

given separately for rural and urban sectors.

Several factors would have to be taken into account which effect the growth of demand for consumer goods. The most important factors are: (a) growth of income and population; (b) shift in the pattern of consumption; (c) price changes; (d) change in family size and composition; and (e) changes in the distribution of income. In this paper however, we limit ourselves to a consideration of the impact of rise in income accompanied by change in income inequality on consumption. The neglect of other major factors will no doubt restrict the usefulness of our projections, but the available published data with regard to those variable are hardly sufficient to permit a detailed analysis of all the factors simultaneously.

In this paper we have worked out demand projections by making use of the formula given by Iyengar (1960a); we have also made use of the consistent estimates of income (total expenditure) elasticities provided by him for a large number of commodities in a recent paper (Iyengar, 1967). His estimates have, however, been slightly adjusted because of the fact that double log Engel curves, using total expenditure as the explanatory variable, are not additive.

Choice of Regressor in Engel Curve Analysis, Deb Kumar Dutta Mazumdar, Indian Statistical Institute, Calcutta

In Engel curve analysis one is faced with the problem of choosing appropriate classificatory character and variable. This has given rise to considerable interest among research workers in choosing appropriate variables in regression analysis but no attempt has, however, been made to analyse the regression coefficients estimated from different combinations of classificatory characters and variables.

In the present paper three combinations of classificatory characters and variables are used in estimating regression coefficients from the same data for a given model. In model M_1 , (\bar{X}_i, \bar{Y}_i) are respectively total expenditure and expenditure on specific commodity per capita, classified by per capita total expenditure level and the weights W are the proportion of population. Specific expenditure and total expenditure per household tabulated by household total expenditure level are (\bar{Y}_i, \bar{X}_i) and W the proportion of households in model M_2 are total expenditure and specific expenditure per capita tabulated by household expenditure level and W is the proportion of population.

The regression coefficients or elasticities estimated from different combinations of classificatory characters and variables are examined in a theoretical model so as to focus attention to the relation existing between them. In the results of regression coefficients estimated for fourteen commodity groups when thrown up in a scatter diagram one observes a definite pattern in the over-estimation or under-estimation in models M_2 and M_3 in relation to M_1 . It is observed that regression coefficients from model M_2 are, in general, nearer to unity than the corresponding results from model M_1 and the regression coefficients from model M_3 moves further away from those of model M_1 .

The fact that total-expenditure-elasticities from different models are nearly the same and the fact that the ranking of commodities by elasticities is

nearly the same from three models show that, broadly speaking, the choice of models affects only the magnitude of deviation of elasticities from unity, the deviation with one method being a monotone increasing function of the deviation with another method.

On the Clustering of States Based on the Pattern and Structure of Consumption, M. Mukherjee, Hemlata Mukherjee and D. B. Lahiri, Indian Statistical Institute, Calcutta

This paper is concerned with a method of cluster formation. The method has been used to obtain clusters of the Indian States which are large distinct regions. Some defined notions of the pattern and structure of consumption have been used to characterize the States. The empirical work is based on the National Sample Survey data on household consumption expenditure. In recent rounds of the National Sample Survey, we have gotten tabulated results of per capita expenditure of a few groups of items of consumption by the States of India as well as for the country as a whole separately for rural and urban areas. In the absence of any readily available Statewise results giving pooled estimates for rural and urban areas, we have confined our study to rural areas alone. A similar study for urban areas is possible and may be taken up. The groups of items distinguished are: (1) cereals and cereal substitutes, (2) pulses, (3) milk and milk products, (4) other food, (5) clothing, (6) fuel and light, (7) other non-food items. Apart from this, we naturally have the estimate of the aggregate consumption expenditure.

It is possible to work out the shares of the individual groups of items in the total expenditure of each State. The vector of the seven percentage shares may be said to represent the *pattern of consumption* of a State. One object of the paper is to see whether it is possible to classify the States into a few groups or clusters of States following some criterion of similarity of the pattern of consumption expenditure. The pattern thus conceived, however, is unaffected by the average per capita expenditure of a State, and two States with widely varying per capita expenditures may conceivably have the same pattern of expenditure. We have, therefore, introduced the notion of the *structure of consumption* of a State defined by a vector of the seven estimates of per capita expenditure on the items mentioned. The second object of the paper is to obtain a few groups or clusters of States on the basis of some criterion of similarity of the structure of consumption expenditure. Finally, since the per capita expenditures on the different items of consumption (variables) are correlated, we have tried to obtain a third type of group or cluster of States based on a set of uncorrelated variables which are linear functions of the original variables. The variables here are the average values of the States; they do not have reference to individuals or households. Since our primary concern in this preliminary study is the formation of clusters of states based on certain characteristics of States, we have not paid attention to the original variables on which the State averages are based. It may be recalled that J.R.N. Stone has also worked with such aggregative variables for a comparison of the economic structure of regions in the U. K. based on the concept of distance. A fuller analysis should, however, cover this aspect of the problem for obvious