INTER-OCCUPATION DIFFERENCES IN THE PATTERN OF MONETIZED AND NON-MONETIZED CONSUMER EXPENDITURE IN RURAL INDIA*

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This study attempts to examine the inter-occupational differences in the patterns of cash and in-kind expenditure in rural India on the basis of a special tabulation of The National Sample Survey (NSS), 18th round (February 1963–January 1964) consumer expenditure data. The occupational groups considered here are (i) cultivators, (ii) agricultural labourers, (iii) other agriculture, and (iv) non-agricultural occupations.

The analysis is carried out primarily in terms of curves relating item-specific cash/kind expenditure to total cash/total kind expenditure for fifteen selected item-groups of expenditure. For each item-occupation combination, four two-parameter forms of Engel curve together with the log-log-inverse form are estimated and the comparisons across occupation groups are made separately on the basis of each of the two-parameter curve forms which were found to give the best fit for at least one occupation group as well as the log-log-inverse form, using analysis of covariance technique.

The results indicate that so far as the cash components of item expenditures are concerned, the pattern of expenditure is considerably influenced by occupational factors. It is observed that cultivators have a cash expenditure pattern different from those of agrictural labourers and of households with non-agricultural activities. The comparison of the kind expenditure patterns does not, however, reflect any clear picture primarily because in most cases the itemwise kind expenditure functions could not be estimated satisfactorily. This analysis also suggests that the specification of itemwise cash and kind expenditure functions employed here may not be the most satisfactory ones in an economy with a high degree of non-monetization and therefore alternative specifications need be examined.

1. INTRODUCTION

A number of studies have been made to analyse the variation in the pattern of consumer expenditure across different occupation groups in India. These studies, based generally on the family budget data obtained by the National Sample Survey (NSS) considered rather broad occupation groups [3, 5, 9]. More specifically, in most of these studies no distinction was made between cultivators and agricultural labourers—the two important groups in rural India between which considerable difference in consumption patterns is expected to exist.[1]

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[1]A brief review of existing studies on inter-occupational difference in the pattern of consumer expenditure in India has been made in [2] and hence is not repeated here. To our knowledge, no study has so far been made to analyse the occupational variation in cash and kind consumer expenditure.

However, in general all these studies indicate significant inter-occupation differences in the pattern of consumer expenditure in India. An earlier paper [2] by the present authors showed, in particular, that agricultural labourers have a consumer expenditure pattern different from those of other occupation groups in rural India. The present study attempts a refinement of the earlier results in one direction, viz., to see how far inter-occupational differences in the consumer expenditure pattern of rural households in India could be explained through a detailed analysis of the cash and kind components of item expenditures. Accordingly, household consumer expenditure on various items have been broken up into two parts—monetized or cash expenditures in the sense of being paid for in money and non-monetized or kind expenditure involving no such cash payment, and inter-occupational differences have been examined separately for cash and kind expenditure patterns.

The rationale of analysing behavioural differences separately for cash and kind components of item expenditure across occupation groups in rural India is essentially as follows. In an economy like that of rural India a substantial part of total transactions takes a non-monetized form.[2] This is particularly true for cultivators who consume a part of their own output and also for agricultural labourers who quite often receive wage payments in kind. There is a presumption that a behavioural difference exists in respect of cash and kind expenditure since these two types of consumer expenditures may be governed by altogether different factors.[3] Finally, there may be considerable occupation effects in consumer behaviour in respect of cash/kind consumption.

It should, however, be emphasized that studies of the role of non-monetized consumption in the theory of consumer behaviour and the measurement of its degree in household consumption is by itself important for a predominantly agricultural and developing economy like India for various other reasons. First, a knowledge about the relationship between the degree of monetization and the course of economic development might be useful in various developmental policy formulations. Secondly, such studies may be useful in developing more satisfactory methods of treatment of non-monetary transactions in national income accounting and demand projection exercises. Thus, for example, if one is interested in estimating the change in the expenditure on a specific item of consumption due to a change in total expenditure on all items, it is probably better to break up item and total expenditures into their cash and kind components. It has, in fact, been claimed by Mukherjee and Rao [8] that whereas cruder estimates of item expenditure may be obtained from relationships involving expenditure on the specific item and total consumer expenditure, for more accurate estimates of item expenditure or of its cash or kind components it is

[2]It may be noted that non-monetary transactions could be of several kinds. We shall be concerned here only with the consumption part of such transactions. For a detailed discussion about the different kinds of non-monetary transactions, see Mukherjee [6].

[3]Tendulkar [10], for example, observed on the basis of a time series study of cash and kind components of food and total consumer expenditure of rural households in Uttar Pradesh, that while cash expenditure followed an inventory adjustment mechanism, the kind expenditures were governed by the habit-formation process.

absolutely essential to split up total consumer expenditure into its cash and kind components and use them as explanatory variables instead of their sum alone.[4]

2. Material Analysed

The present study is based on data obtained from a special tabulation of the 18th round NSS (February 1963–January 1964) household budget enquiry. This tabulation provides, among other things, occupation group-wise estimates of average monthly per capita cash (e_m), kind (e_k) and total ($e = e_m + e_k$) expenditure on each of 15 selected item-groups and the corresponding all-item cash (E_m), all-item kind (E_k)[5] and total ($E = E_m + E_k$) consumer expenditure of households classified in turn by levels of E_m, E_k and E for rural and urban India separately. Since the primary interest here is to examine the differences in consumption pattern across certain agricultural occupations, the rural sector has only been considered.

It may be mentioned that in the NSS enquiries, industry and occupation status of the sampled households are recorded in a six digit code, the first three digits of which represent the industry while the last three digits indicate the occupation. A household's occupation-type is determined by the major source of income during the year preceding the date of enquiry. Based on these codes the present tabulation classified the sampled rural households of 18th round NSS into four groups, viz., (i) cultivators, (ii) agricultural labourers, (iii) other agricultural occupations and (iv) non-agricultural occupation. The coverage of these groups is briefly as follows. Cultivators include both owner and tenant cultivators who operate on land with household and/or hired labour. Agricultural labourers include those households for which agricultural wage employment constitutes the major source of income.[6] Other agricultural occupations primarily include activities of rural artisans. Finally, non-agricultural occupation is the residual group.

As regards the coverage of items of expenditure, all the 15 item groups for which necessary estimates are available have been taken up in the study. These items are (1) cereals, (2) milk, (3) milk products, (4) pulses, (5) oils, (6) vegetables, (7) fruits, (8) fish, egg etc., (9) sugar, (10) spices, (11) beverages, (12) all-food, (13) tobacco, (14) fuel and light, and (15) services. It may be noted that the items covered here account for roughly 80 percent of total household consumer expenditure for the groups other agriculture and non-agriculture, and about 87 percent and 77 percent respectively for agricultural labourers and cultivators.

[4]For a detailed discussion on the importance of studying the nature and role of non-monetized transactions, see Mukherjee [6].

[5]In the NSS enquiries, in addition to data on total consumption of items, information about cash purchases, goods received in exchange for services, consumption out of homegrown stock, gifts and loans are also collected for the reference period of one month preceding the date of enquiry. In the present tabulation the monetized part of total consumption of an item is taken to be equal to the cash purchases and the non-monetized part is taken as the residual from total consumption of the item. This procedure gives only approximate figures for kind consumption as the entire quantity purchased during the reference period need not be consumed during that period. An attempt to get better approximation to cash and kind consumption by adjusting the inventory of consumption on the basis of other detailed information appeared to be computationally prohibitive and hence was not done.

[6]The term agricultural wage employment is defined as employment in the capacity of a labourer on hire (paid in cash and/or kind) or an exchange in agricultural activities.

Table 1 presents the itemwise average per capita cash and kind expenditures separately for each of the four occupation groups and all occupations taken together along with some general information.

TABLE 1

AVERAGE MONTHLY PER CAPITA CASH/KIND EXPENDITURE: NSS 18TH ROUND, ALL-INDIA RURAL, COMBINED SAMPLE, RUPEES

Serial Number (1)	Item (2)	Cultivators		Agricultural labourers		Other agriculture		Non-agriculture		All occupations	
		cash (3)	kind (4)	cash (5)	kind (6)	cash (7)	kind (8)	cash (9)	kind (10)	cash (11)	kind (12)
1	Cereals	2.42	7.19	5.06	3.15	5.25	3.45	6.17	2.12	3.70	5.37
2	Milk	0.18	0.95	0.16	0.21	0.21	0.87	0.48	0.40	0.24	0.70
3	Milk products	0.26	0.56	0.09	0.09	0.16	0.53	0.37	0.21	0.25	0.41
4	Pulses	0.50	0.62	0.53	0.19	0.71	0.38	0.73	0.15	0.55	0.44
5	Oils	0.59	0.10	0.43	0.01	0.66	0.08	0.67	0.02	0.58	0.07
6	Vegetables	0.46	0.23	0.37	0.13	0.54	0.18	0.62	0.08	0.48	0.18
7	Fruits	0.15	0.09	0.09	0.04	0.24	0.07	0.24	0.06	0.16	0.07
8	Fish, eggs, etc.	0.26	0.13	0.24	0.12	0.41	0.12	0.42	0.11	0.29	0.12
9	Sugar	0.71	0.15	0.36	0.04	0.71	0.11	0.65	0.03	0.64	0.10
10	Spices	0.56	0.10	0.56	0.04	0.65	0.09	0.61	0.04	0.57	0.08
11	Beverages	0.33	0.03	0.27	0.13	0.61	0.13	0.78	0.17	0.41	0.08
12	All-food	5.96	9.53	7.48	3.94	9.71	5.82	11.02	3.24	7.33	7.18
13	Tobacco	0.43	0.02	0.39	0.04	0.49	0.01	0.48	0.01	0.44	0.02
14	Fuel and light	0.46	1.07	0.37	0.96	0.55	1.13	0.84	0.71	0.52	0.98
15	Services	0.56	0.18	0.24	0.03	0.76	0.20	0.58	0.02	0.51	0.12
	All	12.11	11.43	11.19	5.24	17.08	7.31	17.58	4.16	13.59	8.77
	Proportion of estimated number of persons		59.96		17.87		1.92		20.25		100.00
	Number of sample households		11,784		4,247		455		5,055		21,541

It may be seen that the per capita total expenditure as well as its cash and kind components show considerable variation across occupation groups. The monthly per capita total expenditure is highest for other agriculture (Rs. 24.39) followed by cultivators (Rs. 23.54), non-agriculture (Rs. 21.74) and agricultural labourers (Rs. 16.43). So far as monthly per capita total kind expenditure is concerned, the picture is however somewhat different. In this case cultivators have the highest expenditure (Rs. 11.43) followed by other agriculture (Rs. 7.31), agricultural labourers (Rs. 5.24) and, as expected lastly by non-agriculture (Rs. 4.16).

As regards the importance of various items in terms of kind expenditure, for all the four occupation groups the monthly per capita kind expenditure is highest for cereals, followed by fuel and light and milk. There are, however, considerable inter-occupational differences in the itemwise average kind expenditures. For cereals, for example, it is very much higher for cultivators than those for the other three occupations groups. For milk also cultivators have considerably higher kind expenditure as compared to agricultural labourers and non-agricultural occupa-

tions. The inter-occupational difference in average kind expenditure on fuel and light is however not so pronounced.

3. Rate of Non-monetization and Related Ratios

To have an overall view of the extent of non-monetization for different occupation groups the item-wise rates of non-monetization (e_k/e) and the ratio of item specific kind expenditure to total kind expenditure (e_k/E_k) have been calculated for each of the four occupation groups as also for all occupations, using the classification of households by total consumer expenditure (E). These ratios are presented in Table 2 along with the Engel ratios (i.e., expenditure on a particular item expressed as a proportion of total consumer expenditure).

Table 2 indicates that the Engel ratio for all-food items is highest for agricultural labourers (69.5 percent) and lowest for the other agriculture group (63.7 percent). As a single item of expenditure the most important item is, of course, cereals, though the Engel ratio for cereals varies widely across occupation groups. As regards the other items, while for some items, e.g., vegetables and fish, eggs, etc., the Engel ratios vary little across occupation groups, for other items such as milk, milk products, sugar and fruits the Engel ratios for agricultural labourers are considerably lower than those of the other groups.

Coming to rates of non-monetization, it will be seen that for cereals the non-monetization ratio (e_k/e) is highest for cultivators (74.8 percent) followed by other agriculture (39.7 percent), agricultural labourers (38.3 percent) and non-agricultural occupations (25.6 percent). High rates of non-monetization are also observed for milk, milk products and fuel and light. For most of the items considered here, the non-monetization ratio is highest for cultivators and lowest for non-agricultural occupations, agricultural labourers and other agricultural occupations holding intermediate positions.

Finally, the ratio of item-specific kind expenditure to total kind expenditure (e_k/E_k) indicate that although there is considerable inter-occupational variation, the largest part of total kind expenditure is on cereals for all the occupation groups. Here again the highest figure is for cultivators (62.9 percent), with agricultural labourers (60.1 percent), non-agriculture (51.0 percent) and other agricultural occupations (47.2 percent) appearing in order.

4. Engel Curve Analysis of Occupationwise Expenditure Patterns

In order to analyse the occupational differences in the pattern of consumer expenditure, Engel curves were fitted to cash and kind expenditure data separately. Four two-parameter forms, viz., linear (L), double-log (DL), semi-log (SL) and log-inverse (LI), and the three-parameter log-log-inverse (LLI) form have been considered here. All these forms have been fitted for each item and occupation group by the method of weighted least squares using the percentage of estimated population in different size classes as weights.

Actually estimation of item specific cash and kind expenditure functions raises both theoretical problems of specification of the functional form and problems of estimation arising out of the nature of the existing data. So far as the

TABLE 2

RATES OF NON-MONETIZATION (e_k/e), ENGEL RATIOS (e/E) AND PROPORTION OF SPECIFIC KIND EXPENDITURE TO TOTAL KIND EXPENDITURE (e_k/E_k); BY SELECTED ITEMS AND OCCUPATION GROUPS: NSS 18th ROUND, ALL-INDIA RURAL COMBINED SAMPLE

Serial Number	Items	Cultivators			Agricultural Labourer			Other Agriculture			Non-agriculture			All-occupation		
		$\frac{e_k}{e}$	$\frac{e}{E}$	$\frac{e_k}{E_k}$	$\frac{e_k}{e}$	$\frac{e}{E}$	$\frac{e_k}{E_k}$	$\frac{e_k}{e}$	$\frac{e}{E}$	$\frac{e_k}{E_k}$	$\frac{e_k}{e}$	$\frac{e}{E}$	$\frac{e_k}{E_k}$	$\frac{e_k}{e}$	$\frac{e}{E}$	$\frac{e_k}{E_k}$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1	Cereals	0.748	0.408	0.629	0.383	0.500	0.601	0.397	0.357	0.472	0.256	0.381	0.510	0.592	0.415	0.612
2	Milk	0.841	0.048	0.083	0.568	0.023	0.040	0.798	0.046	0.120	0.455	0.041	0.096	0.737	0.043	0.083
3	Milk products	0.683	0.035	0.049	0.500	0.011	0.017	0.779	0.028	0.072	0.362	0.027	0.051	0.621	0.030	0.046
4	Pulses	0.554	0.048	0.054	0.264	0.044	0.036	0.349	0.045	0.052	0.171	0.041	0.036	0.440	0.045	0.050
5	Oils	0.145	0.029	0.008	0.022	0.028	0.019	0.107	0.031	0.011	0.029	0.032	0.004	0.108	0.030	0.008
6	Vegetables	0.333	0.030	0.020	0.260	0.030	0.025	0.247	0.030	0.025	0.114	0.032	0.019	0.273	0.030	0.020
7	Fruits	0.391	0.097	0.008	0.308	0.008	0.008	0.219	0.013	0.010	0.200	0.014	0.014	0.304	0.011	0.008
8	Fish, eggs, etc.	0.333	0.017	0.011	0.333	0.022	0.023	0.226	0.022	0.016	0.208	0.025	0.027	0.293	0.019	0.014
9	Sugar	0.174	0.037	0.013	0.100	0.024	0.008	0.134	0.033	0.015	0.044	0.031	0.007	0.135	0.034	0.011
10	Spices	0.152	0.027	0.008	0.067	0.036	0.008	0.122	0.030	0.012	0.062	0.030	0.009	0.123	0.030	0.009
11	Beverages	0.086	0.015	0.003	0.325	0.024	0.025	0.178	0.030	0.018	0.179	0.045	0.041	0.163	0.022	0.009
12	All-food	0.615	0.658	0.834	0.345	0.695	0.752	0.375	0.637	0.797	0.227	0.656	0.779	0.495	0.662	0.820
13	Tobacco	0.044	0.018	0.002	0.093	0.026	0.008	0.020	0.020	0.001	0.020	0.023	0.002	0.044	0.021	0.002
14	Fuel and light	0.699	0.065	0.094	0.722	0.081	0.183	0.673	0.069	0.154	0.458	0.071	0.171	0.653	0.070	0.112
15	Services	0.243	0.031	0.016	0.111	0.016	0.006	0.208	0.039	0.027	0.033	0.027	0.005	0.191	0.029	0.040
16	All-items	0.663	1.000	1.000	0.319	1.000	1.000	0.300	1.000	1.000	0.192	1.000	1.000	0.392	1.000	1.000

problem of specification is concerned, one would prefer to use the functional specification $e_m = f_m(E_m, E_k)$ and $e_k = f_k(E_m, E_k)$ for individual items.[7] For comparing occupation groupwise cash and kind expenditure patterns one should therefore consider the itemwise f_m and f_k functions. This however raises certain problems of estimation because of the grouped nature of the data. Precisely, as in the present case when only one-way classifications of the observations by several independent variables are available, estimation of a multiple regression, particularly the estimation of sampling variances of the estimated regression coefficients, poses a problem which is yet to be resolved.[8] Hence, simpler forms viz., $e_m = f(E)$, $e_m = f(E_m)$, $e_m = f(E_k)$, $e_k = f(E)$, $e_k = f(E_m)$ and $e_k = f(E_k)$ have been considered here.

For each item-occupation group combination these functions have been estimated using the data classified by the respective regressor. It was seen that by and large $e_m = f(E_m)$ and $e_k = f(E_k)$ estimated from E_m and E_k classifications respectively performed most satisfactorily in terms of the correlation coefficient. To illustrate this the coefficients of determination (R^2) associated with the log-log-inverse form of itemwise cash and kind expenditure functions for the all occupation groups using $E_m/E_k/E$ as the single regressor are presented in Table 3. In this table it may be observed that except for cash expenditure on vegetables

TABLE 3

COEFFICIENT OF DETERMINATION (R^2) ASSOCIATED WITH THE LOG-LOG-INVERSE FORM OF CASH/KIND EXPENDITURE FUNCTIONS WITH ALTERNATIVE REGRESSORS BY ITEMS FOR THE ALL-OCCUPATION GROUP, NSS 18TH ROUND ALL-INDIA RURAL COMBINED SAMPLE

Serial Number (1)	Item (2)	$e_m = f(E_m)$ (3)	$e_m = f(E_k)$ (4)	$e_m = f(E)$ (5)	$e_k = f(E_m)$ (6)	$e_k = f(E_k)$ (7)	$e_k = f(E)$ (8)
1	Cereals	0.998	0.977	0.945	0.894	0.999	0.985
2	Milk	0.993	0.952	0.996	0.862	0.988	0.955
3	Milk products	0.991	0.815	0.941	0.891	0.990	0.936
4	Pulses	0.998	0.923	0.989	0.806	0.995	0.989
5	Oils	0.993	0.935	0.989	0.596	0.996	0.958
6	Vegetables	0.916	0.959	0.991	0.587	0.970	0.973
7	Fruits	0.995	0.959	0.984	0.660	0.873	0.905
8	Fish, eggs, etc.	0.992	0.782	0.982	0.729	0.889	0.958
9	Sugar	0.998	0.963	0.991	0.625	0.987	0.926
10	Spices	0.995	0.952	0.989	0.284	0.983	0.701
11	Beverages	0.996	0.976	0.996	0.592	0.844	0.816
12	All-food	0.998	0.982	0.994	0.859	0.999	0.988
13	Tobacco	0.961	0.621	0.941	0.021	0.350	0.736
14	Fuel and light	0.994	0.952	0.988	0.838	0.986	0.991
15	Services	0.991	0.922	0.996	0.532	0.987	0.952

[7] An essential argument in favour of this type of specification is that the effect of a change in E_m on e_m or e_k is likely to be different from that of a change in E_k.

[8] Haitovsky's [4] well-known procedure of estimating a multiple regression equation from various one-way classifications of the basic data is based on a very objectionable assumption about the covariances of the random disturbances across classifications and hence is of little practical help.

and kind expenditure on fruits, fish, egg, etc., and tobacco, in all cases the respective cash/kind expenditure functions are best explained when total cash/kind expenditure is taken as the regressor.[9] For this reason in subsequent analysis $e_m = f(E_m)$ and $e_k = f(E_k)$ have been taken as the specification of the cash/kind expenditure function for individual items.

As normally expected, for any specific item the best-fitting algebraic form of cash/kind expenditure function was found to differ across occupation groups. It was therefore decided to examine the inter-occupation differences in the pattern of consumer expenditure on the basis of all the two-parameter forms giving best fit for at least one occupation group, as well as the LLI form. To decide upon the best fitting two-parameter form for each item-occupation group pair the squared correlation coefficient between the observed and the predicted item expenditures (R_y^2) has been used.

Table 4A and 4B present the R_y^2 for the best-fitting two-parameter form and the LLI form for each item-occupation group combination for $e_m = f(E_m)$ and $e_k = f(E_k)$ respectively. It may be pointed out that these R_y^2's are generally more satisfactory for cash expenditure functions than for kind expenditure functions. Specifically, e_k for such items as fruits, fish, eggs, etc., and beverages are not satisfactorily explained by the regression equations. These items, therefore, have been dropped in subsequent analysis.

5. Cash/kind Expenditure Elasticities

For a preliminary examination of the extent of inter-occupational differences in the cash/kind expenditure patterns, the cash/kind expenditure elasticities from the estimated itemwise cash/kind expenditure functions for different occupation groups have been compared.

It should be mentioned that these elasticities measure the responsiveness of itemwise cash/kind expenditures to variation in total cash (E_m)/total kind (E_k) expenditure and not to the change in total consumer expenditure (E). Moreover, the same level of E_m/E_k may imply different levels of E for the various occupation groups. Thus, when the cash/kind expenditure functions are of variable elasticities form, evaluation of these elasticities at the same level of E_m/E_k for all groups does not necessarily lead to equalization of the corresponding levels of E. However, inter-occupational comparison of cash/kind expenditure elasticities would not be meaningful unless the effects of differences in levels of E across occupation groups are also eliminated by calculating the elasticities at levels of E_m/E_k corresponding to a common level of E for all the occupation groups.

Instead of going into the refined comparison of cash and kind expenditure elasticities across occupation groups by eliminating the inter-occupation differences in (i) levels of living as indicated by E and (ii) the degree of monetization, a rough comparison has been made here on the basis of the average

[9]Mukherjee and Prasada Rao [8] examined the questions regarding the choice of regressor in cash/kind expenditure functions. They observed that although f_m and f_k were best specifications, $e_k = f(E_k)$ and $e_m = f(E_m)$ were equally good for many items. Their results are, however, vitiated by the fact that they used expenditure data classified by levels of E and ignored the problems of estimation of multiple regression equations arising in such a situation.

TABLE 4A

SQUARED CORRELATION COEFFICIENTS BETWEEN OBSERVED AND PREDICTED ITEM EXPENDITURES ASSOCIATED WITH THE BEST FITTING TWO-PARAMETER FORM AND THE LLI FORM OF $e_m = f(E_m)$ BY ITEM AND OCCUPATION GROUP: NSS 18TH ROUND, ALL-INDIA RURAL COMBINED SAMPLE

Item group	Occupation group									
	Cultivator		Agricultural labourer		Other agriculture		Non-agriculture		All-occupations	
(1)	2-parameter (2)	LLI (3)	2-parameter (4)	LLI (5)	2-parameter (6)	LLI (7)	2-parameter (8)	LLI (9)	2-parameter (10)	LLI (11)
1 Cereals	0.973 (LI)	0.958	0.976 (SL)	0.988	0.800 (LI)	0.885	0.995 (LI)	0.995	0.992 (LI)	0.990
2 Milk	0.900 (L)	0.894	0.888 (L)	0.740	0.660 (SL)	0.660	0.947 (L)	0.887	0.942 (L)	0.847
3 Milk products	0.983 (L)	0.978	0.876 (DL)	0.581	0.915 (L)	0.665	0.952 (L)	0.884	0.968 (L)	0.928
4 Pulses	0.953 (DL)	0.992	0.950 (L)	0.968	0.900 (L)	0.827	0.936 (DL)	0.933	0.976 (DL)	0.993
5 Oils	0.944 (L)	0.980	0.959 (DL)	0.964	0.890 (DL)	0.891	0.970 (DL)	0.951	0.972 (DL)	0.978
6 Vegetables	0.961 (DL)	0.972	0.961 (DL)	0.942	0.916 (SL)	0.945	0.974 (DL)	0.952	0.978 (DL)	0.965
7 Fruits	0.988 (L)	0.978	0.923 (L, SL)	0.900	0.924 (DL)	0.888	0.974 (L)	0.968	0.991 (L)	0.979
8 Fish, eggs, etc.	0.918 (DL)	0.939	0.926 (DL)	0.864	0.882 (LI)	0.852	0.910 (L)	0.862	0.932 (DL)	0.928
9 Sugar	0.995 (L)	0.990	0.936 (DL)	0.866	0.925 (L)	0.901	0.951 (DL)	0.934	0.997 (L)	0.998
10 Spices	0.985 (L)	0.956	0.613 (L)	0.629	0.845 (L)	0.838	0.981 (DL)	0.979	0.990 (L)	0.979
11 Beverages	0.942 (DL)	0.938	0.948 (L)	0.915	0.866 (L)	0.700	0.966 (DL)	0.955	0.972 (L)	0.943
12 All-food	0.965 (DL)	0.995	0.973 (L)	0.993	0.942 (SL)	0.960	0.939 (SL, DL)	0.993	0.939 (DL)	0.995
13 Tobacco	0.914 (DL)	0.954	0.961 (L)	0.959	0.781 (LI)	0.781	0.990 (L)	0.991	0.969 (DL)	0.943
14 Fuel and light	0.990 (L)	0.990	0.894 (L)	0.846	0.781 (DL)	0.703	0.971 (DL)	0.921	0.987 (L)	0.971
15 Services	0.961 (DL)	0.933	0.773 (DL)	0.636	0.880 (DL)	0.833	0.930 (DL)	0.998	0.950 (DL)	0.995

TABLE 4B

SQUARED CORRELATION COEFFICIENTS BETWEEN OBSERVED AND PREDICTED ITEM EXPENDITURES ASSOCIATED WITH THE BEST FITTING TWO-PARAMETER FORM AND THE LLI FORM OF $e_k = f(E_k)$ BY ITEM AND OCCUPATION GROUP: NSS 18TH ROUND ALL-INDIA RURAL COMBINED SAMPLE

Item group	Occupation group									
	Cultivator		Agricultural labourer		Other agriculture		Non-agriculture		All-occupations	
(1)	2-parameter (2)	LLI (3)	2-parameter (4)	LLI (5)	2-parameter (6)	LLI (7)	2-parameter (8)	LLI (9)	2-parameter (10)	LLI (11)
1 Cereals	0.950 (SL)	0.997	0.972 (SL)	0.971	0.962 (SL)	0.982	0.988 (SL)	0.995	0.962 (SL)	0.999
2 Milk	0.861 (L)	0.518	0.816 (DL)	0.662	0.925 (DL)	0.916	0.834 (L)	0.413	0.873 (L)	0.557
3 Milk products	0.863 (DL)	0.463	0.720 (L)	0.615	0.537 (LI)	0.584	0.781 (L)	0.361	0.847 (DL)	0.458
4 Pulses	0.855 (DL)	0.836	0.930 (L)	0.957	0.825 (L)	0.615	0.888 (L)	0.889	0.872 (DL)	0.811
5 Oils	0.899 (L)	0.894	0.823 (L)	0.820	0.234 (L)	0.233	0.857 (L)	0.858	0.900 (L)	0.598
6 Vegetables	0.701 (DL)	0.485	0.770 (DL)	0.580	0.488 (L)	0.555	0.922 (DL)	0.917	0.745 (L)	0.327
7 Fruits	0.432 (L)	0.244	0.114 (L)	0.191	0.298 (L)	0.220	0.685 (L)	0.317	0.530 (L)	0.345
8 Fish, eggs, etc.	0.625 (DL)	0.253	0.462 (L)	0.394	0.386 (L)	0.420	0.279 (L)	0.334	0.610 (L)	0.345
9 Sugar	0.939 (L)	0.733	0.486 (L)	0.463	0.477 (DL)	0.658	0.748 (L)	0.718	0.927 (L)	0.618
10 Spices	0.548 (L)	0.602	0.692 (DL)	0.687	0.618 (L)	0.710	0.680 (L)	0.622	0.597 (L)	0.656
11 Beverages	0.501 (L)	0.619	0.378 (L)	0.380	0.189 (L)	0.125	0.395 (DL)	0.192	0.563 (L)	0.608
12 All-food	0.996 (L)	0.995	0.942 (SL)	0.933	0.990 (L)	0.990	0.972 (L)	0.983	0.991 (L)	0.992
13 Tobacco	0.942 (LI)	0.938	0.330 (L)	0.910	0.362 (LI)	0.475	0.673 (L)	0.646	0.350 (L)	0.675
14 Fuel and light	0.914 (L)	0.943	0.487 (L)	0.838	0.554 (L)	0.585	0.854 (L)	0.857	0.872 (L)	0.985
15 Services	0.758 (DL)	0.966	0.462 (DL)	0.394	0.770 (DL)	0.704	0.604 (L, DL)	0.570	0.804 (DL)	0.969

elasticities ($\bar{\eta}$) for each item-occupation pair.[10] These itemwise average cash and kind elasticities corresponding to the best-fitting two-parameter form and the LI form have been presented in Tables 5A and 5B separately for each occupation group.

TABLE 5A

ESTIMATES OF AVERAGE CASH EXPENDITURE/KIND EXPENDITURE ELASTICITIES ($\bar{\eta}_m/\bar{\eta}_k$) BASED ON THE BEST FITTING TWO-PARAMETER CURVE BY ITEM AND OCCUPATION GROUP: NSS 18TH ROUND, ALL-INDIA RURAL COMBINED SAMPLE

Item group	Cultivator		Agricultural labourer		Other agriculture		Non-agriculture	
	$\bar{\eta}_m$	$\bar{\eta}_k$	$\bar{\eta}_m$	$\bar{\eta}_k$	$\bar{\eta}_m$	$\bar{\eta}_k$	$\bar{\eta}_m$	$\bar{\eta}_k$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1 Cereals	0.921 (LI)	0.861 (SL)	1.017 (SL)	1.575 (SL)	0.644 (LI)	1.449 (SL)	0.655 (LI)	1.785 (SL)
2 Milk	1.016 (L)	1.135 (L)	1.455 (L)	0.843 (DL)	0.967 (SL)	0.811 (DL)	1.420 (L)	1.002 (L)
3 Milk products	1.200 (L)	1.119 (DL)	1.384 (DL)	1.208 (L)	1.172 (L)	1.129 (DL)	1.509 (L)	1.284 (L)
4 Pulses	0.778 (DL)	0.857 (DL)	0.794 (L)	1.025 (L)	0.887 (L)	1.256 (L)	0.740 (DL)	1.100 (L)
5 Oils	0.562 (DL)	1.386 (L)	0.615 (DL)	2.145 (L)	0.749 (DL)	1.144 (L)	0.647 (DL)	1.029 (L)
6 Vegetables	0.620 (DL)	0.597 (DL)	0.682 (DL)	0.559 (DL)	0.731 (SL)	1.229 (L)	0.759 (DL)	0.505 (DL)
7 Fruits	1.029 (DL)	—	1.090 (DL)	—	1.222 (DL)	—	1.260 (L)	—
8 Fish, eggs, etc.	0.794 (DL)	—	0.990 (DL)	—	0.753 (LI)	—	1.026 (L)	—
9 Sugar	0.870 (L)	1.718 (L)	0.919 (DL)	1.143 (L)	1.077 (L)	1.183 (DL)	0.857 (DL)	1.393 (L)
10 Spices	0.445 (L)	1.988 (L)	1.107 (L)	0.605 (DL)	0.444 (L)	1.216 (L)	0.472 (DL)	0.688 (L)
11 Beverages	0.918 (DL)	—	1.241 (L)	—	1.272 (L)	—	1.387 (DL)	—
12 All-food	0.954 (DL)	1.004 (L)	0.917 (L)	1.510 (SL)	0.772 (SL)	1.127 (L)	0.931 (DL)	1.007 (L)
13 Tobacco	0.181 (DL)	1.353 (LI)	0.681 (L)	0.861 (L)	0.472 (LI)	0.998 (LI)	0.649 (L)	1.584 (L)
14 Fuel and light	0.744 (L)	0.590 (L)	0.818 (L)	0.688 (L)	0.819 (DL)	0.176 (LI)	0.875 (DL)	0.326 (L)
15 Services	1.247 (DL)	1.174 (DL)	1.068 (DL)	0.654 (DL)	1.534 (DL)	1.295 (DL)	1.289 (DL)	0.982 (DL)

[10]The average elasticity of an item from a variable elasticity Engel curve is a single measure of elasticity over the entire Engel curve. The obvious advantage of using this measure is that it becomes possible to summarise the whole curve by means of one number taking due care of the share of aggregate expenditure for the specific item accounted for by each expenditure class to its mean expenditure. It is defined as

$$\bar{\eta} = \int_0^\infty \eta_x \frac{E(y/x)}{E(y)} g(x)\, dx \quad \text{where}$$

η_x: variable elasticity at per capita total cash/kind expenditure x, $E(y/x)$ is the item expenditure predicted by the Engel curve, $g(x)$ is the density function of x and $E(y)$ is the mean level of item cash/kind expenditure. For computation procedure of $\bar{\eta}$ see [1].

TABLE 5B

ESTIMATES OF AVERAGE CASH EXPENDITURE/KIND EXPENDITURE ELASTICITIES ($\bar{\eta}_m/\bar{\eta}_k$) BASED ON THE LOG-LOG-INVERSE CURVE BY ITEM AND OCCUPATION GROUP: NSS 18TH ROUND, ALL-INDIA RURAL, COMBINED SAMPLE

Item Group (1)	Cultivator		Agricultural labourer		Other agriculture		Non-agriculture	
	$\bar{\eta}_m$ (2)	$\bar{\eta}_k$ (3)	$\bar{\eta}_m$ (4)	$\bar{\eta}_k$ (5)	$\bar{\eta}_m$ (6)	$\bar{\eta}_k$ (7)	$\bar{\eta}_m$ (8)	$\bar{\eta}_k$ (9)
1 Cereals	0.979	0.883	0.950	1.239	0.534	1.040	0.668	1.030
2 Milk	1.216	1.291	1.517	0.829	0.929	0.815	1.484	0.609
3 Milk products	1.206	1.715	1.893	0.921	1.600	1.234	1.582	1.073
4 Pulses	0.748	0.877	0.839	1.131	0.716	1.466	0.744	1.072
5 Oils	0.560	1.369	0.650	1.668	0.737	0.902	0.700	0.955
6 Vegetables	0.619	0.834	0.743	0.413	0.706	0.606	0.817	0.355
7 Fruits	1.068	—	1.158	—	1.493	—	1.267	—
8 Fish, eggs, etc.	0.774	—	1.074	—	0.954	—	1.142	—
9 Sugar	0.848	2.030	1.001	0.772	0.884	1.571	0.896	—
10 Spices	0.457	0.997	0.684	0.600	0.471	1.092	0.482	1.343
11 Beverages	0.921	—	1.267	—	1.447	—	1.510	0.515
12 All-food	0.914	1.076	0.974	1.139	0.733	1.121	0.822	1.114
13 Tobacco	0.432	1.558	0.637	1.440	0.503	0.654	0.654	1.185
14 Fuel and light	0.715	0.513	0.828	0.195	0.888	—	1.034	0.040
15 Services	1.421	1.748	1.297	0.610	1.786	2.268	1.747	1.031

For most of the item-occupation pairs the average cash expenditure elasticity ($\bar{\eta}_m$) differs from the corresponding kind expenditure elasticity ($\bar{\eta}_k$). That is, the responsiveness of item cash consumption to a change in E_m is different from that of kind consumption on the same item resulting from a change in E_k.[11] Secondly, for many of the items inter-occupational variations in the cash consumption elasticities are quite large. For kind consumption, the inter-occupational differences in the elasticities are, however, much more pronounced. These general impressions based on the elasticities from the two-parameter forms are confirmed, in most cases, by the elasticities computed from the LLI form.

6. TEST OF HOMOGENEITY OF ITEMWISE CASH AND KIND EXPENDITURE FUNCTIONS

In order to examine inter-occupational differences in cash and kind expenditure patterns, the analysis of covariance test has been performed for each of the

[11]It would perhaps be more interesting to examine whether the elasticity of cash consumption differs significantly from that of the kind consumption on an item when changes in total consumption are considered. One may compute these elasticities directly from fitted Engel curves of $e_m(e_k)$ on E based on the classification of households by total consumer expenditure. Alternatively, the same elasticities may be calculated indirectly by estimating the relationship between $e_m(e_k)$ on $E_m(E_k)$ and also $E_m(E_k)$ on E using, in each case, the classification of households by the relevant regressor and then combining the two elasticities by the formulae

$$\eta e_m, E = \eta e_m, E_m \times \eta E_m, E$$

and

$$\eta e_k, E = \eta e_k, E_k \times \eta E_k, E$$

where $\eta_{x,y}$ denotes the elasticity of x with respect to y. It should be noted, however, that certain statistical problems arise in using the above formulae.

itemwise cash/kind expenditure functions. These tests have been carried out in three stages. In the first stage all the four occupation groups have been taken together and the homogeneity of itemwise cash/kind expenditure functions across all the four occupation groups are tested; in the next stage, the non-agricultural occupation has been dropped and the tests are performed only for the three agricultural occupations; and in the final stage, pairwise homogeneity have been examined with the objective of identifying occupation pairs having homogeneous expenditure patterns. At each of these three stages, the overall homogeneity of itemwise cash/kind expenditure functions across occupation groups (i.e., the null hypothesis that all the parameters of the relevant expenditure function across occupation groups are same) have been tested for the two-parameter forms which gave best fit for at least one occupation group and also for the LLI form. If for any item the hypothesis of overall homogeneity is rejected for the tests based on a two-parameter form, further tests of homogeneity of slope/intercept have been done. For the sake of brevity, the results of the first two stages are reported here briefly and the details of only the pairwise tests are presented here.

So far as the first stage of tests are concerned, the results indicate considerable inter-occupation heterogeneity. For cash expenditure functions, complete homogeneity is established only for pulses. Kind expenditure functions also display, on the whole, considerable heterogeneity. However, in this case, tests based on alternative forms often gave conflicting results. Precisely, while LLI-based tests indicate heterogeneity in all the cases except fish, eggs, etc., and spices, tests based on the linear form (which in case of kind expenditure turned out to be as satisfactory as LLI in many cases) indicated heterogeneity in fewer cases.

Exclusion of the non-agricultural occupation group led only to marginal alteration in the picture of overall heterogeneity of cash/kind expenditure functions. For cash expenditure functions, the tests based on three agricultural occupations showed that in addition to pulses, cash expenditure functions for milk are also homogeneous across occupation groups. For kind expenditure functions no such effect of excluding the non-agricultural occupation is evident.

Coming to the result of the pairwise comparisons of itemwise cash/kind expenditure functions, the following observations may be made on the basis of results reported in Tables 6A and 6B.

Between cultivators (occupation 1) and agricultural labourers (occupation 2) the cash expenditure functions for all items are different except milk and pulses. For fuel and light the test based on the linear form indicated homogeneity while that based on LLI rejects it. In the case of beverages also while DL and LLI show heterogeneity, the linear form shows homogeneity. For cereals both SL and LI based tests indicated heterogeneity of slopes of the occupation-specific expenditure functions. For milk products, oils, vegetables, fruits and services the DL based tests indicated the heterogeneity of intercepts rather than of elasticities as the source of overall heterogeneity.[12] For all-food items both DL and L-based tests indicated that the slopes are heterogeneous. As regards the kind expenditure functions the results of homogeneity tests do not always give unequivocal answers. The overall picture is one of heterogeneity. However, for some items, viz., oils,

[12]For milk products, sugar, spices and tobacco the L-based tests indicate heterogeneity of slopes.

TABLE 6A

COMPUTED VALUES OF F-RATIOS ASSOCIATED WITH THE TEST OF OVERALL HOMOGENEITY OF ITEMWISE CASH EXPENDITURE FUNCTIONS FOR EACH OCCUPATION PAIR: NSS 18TH ROUND, ALL-INDIA RURAL, COMBINED SAMPLE

	Occupation pairs											
	1,2		1,3		1,4		2,3		2,4		3,4	
Item group (1)	Form (2)	F* (3)	Form (4)	F* (5)	Form (6)	F (7)	Form (8)	F (9)	Form (10)	F (11)	Form (12)	F (13)
1 Cereals	SL	62.57†	—	—	—	—	SL	9.68†	SL	15.39†	—	—
	LI	186.22†	LI	9.82‡	LI	101.60†	LI	8.20‡	LI	30.20†	LI	2.88
	LLI	141.11	LLI	7.62	LLI	72.25	LLI	12.95	LLI	38.35	LLI	3.70
2 Milk	L	1.07	L	0.74	L	33.87†	L	5.64†	L	10.05†	L	13.98†
	—	—	SL	0.28	—	—	SL	0.07†	—	—	SL	1.37
	LLI	3.03	LLI	0.95	LLI	14.49	LLI	2.89	LLI	18.01	LLI	7.07
3 Milk products	L	23.36†	L	16.13†	L	4.05†	L	1.48	L	13.78†	L	12.84†
	DL	110.12†	—	—	—	—	DL	0.14	DL	28.31†	—	—
	LLI	149.21	LLI	14.20	LLI	8.10	LLI	1.09	LLI	34.43	LLI	5.40
4 Pulses	L	3.43	L	1.34	—	—	L	0.13	L	3.10	L	1.30
	DL	2.19	DL	0.22	DL	1.88	—	—	DL	2.63	DL	0.06
	LLI	3.56	LLI	0.44	LLI	3.46	LLI	0.60	LLI	1.25	LLI	0.04
5 Oils	DL	64.67†	DL	4.70‡	DL	12.15‡	DL	3.10	DL	9.04‡	DL	0.57
	LLI	65.39	LLI	3.41	LLI	10.13	LLI	2.16	LLI	10.83	LLI	0.81
6 Vegetables	DL	37.43‡	DL	3.71	DL	5.86†	DL	1.43	DL	9.01‡	DL	0.64
	—	—	SL	0.42	—	—	SL	1.50	—	—	SL	0.23
	LLI	45.65	LLI	3.90	LLI	6.16	LLI	6.23	LLI	9.50	LLI	1.97

TABLE 6A—(*contd.*)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
7 Fruits	DL	50.09‡	DL	1.01	DL	9.19†	DL	3.22	DL	31.35†	DL	0.32
	LLI	36.59	LLI	0.90	LLI	5.34	LLI	2.34	LLI	19.84	LLI	0.85
8 Fish, eggs, etc.	DL	11.79†	DL	3.15	DL	7.42†	DL	1.33	DL	1.06	L	1.09
	—	—	LI	2.26	L	8.25†	LI	2.61	L	0.58	LI	0.33
	LLI	11.65	LLI	4.31	LLI	8.39	LLI	3.76	LLI	0.72	LLI	2.25
9 Sugar	L	79.17†	L	6.73‡	L	73.52†	L	6.47†	—	—	L	3.49†
	DL	235.38‡	—	—	DL	93.80‡	DL	5.67‡	DL	10.75‡	DL	0.43
	LLI	198.12	LLI	11.08	LLI	62.67	LLI	4.93	LLI	9.25	LLI	0.31
10 Spices	L	5.41†	L	0.76	L	10.39†	L	2.27	L	6.70†	L	0.60
	—	—	—	—	DL	10.30‡	—	—	DL	8.13†	DL	1.07
	LLI	9.91	LLI	0.26	LLI	13.11	LLI	2.13	LLI	10.35	LLI	0.70
11 Beverages	L	2.31	L	5.91†	—	—	L	5.50†	L	13.84†	L	2.49
	DL	59.91†	DL	1.60	DL	42.76†	—	—	DL	41.45†	DL	2.11
	LLI	36.02	LLI	1.69	LLI	30.21	LLI	4.20	LLI	36.69	LLI	2.57
12 All-food	L	13.92†	—	—	—	—	L	13.54†	L	3.47	SL	0.53
	DL	33.28†	DL	3.49	DL	27.58†	SL	0.12	DL	3.15	DL	0.52
	LLI	56.98	LLI	7.12	LLI	71.76	LLI	6.34	LLI	2.16	LLI	4.88
13 Tobacco	L	5.95†	LI	0.63	L	3.36	L	11.06†	L	10.43†	L	6.50†
	DL	9.65†	DL	1.02	DL	13.42†	LI	0.53	—	—	LI	0.10
	LLI	16.11	LLI	1.67	LLI	12.85	LLI	5.60	LLI	5.84	LLI	3.83
14 Fuel and light	L	3.05	L	0.94	L	41.79†	L	0.36	L	19.67†	—	—
	—	—	DL	1.36	DL	12.11†	DL	0.35	DL	19.49‡	DL	4.14‡
	LLI	19.90	LLI	1.31	LLI	22.25	LLI	0.29	LLI	29.97	LLI	5.63
15 Services	DL	33.78‡	DL	3.62‡	DL	17.86‡	DL	3.50	DL	1.75	DL	0.47
	LLI	41.51	LLI	3.55	LLI	38.30	LLI	1.43	LLI	2.51	LLI	1.11

*The degrees of freedom associated with F are (20, 2) for two parameter forms and (18, 3) for the LLI form. The 5 percent critical values of F are 3.49 and 3.10 respectively; corresponding 1 percent values are 5.85 and 5.09 respectively.

†Further test indicated that the slopes are different.

‡Further test indicated that the slopes are homogeneous, but the intercepts differ.

TABLE 6B

COMPUTED VALUES OF F-RATIOS ASSOCIATED WITH THE TESTS OF OVERALL HOMOGENEITY OF ITEMWISE KIND EXPENDITURE FUNCTIONS FOR EACH OCCUPATION PAIR: NSS 18TH ROUND, ALL-INDIA RURAL, COMBINED SAMPLE

	Occupation pair											
	1,2		1,3		1,4		2,3		2,4		3,4	
(1)	Form (2)	F (3)	Form (4)	F	Form (6)	F (7)	Form (8)	F (9)	Form (10)	F (11)	Form (12)	F (13)
1 Cereals	SL	3.66*‖	SL	0.28	SL	14.26*§	SL	2.38	SL	12.05*§	SL	11.68*§
	LLI	12.78*	LLI	102.90*	LLI	40.13*	LLI	112.75*	LLI	18.77*	LLI	199.72*
2 Milk	L	3.56*§	L	0.30	L	0.34	DL	57.65*‖	L	12.30*§	L	0.40
	DL	14.12*‖	DL	0.94	—	—	—	—	DL	60.16*‖	DL	3.53
	LLI	50.92*	LLI	1.35	LLI	19.64*	LLI	41.85*	LLI	20.07*	LLI	40.33*
3 Milk products	DL	14.63*‖	DL	0.47	DL	1.53	L	6.72*§	L	9.96*§	DL	1.05
	L	3.82*§	—	—	L	1.06	DL	14.91*‖	—	—	L	1.37
	LLI	33.50*	LLI	1.24	LLI	15.30*	LLI	10.53*	LLI	10.06*	LLI	7.84*
4 Pulses	DL	120.72*§	DL	11.42*§	DL	110.92*§	L	5.35*§	L	0.13	L	3.22
	LLI	42.62*	LLI	7.82*	LLI	18.74§	LLI	4.34*	LLI	5.60*	LLI	3.16
5 Oils‡	L	2.12	—	—	L	2.48	—	—	L	5.41*‖	—	—
	LLI	60.21*	—	—	LLI	20.80*	—	—	LLI	34.08*	—	—
6 Vegetables	DL	0.11	DL	0.13	DL	2.66	DL	0.18	DL	11.30*‖	DL	0.43
	—	—	L	0.57	—	—	L	2.24	—	—	L	4.38*§
	LLI	6.94*	LLI	1.24	LLI	17.65*	LLI	0.17	LLI	11.06*	LLI	0.65
7 Sugar	L	5.18*§	L	0.51	L	6.45*§	L	2.27	L	0.08	L	0.80
	LLI	9.35*	LLI	2.60	LLI	4.86*	LLI	0.45	LLI	5.22*	LLI	5.37*

TABLE 6B—(*contd.*)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
8 Spices	L	0.97	L	0.07	L	1.00	L	4.41*§	L	1.66	L	1.26
	DL	4.30*§	—	—	—	—	DL	0.55	DL	8.34*‖	—	—
	LLI	0.83	LLI	1.08	LLI	0.52	LLI	3.71*	LLI	1.57	LLI	3.29
9 All-food	L	1.81	L	0.11	L	0.21	L	0.54	L	0.63	L	0.27
	SL	1.72	—	—	—	—	SL	1.29	SL	0.77	—	—
	LLI	4.18*	LLI	1.75	LLI	7.79*	LLI	0.58	LLI	2.38	LLI	21.09*
10 Tobacco†	LLI	50.03*	LLI	19.80*	LLI	11.44*	LLI	8.52*	LLI	60.26*	LLI	1.80
11 Fuel and light	L	3.16	L	1.84	L	0.18	L	0.85	L	1.45	L	4.62*‖
	LLI	9.28*	LLI	1.92	LLI	42.42§	LLI	6.58*	LLI	25.69*	LLI	15.25*
12 Services	DL	7.87*§	DL	0.06	DL	5.62*‖	DL	4.25*§	DL	5.85*§	DL	3.16
	LLI	16.47*	LLI	0.52	LLI	15.15*	LLI	2.92	LLI	2.22	LLI	2.68

*Significant at 5 percent level.

†For the purpose of this comparison, the two-parameter forms were not used for tobacco since no single form was found to perform satisfactorily for any of the occupation pairs.

‡For this item all the forms of kind expenditure functions indicated very poor fit for occupation group 3. Thus no pairwise comparison was done for this group.

§Further test indicated that the slopes are different.

‖Further test indicated that the slopes are homogeneous, but the intercepts differ.

vegetables, spices, all-food and fuel and light, the test based on one form of kind expenditure function indicates overall homogeneity while that based on other form rejects it. For other items, viz., cereals, milk, milk products, pulses, sugar and services the kind expenditure functions differ across occupation. Further tests for these items based on two-parameter forms indicate that for cereals only the intercepts of SL functions are different; for milk and milk products while the DL elasticities are homogeneous the corresponding intercepts are different; for pulses and services even the DL elasticities are different; and finally for sugar the slopes of the linear functions are different for this occupation pair.

Between cultivators (occupation 1) and other agricultural occupations (occupation 3), the cash expenditure functions show a considerable degree of homogeneity. In fact, only for cereals, milk products and sugar are these functions found to be different for this pair of occupations. For cereals the LI-based test indicates heterogeneity of intercepts as the source of overall heterogeneity; L-based tests bring out that the slopes are different for milk products, while the intercepts are different for sugar. For this pair of occupations, the itemwise kind expenditure functions are also by and large similar. For all items except cereals, pulses and tobacco the kind expenditure functions turned out to be homogeneous. Here again tests based on two-parameter forms indicate that for cereals only the intercepts of SL curves are different and for pulses even the DL slopes are different.

For the occupation pair 1 and 4 (i.e., non-agricultural occupation group), the homogeneity of cash expenditure functions is established only for pulses. Slopes of two-parameter cash expenditure functions are found to be different for cereals (LI), milk (L), milk products (L), vegetables (DL), fruits (L, DL) and fish, eggs, etc. (L, DL).[13] Homogeneity of only the intercepts is observed in case of oils (DL), sugar (DL), spices (DL), services (DL) and all-food items (DL). The picture about the homogeneity of kind expenditure functions, however, is not clear because for most of the items the results of the tests appear to be form-specific. Only for cereals, pulses, sugar, spices and services do the results of overall homogeneity based on best-fitting two-parameter forms agree with those obtained on the basis of corresponding LLI forms. However, LLI-based tests indicate that for all the items except spices the kind expenditure functions for this occupation pair are different.

As between occupation groups 2 and 3, a clear cut picture of overall heterogeneity of cash expenditure functions emerges for cereals, sugar, beverages and all-food items. For vegetables and tobacco the results based on alternative curve forms do not agree. For all other items the cash expenditure functions turn out to be homogeneous. The corresponding picture about kind expenditure functions is, on the whole, one of overall heterogeneity. Here, only for vegetables, sugar and all-food items are the kind expenditure functions homogeneous. For cereals, fuel and light and services there is disagreement of conclusions based on different forms. The slopes of two-parameter forms are found to be different for milk products (L) and pulses (L). For milk (DL) and milk products (DL) the intercepts differ while the slopes are homogeneous.

[13]The parenthesis following an item name contains the name(s) of the two-parameter form(s) in respect of which these observations are made.

Cash expenditure functions for pulses, fish, eggs etc., all-food items and services are seen to be homogeneous for occupation groups 2 and 4. For this pair, cash expenditure functions for all other items are different. Only the slopes of the two parameter forms are found to be homogeneous for cereals (LI), milk products (DL), oils (DL), vegetables (DL), sugar (DL) and fuel and light (DL). In the case of cereals (SL), milk (L), milk products (L), fruits (L, DL), spices (L, DL), tobacco (L) and fuel and light (L) the difference of slopes is the source of overall heterogeneity of the cash expenditure functions. Corresponding results for kind expenditure functions also indicate considerable heterogeneity. Only for all-food items is homogeneity established, and for pulses, sugar, spices, fuel and light and services the results obtained from alternative forms differ. However, except fuel and light, in all other cases these differences are marginal in the sense that at the one percent level of significance the conclusions derived from alternative forms would be quite similar. Here it is seen that for cereals (SL, LI) and milk products (L) the slopes are different, while for milk (DL), oils (L), vegetables (DL) and spices (DL) the intercepts differ although the slopes are comparable across occupations.

The extent of homogeneity of cash expenditure patterns is quite remarkable for the occupation pair 3 and 4. For this pair, cash expenditure patterns are seen to be different only for milk and milk products. For these two items the slopes of the linear cash expenditure functions differ across occupations. As regards the homogeneity of kind expenditure functions, a number of anomalous results are obtained. However, most of the anomalies are resolved if inferences are made at the one percent level of significance. On the whole, kind expenditure functions are found to be different for cereals and fuel and light (LLI-based tests indicate that kind expenditure patterns for milk and all-food items are also different).

6. Conclusion

The results of the present exercise indicate that so far as the cash components of item expenditures are concerned, the pattern of expenditure is considerably influenced by occupational factors. It is observed that cultivators have a cash expenditure pattern different from that of agricultural labourers as well as of households with non-agricultural activities. The analysis of the kind expenditure patterns does not, however, reflect any clear picture primarily because of the fact that in most of the cases the itemwise kind expenditure functions could not be estimated satisfactorily. It appears that the specifications of itemwise cash and kind expenditure functions employed here may not be the most satisfactory ones in a highly non-monetized economy. In fact, a detailed study is in progress in which the methodological issues on specification and estimation of expenditure functions and elasticities as also other aspects of the problem are being examined.

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