. The elasticity of quantity bought was less than the elasticity of expenditure at a given income level. As income increased there was an increasing gap between the increase in expenditure on the commodity and the increase in the quantity bought. In most cases for larger households at a particular level of income consumption per person was less than in smaller households for most commodities. However for farinacious goods larger households spent

about nineteen percent less than the smaller households. This is attributed to the existence of specific economies of scale and their economic effect. For clothing specific economies were negligible. In durables the authors found distinct diseconomies of scales.

A comparison of elasticities for food, clothing, housing and miscellaneous items with respect to total expenditure and family size based on regression analysis of about forty surveys from about 30 countries has been done by Houthakker.[5] The parameters were estimated by means of the classical least squares method with observations weighed according to the household represented in each group average. The elasticities for food were all significantly less than 1 confirming thereby Engel's law. The highest elasticity was for Poland, 0.731 and the lowest for British Middle Class survey, 0.344. The elasticity for U.S.A. and for Canada were high, compared to those of most European countries. Houthakker suggests the possibility that relative differences in price might have an influence on elasticity. The elasticities for clothing with respect to total expenditure were all greater than unity except in one case and less than 1.5 except for five cases. In

[5] H.S. Houthakker, 'An International Comparison of Household Expenditure Patterns, Commemorating the Century of Engel's Law,' Econometrica, Vol. 25, 1959, pp. 532-551.

technical sense clothing was a luxury though a moderate one. No particular pattern was apparent in the elasticities for different countries, probably due to the determining influence of price. Housing elasticities including fuel and light, but not furniture were mostly less than unity and very small for U.K. particularly in the middle class survey. It appeared however that on the whole housing was a necessity in the technical sense, (Schwabe's Law). The elasticities for miscellaneous expenditures were all above unity.

During 1966-68 a survey of consumer expenditure and finances was carried out in Australia for the first time under the joint venture of the Macquarie University and the University of Queensland.[6] The survey included a sample of about 5500 Australian families living in urban areas. Total expenditure was taken as income for the estimation of Engel elasticity of demand for a commodity, because of the fact that figures for gross income are unreliable as families tend to forget to include such items as refund from income tax and on the other hand deliberately conceal income from other sources. Taking total expenditure as

[6] M. Podder, 'Patterns of Household Consumption Expenditures in Australia,' The Economic Record, 47 (1971), pp.379-388.

proxy also takes care of cases where a family engaged in business might be having negative income due to loss in business during a certain period. Expenditures on nine commodity groups (food, clothing and footwear, tobacco and liquor, fuel, gas, electricity and telephone, fares, medical, recreation, housing and furnishing and consumer durables) were analysed. Five forms of Engel curves were fitted. In general double logarithmic form gave better fit to data than the other forms. Income elasticities for food, fuel and housing were less than unity and for other items greater than unity. The largest proportion of increased income was spent on consumer durables, followed by transport, food and clothing. Income elasticities were very similar over all state capitals. Income elasticity for housing varied from 0.487 (Brisbane) to 1.252 (Perth). The double logarithmic form was used to test the influence of family size. The results showed the influence of family size.

Ferber has reported on a number of studies on consumption involving variables other than income.[7] A brief summary of relevant findings as reported by him is given here. Watts ascribed central role to occupation and education in the determination of expenditure.[8] He attempted to explain

[7] R. Ferber, 'Research on Household Behaviour,' Surveys of Economic Theory - Resource Allocation, Vol.3, The Royal Economic Society and the American Economic Association, New York: Macmillan, 1967, pp. 114-154.

[8] ibid., pp. 127.

of expenditure on the basis of a person's future expected income which was related to a cross section profile, holding occupation, education and age constant. Among other things he found that at a given level of income those with more education expected higher income and spent more. Morgan found that self-employed including farmers had very different saving patterns from other families. Home-owners saved more than renters, dwellers in open country areas saved more than metropolitan dwellers, and that life cycle was highly relevant for understanding saving pattern.[9] Friend and Kraus found that self-employed exhibited much the same consumption pattern as that of other families.[10] According to Klein the self employed were more frequently home-owners and tended to spend less for rental cause and more for house hold operation, than families of salaried professionals.[11] Klein also showed that the self-employed saved more than other families principally because of their business savings; they did not save appreciably more in other forms. Fisher has analyzed the influence of family life cycle on consumer behaviour and found that the younger families tend to be heavy purchasers of durable goods even though they may have to dissave to do so, whereas older families with the necessary assets make relatively few durable goods purchases.[12]

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[9] loc cit.
[10] ibid., pp. 127-128.
[11] ibid., p. 128
[12] loc cit.

Brady studied the family savings and found that holding income constant saving is found to increase uniformly with the age of the wife. In addition Brady showed that the family saving is influenced not only by socio-economic variables such as age, family size and occupation, but also by the general level of income in the community where the family resides.[13] Klein studied the saving behaviour from a sample survey data and found that households experiencing income decreases and who expect further decrease appear to save more than households experiencing decrease, but expecting an upturn in the near future.[14] This finding shows how psychological factors have also significant influence on the economic behaviour of households. Katona and associates maintain that attitudinal data provide insight into underlying motives and buying forces apart from socio-economic factors.[15]

Studies in India on Consumption Patterns

Several studies have been conducted in India also on the consumption patterns of households. Earliest reported study in India is that of Bedford who was a British physician working at Chittagong (now in Bangla Desh) who collected

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[13] Ibid., pp. 128-129

[14] Ibid., p. 130

[15] George Katona, The Mass Consumption Society. Katona points out that consumers with large liquid assets both saved more and dissaved more than consumers with small initial assets. According to him people exert greater effort when they are close to their goal than when their goals are hardly attainable.

family budget data from his patients.[16] Modern econometric studies in India may however be said to have started with Mahalanobis and associates, N.Srinivasa Iyengar and others. The establishment of the National Sample Survey Organization and the development of statistical studies at the Indian Statistical Institute, Calcutta of international standard led to an outburst of econometric activity, as yet unrivalled.

Mahalanobis studied the consumption of cereals on the basis of two rounds of NSS (6th round during 1954/55 and 13th round during 1957/58).[17] Using fractile graphical analysis he has shown that in spite of large changes in price the quantity of cereals consumed remained remarkably steady in the two rounds.[18] The quantity consumed however increased sharply in the bottom 20-25% of the population in both urban and rural areas in both rounds indicating that one-fifth of the population of India could not probably afford to eat as much cereals as they would like to. There was positive income elasticity of quantity consumption of cereals throughout the whole range of household income in rural areas and upto a third of the population in urban areas

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[16] P.S.N.Rao, 'J.R.Bedford's Study of Family Income and Expenditure, 1849,' Artha Vijnana', Vol.16, No.1, 1974, pp.77-90.

[17] P.C.Mahalanobis, 'A Preliminary Note on the Consumption of Cereals in India', Sankhya, Series B, Vol.25, Parts 3 and 4, 1963, pp.217-236.

[18] P.C.Mahalanobis, 'Fractile Graphical Analysis,' Sankhya Series, A, Vol.23, Part 1, 1961, pp.41-64.

after which consumption levelled off. The pattern of income elasticity appeared to be the same or very similar in both the rounds in spite of the large increase in the price of cereals. For cereals as a whole there was thus no evidence of price elasticity at the national level. Estimation of quality elasticities for certain commodities have been studied by Sreenivasa Iyengar.[19] The quality elasticity, which may be taken as a measure of quality sensitiveness, represents in relative terms, the increase in the average price paid by the consumer as a result of a unit rise in his total expenditure. Taking NSS data and applying the method of specific concentration curves and Lorenz curve, he has broadly concluded that (i) the quantity and value elasticities in rural areas for almost all items except salt are higher than the corresponding figures in urban areas. The results appear to suggest that the consumers are generally tempted to pay higher prices for ostensibly similar items, i.e. to move for better qualities within the commodity group as the standard of living improves. The degree of quality consciousness appears to be generally higher in urban areas.

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[19] N. Sreenivasa Iyengar, 'Estimation of Quality Elasticities for Certain Commodities from National Sample Survey Data,' Sankhya Series B, Vol.25, Part 1, 1963, pp.15-22.

In another study Sreenivasa Iyengar has investigated the relationship of price movements and consumer behaviour using fractile graphical analysis.[20] Study was confined to data from rural areas of West Bengal (4th and 5th round NSS, 1952-53 and 13th round, 1957-58) and two subsamples. The overall consumer price index was observed to decline with the rise in the level of living. The pattern was even more discernible in the case of the food index, it was higher for the lower income group than for the higher. The differentials in the non-food prices suggested a mild increasing trend. The indices calculated provided further empirical evidence for the hypothesis that overall consumer price index is a slightly decreasing function of the level of living. The fractile graphical analysis and the associated sub-samples suggested that in real terms the distribution of total expenditure as well as the distribution of food expenditure changed favourably in the rural areas of West Bengal during the five year period 1952-57 ; not only did the inequality of these distributions decline but the level of the real expenditure also improved considerably.

In order to determine the effects of rising income and prices on household expenditure, which is an important

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[20] M. Sreenivasa Iyengar, 'A Study of Differential Price Movements and Consumer Behaviour, An Application of Fractile Graphical Analysis,' Indian Economic Review New Series, Vol.II, No.2, pp.179-198.

econometric problem, Iyengar and Jain made use of a non-linear system of demand curves which were different from the addilog model of Houthakker (1960) in that it possessed the additional properties of homogeneity and symmetry.[21] The method is illustrated for only two items, viz. food and non-food, from the published NSS data relating to monthly expenditures of rural households in West Bengal. The proportionate of total outlay spent on luxuries increases with the level of total expenditure and for necessities it decreases. The elasticities are therefore not independent of the level of living as measured by total expenditure. Food and Non-food items cannot be both necessities or luxuries. The own price elasticities of demand were all negative, and for food the price elasticities were lower in magnitude than for non-food in both the years studied.

Another study by Sreenivasa Iyengar, Jain and Srinivasan related to the economies of scale.[22] The study was based on household data on total consumption expenditure and its commodity composition, as well as household size

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[21] T. Sreenivasa Iyengar, and L.R.Jain, 'An Econometric Model of Consumer Behaviour to measure Income and Price Effects on Households' Expenditure,' Mimeograph.

[22] T. Sreenivasa Iyengar, L.R.Jain and T.N.Srinivasan, 'Economies of Scale in Household Consumption - A Case Study,' The Indian Economic Journal, Vol.XV, No.4, July-Sept., 1967, pp.465-477.

obtained from cross section of households during the 17th round, NSS, (Sept. 61 - July 62). The regions covered were Uttar Pradesh and Madras, both rural and urban sectors. The commodity groups considered were food, clothing, housing and miscellaneous. The double-logarithmic form was fitted. The rural values of R^2 were larger than the urban values for all expenditure, except on milk and milk products. The expenditure elasticities differed between urban and rural areas in both the states. In general rural elasticities were higher than urban elasticities. This positive difference could be attributed to the fact that rural households belonged relatively to low income group compared to urban households. Cereals, fuel and light turned out to be necessities with expenditure elasticities less than unity. Milk and milk products and clothing belonged to the class of luxuries in India. There was no strong evidence of inter-state differences in the expenditure elasticity generally although the same could not be said of the family size coefficient. Significant negative elasticity with respect to family size was noticed such as the elasticity relating to milk and milk product in Uttar Pradesh. The researchers interpreted the effect of family size as follows : Given the total outlay, increase in expenditure on one commodity could be met

only at the expense of expenditure on another. Once the substitution aspect is considered it should not surprise that with relatively luxury items such as milk, milk products and clothing negative elasticities occur. A counter-argument holds good in the case of necessities where positive elasticities occur. They concluded that the omission of family size and analysis with per capita figures may lead to a serious specification error in the case of certain necessities.

The National Council of Applied Economic Research, New Delhi (NCAER) have also investigated consumer expenditures on an all India basis and reported their findings, which are useful for purposes of comparison.[23] The average per capita consumer expenditure per month exceeded the corresponding income figures by about 15 per cent for the country as a whole, 'a phenomenon observed throughout the world including U.K. and U.S.A. in household sample survey.'[24] The average per capita expenditure per month on different commodity groups were as follows according to NCAER report (for the country as a whole) (Ref. Period : May 1963 to April 1965).

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[23]National Council of Applied Economic Research, All India Consumer Expenditure Survey, Vol. II, Pattern of Income and Expenditure, New Delhi, 1967.

[24]Ibid., p.46.

Cereals	Rs. 34.30
Pulses	Rs. 6.20
Milk and Milk Product	Rs. 9.20
Meat, Eggs, Fish	Rs. 2.70
Edible Oil	Rs. 4.60
Sugar	Rs. 3.60
Fuel and Light	Rs. 6.80
Clothing	Rs. 8.10
Other residual group	Rs. 39.90
	Rs. 115.40

Expenditure on cereals as percentage of income was the lowest for the professional, technical and related workers followed by administrative and executive occupational groups. It was highest for the farming and related groups of workers followed by service workers. It was seen that at a given level of income the importance of cereals in the diet increased with family size, the per capita expenditure on other major food products fell more sharply with family size than per capita expenditure on cereals. When the per capita expenditure on pulses was expressed as percentage of income it was found to be highest for workers in service, sports and recreation lowest for

professional, technical and related workers. Per capita expenditure on pulses showed a decreasing trend with the increasing size of the family. When analysed in relation to income, expenditure was highest for large families and lowest for small families.

Milk and milk products were clearly among the food categories substituted for cereals in developmental areas. The average per capita expenditure on milk and milk products was significantly higher for the two top income occupational group (professional and administrative). The per capita expenditure on milk and milk products decreased with increasing size of the family, but the proportion of income spent on the item showed some tendency to increase with increasing size of the family.

Edible oil, sweetening agents, fuel and light attracted more per capita expenditure with increasing level of income. The per capita expenditure on clothing showed a consistent increase with increasing level of per capita income. The per capita expenditure incurred by the professional, technical and related groups or by the administrative, and executive, occupational groups was significantly higher than the per capita expenditure on this item by any other occupation groups.

The consumption on rice showed a clear tendency to rise with increasing per capita income, so also wheat and wheat products. Both the per capita quantity of rice consumed and the per capita expenditure on rice suggested curtailment of rice consumption with increasing size of the family.

Expenditure on footwear rose sharply with the level of per capita income. High income occupation groups spent relatively high amount on this item. The double log form of the Engel curve had been chosen for forecasting wheat consumption (both quantity and value), maize, edible oil, tobacco, cotton cloth (all values). The semi-log was found to be relatively better fit for explaining family consumption behaviour with regard to rice (quantity and value). The straight line or linear form of demand relationship was selected for explaining the family consumption of jowar (quantity and value), milk and milk products, durables and semi-durables.

Two other independent variables which were included in the regression analysis were the number of consumption units in a family and the level of education of the head of the family. It appeared that the per capita expenditure on most commodities fell substantially with increasing family size, though it did not fall in proportion to the

number of members in the family. Hence the total consumption expenditure rose with family size. The extent of reduction in the per capita outlay with increasing family size differed between commodities. It was greatest for semi-luxuries, durables and semi durables, and least for food items.

The Indian Statistical Institute, Calcutta has prepared a report on the 15th round of NSS with regard to consumer expenditure.[25] The survey covered the entire Indian Union, excluding a few places such as Andaman Islands. In the rural sector people subsisted mainly on cereals and cereal substitutes, while for the urban and city sector they were only the principal items of food. The per capita expenditure on cereals per month in the rural area was 41.43 % of total expenditure on all food items whereas in the city it was only 15.59 %. Milk and Milk products came out as the next item of importance. The expenditure on non-food items as a percentage of total expenditure was 31.99 % in the rural area, 39.02 % in the urban area and 43.45 % in the city. This brought out clearly the wide disparity in the levels of living for the three regions.

An important characteristic in the consumer habit of the rural, urban and city population in India has been

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[25] NSS, Fifteenth Round, July 1959 - June 1960 Report, No.104, Delhi.

revealed by the high rate of physical consumption of cereals and their substitutes in the three sectors.[26]

The role of occupational factors on consumption pattern was investigated by Singh on NSS data relating to 15th round including the rural and urban sectors of western Uttar Pradesh.[27] The occupation categories considered by him were : professionals, semi-professionals, clerical, storekeepers, cultivators, skilled and semi-skilled workers with one category for unemployed and unidentified workers. These occupations were classified into five different groups. The level of living (measured in terms of average total spending per person) in rural sector for all occupation types excepting cultivators was lower than their urban counterpart. Singh attributed the differences in resource allocation to the various consumption items to heterogeneity in socio-economic cultural background. Rural households spent more on rice and inferior cereals whereas the urban households conscious of nutritive value of food spent more on fruits and vegetables, as well as on meat, eggs and fish.

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[26] The proportion of expenditure on non-cereals to total food expenditure is an indicator of the quality of the food intake according to Ganguli. Calory per person derived from cereals reflects to some extent the lack of many vitamins, minerals and proteins in the diet, vide D.K.Ganguli & P.D.Gupta, Levels of Living in India, New Delhi : S.Chand & Co., 1976, p.44.

[27] Balvir Singh, 'Role of Occupational Factors in Household Consumption,' Indian Economic Review, Vol.3 (New Series) 1968, pp.85-110.

Sinha and Ray carried out an analysis of food expenditure patterns of industrial workers in India and their families.[28] The source of the data was various NSS rounds. The aim of the study was to find out (i) the impact of urbanization on the demand for food (ii) the nature of income elasticity of expenditure on food for this group ; (iii) the importance of the particular socio-economic variables and determinants of the demand for food. The study showed that the income elasticity of the demand for food, like other characteristics of a developing system, was far from being a fixed parameter. As development proceeds this elasticity is subject to change, in a particular manner and direction. Secondly the particular value of the income elasticity is subject to considerable variation within the country at a point of time. Thirdly variables other than income exert significant pressure on behaviour as evidenced by food expenditure pattern. The survey which provided data was carried out in 1958-59 and covered fifty largest urban centres (in terms of total population) with sample of households in proportion to the industrial population of each centre. The expenditures were grouped as follows :

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[28] R.P. Sinha and P.C. Ray, 'Analysis of Food Expenditure Patterns of Industrial Workers and their Families in a Developing Country,' The Journal of Developmental Studies, Vol. 8, No.4, July, 1972, [illegible].

Food expenditure per household (11 commodity groups and 27 individual items)

Quantities of food purchased per household (8 commodity groups and 25 individual items)

Nutritional components of the family diet (10 items)

Sixteen variables representing selected economic and social characteristics of working class families were tested for significance as determinants of expenditure on food. Ten represented the socio-economic nature of the individual household, four the other economic factors considered relevant such as the prices of essential food items, and two dummy variables regionality and the influence of the locally predominant type of industry. Standard least squares multiple regression technique with appropriate statistical tests was employed. Double logarithmic forms of function were adopted throughout the analysis. This study employed total family income as an explanatory variable rather than the more conventional total expenditure. The income elasticity coefficient was therefore a true income elasticity.

The results of the analysis were compared with those obtained previously by identical method from studies of labourers in rural construction scheme and rural working class and of purely agricultural labourers. The major

findings were : (i) for basic carbohydrate items cereals and pulses expenditure was not significant in either groups (rural / urban working classes). Other factors are presumably more important determinants of expenditure on these items i.e. family size as a significant explanatory variable. With cereals the two size elasticities did not differ substantially. (ii) oils were clearly considered more of a luxury by the working class. The expenditure elasticity was more than twice that of the urban middle class, Family size was significant in each case. Expenditure on meat was not significant for the working class, probably accounted for by the very low levels of income. In the middle class however the authors found the expenditure on meat significant and the coefficient greater than unity. It may be classed as an attainable luxury. The same appeared to be true of vegetables and fruits. (iv) Total expenditure was significant for milk in both studies, the coefficient for working class being twice that for the middle class. The latter point may indicate an order of priority, milk before meat. Family size was not significant with respect to expenditure on meat, vegetables or milk in either groups. (v) Despite their higher income level middle class expenditure on staple food stuff was still related to family size than on expenditure on luxury items.

They however, found that while income was significantly associated with aggregate food expenditure other factors might have played a more important role with regard to expenditures on individual items. Although certain commodities were regarded as unattainable luxuries at low levels of income they were purchased when a certain minimum level of income was reached. At that point estimates of their elasticities showed an increase in trend given further growth of income. Thus this qualitative change in the composition of diet showed the decline of the income elasticity of the aggregate expenditure on food. Two important policy conclusions pointed out by them are : (i) great care should be exercised in employing national estimates of income elasticity of demand for food (ii) as regards future agricultural production planning sufficient attention should be paid to the efforts of households to diversify their diet as their income rises in order to 'short circuit' the emergence of shortages of particular dietary component.

√ Interregional variations in the consumption patterns in India have been studied in detail by Gupta.[29] The data

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[29] Devendra D. Gupta, Consumption Pattern in India, Bombay : Tata McGraw-Hill Publ. Co., 1973.

analysed were again NSS data collected during the 11th and 12th rounds. The study was confined to food grains and clothing and the analysis was done for six regions of India. Several Engel forms were tested for appropriateness separately for rural and urban sectors. Average total expenditure was used as the principal explanatory variable of household consumption. The results of the study indicated distinct Engelian functions for the various regions. Covariance tests showed the existence of significant interregional variations in consumer behaviour in India. This was true even when the proportionate effect of household size was taken into consideration. In all the regions the elasticities were less than unity for food grains and greater than unity for clothing. The urban elasticities in general were smaller than the rural ones especially for food grains and greater than unity for clothing. In the case of clothing it was found that in the middle range of income the elasticities were more or less constant thereby indicating the appropriateness of constant elasticity curve or a relationship which exhibited slow changes in elasticity with changes in expenditure. The linear and log-linear forms were found to be good fits for clothing total expenditure relationship in the urban areas. For

food grains the log-inverse form was found to be better fit. The study showed that there were significant differences in the consumption of food grains and clothing in the six regions of India. Heterogeneity existed between urban and rural sectors within the same region. Seasonal fluctuations were found to have no significant influence on consumer demand.

Using unpublished data of NSS of, 17th round, he further investigated the effects of household size on consumption. The regions considered were Tamil Nadu and Uttar Pradesh. The log-linear model was used, for ten major commodity groups. It was noticed that expenditure elasticities and household size elasticities moved in opposite directions. The elasticity with respect to household size was found to be positive for food grains and cereals, being lowest for non-food items. In the case of superior goods, the household size elasticities were low. Gupta has argued that at any given level of total expenditure an increase in the household size would result in an absolute decrease in the expenditure of the specific item under consideration, thus giving rise to negative household size elasticities in the case of luxuries and positive and high elasticities in the case of necessities and inferior goods. Testing whether the sum of household size and total

expenditure elasticities differs significantly from unity or not one can conclude whether there are economies of scale or constant returns to scale. From the t-statistics for the urban and rural sector in the two regions for nineteen items no clear cut picture emerged. Gupta concluded, 'The results of our investigations are not absolutely clearcut, but it is difficult to escape the conclusion that household size effects household consumption and the extent of this effect varies between commodities and between regions.'[30]

In order to determine the influence of age on household consumption the data were analyzed with reference to three broad age groups, young (under 30 years), middle (30 - 49 years)and old (50 and above) where the age referred to was the age of the head of the household. It was observed that the influence of age of the head on consumer behaviour was different for various items of consumption and for the four sectors (Tamil Nadu and Uttar Pradesh, rural and urban areas). Covariance tests however showed that this variable did not affect consumer behaviour significantly.

Ganguli and Gupta have made a comparative study of the levels of living in the different states of India.[31]

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[30] Gupta, ibid., p.111.

[31] B.N.Ganguli & D.D.Gupta, Levels of Living in India, an Interstate Profile, New Delhi : S.Chand & Co., 1976.

The eight components chosen by them as indicators of levels of living were expenditure on protein-rich food, housing, medical care, education, clothing, leisure, security and environment. They found that Punjab, Rajasthan, Madhya Pradesh, Gujarat and to some extent Uttar Pradesh had a higher than average expenditure on milk and milk products. Punjab, Rajasthan and Gujarat maintained over the period relatively high level of nutrition, but Gujarat-urban showed depressed level of nutrition. The percentage distribution of expenditure on all foods and cereals for Gujarat - urban was 49.9 %. Expenditure on milk and milk products for Gujarat - urban was 16.7 % ; meat, fish eggs 4.1 % and on pulses 1.7 %. With respect to housing Maharashtra, West Bengal, Gujarat and Tamil Nadu were amongst states which showed a high density on housing space. Industrially developed states, as Maharashtra, West Bengal and Gujarat showed rather low levels of housing. In respect of rent the percentage expenditure on rent to the total expenditure for Gujarat - urban was 4.24 %. As far as housing was concerned Gujarat ranked eighth, with Punjab leading first. In respect of secondary components, leisure, security and environment, Punjab topped, while Gujarat, Maharashtra and Jammu Kashmir States stood high on the list. While summarizing their

results the authors point out that Punjab, Maharashtra, Tamil Nadu, Kerala, Gujarat and Jammu Kashmir are leading states in respect of the most aspects of living, while on the other hand Orissa, Bihar, Madhya Pradesh and Andhra Pradesh seem to be low below the line.

A number of isolated studies have been reported in Indian journals pertaining to consumption behaviour and expenditure. A brief review of selected articles are given below. Dandekar and Unde investigated the age and sex of heads of households in West Bengal.[32] Their results showed that for the age group 35-64 years the headship rate (ratio of number of heads of households to the number of persons in that age group expressed as a percentage) varied only between 85 to 90 % showing that very large population of males in these age groups had each an independent household. Gill found in a study of the consumption of milk and milk products in the city of Amritsar that there was a very great difference in the consumption of milk between poor families and middle income groups, the difference being as high as four times, while at higher levels of income he found the consumption

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[32] K. Dandekar & D.S. Unde, 'Households in West Bengal and their Headship,' Artha Vijnana, Vol.3, No.1, 1961, pp.18-26.

to be nearly the same.[33] Brahme has described the consumption of fuel and lighting in the rural areas of Maharashtra.[34] She found that mainly non-agriculturally occupied families incur expenditure on fuel. Bhate and Brahme attempted to differentiate in the possession of durables in the rural sector according to social strata.[35] They found that different scaling methods were not of much use as variation in the type of durables possessed in the rural areas were small. Four sets of consumption expenditure relating to Calcutta for the period 1939-56 were compared by Thakurta who found that the expenditure elasticity for food, fuel, light, rent and taxes, clothing, miscellaneous were nearly 0.9 for all the four surveys conducted during the period showing, thereby that the families had remained more or less poor.[36] The bias in income elasticity on account of taking household as unit without size into consideration was the subject of a note by Baldota.[37] Sovani has investigated the structure of urban incomes in India for the period 1954-57 and found

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[33] S.S. Gill, 'Consumption of Milk and Milk Products in Amritsar,' Artha Vijnana, Vol.2, No.2, 1960, pp.115-120.

[34] S. Brahme, 'Consumer Expenditure on Fuel and Lighting in Some Rural Areas,' Artha Vijnana, Vol.3, No.3, 1961, pp.11-18.

[35] V. Bhate and S. Brahme, 'Scaling Methods in Relation to Possession of Durable Articles in Rural Areas,' Artha Vijnana, Vol.4, No.1, 1962, pp.60-71.

[36] D.K. Guha Thakurta, 'A Note on Changing Family Expenditure in Calcutta, during 1939-56, Artha Vijnana, Vol.5, No.3 1963, pp.189-194.

[37] S.N. Baldota, 'Bias in Income Elasticity Estimates derived from Expenditure from Family Data - A Note,' Artha Vijnana, Vol.6, No.1, 1964, pp.37-44.

the distributions consistent in all cities and town. He has remarked that ' the greatest source of confusion is the inclusion or exclusion of domestic servants.'[38] The double and semilog forms were found good fits for determining the income elasticity for sugar in a study by Kumar.'[39]

Urban middle class was the target of study by Srivastava who analysed expenditure data relating to 45 cities and towns. He found the second-degree polynominal a better fit.[40] Radhakrishnan and Misra have taken region as a variable and found that there is significant difference not only in consumption pattern but also in the expenditure elasticity showing the need for taking this variable into consideration while studying levels of living.[41]

The above review testifies to the fact how the NSS data have been of value to Indian econometricians for deriving elasticities, evaluating the determinants of

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[38] V.V. Sovani, 'The Structure of Urban Income in India,' Artha Vijnana, Vol.8, No.3, 1964, pp.145-179.

[39] P. Kumar, 'Income Elasticity of Demand for Sugar, A Regional Analysis,' Artha Vijnana, Vol.9, No.2, 1967, pp.184-195.

[40] S.C. Srivatsava, 'A Study on the Pattern of Consumption Expenditure of the Middle-class Urban Population,' New Delhi, Econometrica, Vol.36, No.5, 1968, p.58 (Abstract).

[41] Radhakrishna, R. and G.K. Misra : 'A Regional Approach to the Consumption Patterns of India,' Artha Vijnana, Vol.XII, No.4, 1970, pp.520-562.

household behaviour, assessing the inter-regional variations in consumption of food and predicting demand. At the same time it shows the lacuna with regard to budget studies relating specifically to the affluent group. In the next chapter we describe the design of our study.