Aggregate and Regional Demand Response Patterns in Pakistan

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1. INTRODUCTION

The econometric analysis of demand in Pakistan has, until recently, been a relatively neglected field of analysis. Much of the earlier work, reviewed in Ali (1985), consists of linear Engel curves based on grouped data published by the Bureau of Statistics. Ahmad, Leung and Stern (1984), and Ahmad, Ludlow and Stern (1987) use household observations from the 1976 Micro-Nutrient Survey (MNS), to estimate 17 (9 of which are food items) and 13 commodity parameters and elasticities based on a modified Linear Expenditure System (LES) using Maximum Likelihood methods. The modified LES is a method of obtaining LES parameters without independent price information, analogous to the ELES. This method differs from the ELES in that expenditure information is used, rather than income, see Ahmad, Ludlow and Stern (1987) for details.

In this paper, we present regional demand estimates for the four provinces of Pakistan using the Household Income and Expenditure Survey (HIES) 1979, and for rural and urban areas. This not only presents a pattern of regional differences or similarities in consumption behaviour, but the aggregate demand responses may be compared with those of the previous study for 1976 reported in Ahmad, Ludlow and Stern (1987). This permits an analysis of inter-temporal changes in demand response for a fairly disaggregated set of commodities. While we use the modified LES method and household level observations (in this paper), the results may also be compared with those which use alternate functional forms. There are two papers to date, dealing with the latter for Pakistan. One is by Ahmad, Leung and Stern (1987) which models the consumption of wheat given rationing, and the joint production-consumption decisions for wheat by farm households, based on the 1976 MNS. The second paper is by Alderman (1987), who uses the 1979 HIES and independent price information to estimate the Almost Ideal Demand System (AIDS), as formulated by Deaton and Muellbauer (1980).

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The list of 17 commodities which we use for estimation is contained in Table 1 and we suppose that the minimum requirements for all commodities except (10) 'housing', and (17) 'other non-food' are proportional to household size ($f_i = 0$ for $i \neq 10, 17$), and minimum requirements for goods (10 and 17) are independent of household size ($d_i = 0$ for $i = 10, 17$). Thus we estimate the system (1), a modification of the standard LES, where ϵ_i is a random term.

$$X_i^h = n^h.d_i + b_i (M^h - \Sigma_j n^h.d_j - \gamma_{10} - \gamma_{17}) + \epsilon_i, \ (i, j=1..9, 11..16)$$

$$X_i^h = \gamma_i + b_i (M^h - \Sigma_j n^h.d_j - \gamma_{10} - \gamma_{17}) + \epsilon_i, \ (i=10, 17; j=1..9, 11..16)$$

$$\text{with} \quad \sum_{i=1}^{n} b_i = 1 \quad \cdots \qquad \cdots \qquad \cdots \qquad \cdots \qquad \cdots \qquad (1)$$

X_i is the expenditure on the ith good, M is total money expenditure. The b_i and γ_i, are marginal budget shares and minimum consumption requirements. Having imposed n restrictions on the d_i and f_i we have $n - 2$ over-identifying restrictions. Accordingly there are $(n - 2)$ restrictions on the reduced form.

The structure (1) was estimated directly using Deaton's NLFIML programme for a maximum likelihood estimation of a complete demand system see Deaton (1981). We have 1965 households in our sample.

2. ESTIMATES FOR 1979

From the *marginal budget shares, b_i,* we see significant differences between urban and rural demand patterns. For the Punjab the urban marginal budget share for wheat, pulses, milk and sugar is less than that for the rural sector. In Sind the marginal budget shares for food are also generally higher in rural than in urban areas; with the exception of pulses and milk which are lower; and meat, fish and eggs being roughly the same. The marginal budget shares for housing, education and travel and vehicles are, as expected, lower for rural areas, but higher for other non-food items. There are no differences between the marginal budget shares for clothing, health and personal care for the rural and urban samples. For the North West Frontier Province (NWFP) the marginal budget share for food is also higher in rural areas, with the exception of pulses. As would be expected it is lower for housing, education and other non-food in the rural areas. A suprising feature is that the marginal budget share for health and personal care, and for travel and vehicles is higher in the rural areas. In Baluchistan the marginal budget share for milk and vegetables, fruit and spices is higher in rural areas.

The *minimum consumption requirements* also vary between sectors and across provinces, most noticeably those for meat and eggs, edible oils, vegetables, fruit and

Table 1

Parameter Estimates for the Modified LES from the 1979 HIES.
(Pakistan, Urban and Rural)

	FULL SAMPLE 19493 CASES		URBAN 7503 CASES		RURAL 11990 CASES	
	$b(i)$	d_i and γ_i	$b(i)$	d_i and γ_i	$b(i)$	d_i and γ_i
1 Wheat	0.0098 (0.0005)	11.930 (0.077)	0.0082 (0.0005)	8.647 (0.115)	0.0255 (0.0007)	13.027 (0.098)
2 Rice	0.0093 (0.0002)	2.318 (0.041)	0.0092 (0.003)	2.228 (0.067)	0.0092 (0.0004)	2.350 (0.055)
3 Pulses	0.0046 (0.0001)	2.122 (0.017)	0.0034 (0.0001)	2.242 (0.029)	0.0068 (0.0001)	1.977 (0.021)
4 Meat and Eggs	0.0490 (0.0003)	2.277 (0.095)	0.0499 (0.0006)	3.233 (0.191)	0.0410 (0.0004)	1.815 (0.086)
5 Milk	0.0525 (0.0007)	11.050 (0.136)	0.0437 (0.0008)	8.416 (0.206)	0.0808 (0.0011)	11.037 (0.202)
6 Vegetables, etc.	0.0383 (0.0003)	5.457 (0.075)	0.0383 (0.0004)	5.998 (0.147)	0.0348 (0.0003)	5.0741 (0.073)
7 Edible Oils	0.0130 (0.0003)	4.308 (0.046)	0.0113 (0.0003)	5.968 (0.065)	0.0099 (0.0004)	3.468 (0.060)
8 Sugar	0.0124 (0.0002)	2.368 (0.036)	0.0075 (0.0002)	3.567 (0.051)	0.0183 (0.0003)	1.447 (0.050)
9 Tea	0.0050 (0.0001)	1.357 (0.017)	0.0040 (0.0001)	1.556 (0.028)	0.0062 (0.0001)	1.166 (0.022)
10 Housing	0.2226 (0.0013)	−1.592 (2.649)	0.2519 (0.0023)	−7.101 (6.417)	0.1502 (0.0012)	10.954 (1.780)
11 Fuel and Light	0.0200 (0.0003)	5.292 (0.051)	0.0190 (0.0003)	5.085 (0.086)	0.0226 (0.0004)	5.150 (0.067)
12 Clothing	0.0508 (0.0004)	7.981 (0.101)	0.0509 (0.0006)	7.573 (0.202)	0.0498 (0.0005)	7.944 (0.103)
13 Other Food	0.0573 (0.0006)	1.988 (0.139)	0.0631 (0.0011)	0.392 (0.298)	0.0497 (0.0008)	2.531 (0.135)
14 Education	0.0156 (0.0002)	−0.173 (0.045)	0.0153 (0.0004)	0.228 (0.092)	0.0139 (0.0003)	−0.411 (0.042)
15 Health	0.0419 (0.0003)	2.518 (0.085)	0.0423 (0.0005)	2.647 (0.172)	0.0388 (0.0004)	2.338 (0.083)
16 Travel/Recreation	0.1518 (0.0011)	−8.323 (0.316)	0.1457 (0.0020)	−9.268 (0.634)	0.1610 (0.0013)	−8.946 (0.302)
17 Other Non-food	0.2463 (0.0016)	−43.880 (3.250)	0.2362 (0.0026)	−87.808 (6.694)	0.2816 (0.0019)	−40.787 (3.383)
	−264700.0		−129070.0		−922441.0	

Notes: (i)   Standard errors in brackets.

      (ii)   The b_i are marginal budget shares.

      (iii)   The entries in the columns headed d_i and γ_i are d_i for $i \neq 10.17$ and γ_i $(=f_i)$ for $i = 10,17$ — see Equation (5). The units for d_i are rupees per head and for γ_i are rupees per household per month.

spices and tea are greater in the urban areas as compared to the rural. Minimum requirements for fuel and light are marginally higher in urban areas. It is interesting to note that the minimum consumption requirements for tea are lower in the Punjab and Sind than in the NWFP and Baluchistan.

There are a number of contrasts *across provinces*. The "minimum consumption requirement" for wheat is higher in the NWFP than the other provinces. The "minimum consumption" of rice is high in Sind but almost negligible in the NWFP, reflecting different taste patterns. However, pulses show little variation across the provinces. There is a low "minimum consumption requirement" for meat and eggs (Rs 0.813) for the Punjab, but all other provinces report a value greater than Rs 4.0 per head per month. Note that the average expenditure on meat and eggs in the Punjab is around 3.5 percent of total expenditure. The minimum consumption requirements for milk are similar in the Punjab, NWFP and Sind, while in Baluchistan it is half that of the other provinces. There is little variation across provinces for vegetables, fruit and spices. There is a similar minimum consumption requirement for edible oils in Sind, NWFP and Baluchistan but only half this amount in the Punjab. Minimum sugar consumption shows little variation across provinces. The minimum consumption requirements for tea are smallest in the Punjab and greatest in Baluchistan a fact again reflected in the average consumption patterns. The minimum requirement for fuel and light is higher for the NWFP, than the other provinces, reflecting climatic differences. The minimum requirements for clothing do not vary across provinces. The minimum expenditures on education on the other hand are insignificant in the Punjab and Sind but positive in the NWFP and Baluchistan. Minimum health expenditure is predominantly positive, except in Baluchistan where it is insignificantly different from żero. The minimum consumption requirements for travel and recreation and other non-food for all provinces are insignificant.

The sectoral and regional differences reflect differences in the patterns of demand that need to be kept in mind in using the aggregate parameters based on the full sample. There are likely to be further differences on the basis of income groups and these will also be examined in subsequent analysis.

We present the uncompensated own-price elasticities for the four provinces and their urban and rural samples evaluated at sample means in Table 2. The own-price elasticities are all negative. In the majority of cases they are also less than unity (with the exception of housing, education, travel and vehicles and other non-foods) and appear larger for the rural sector than for the urban. Taking wheat as an example, the uncompensated price elasticities range from -0.14 for urban NWFP to -0.45 for rural Sind (with the value of -0.048 for Baluchistan, and -0.015 for urban Baluchistan) There are of course differences within provinces: the own-price elasticity for education is higher in urban as compared to rural Sind, and vice-versa in NWFP and Baluchistan. It is also interesting to note that there are occasionally quite

Table 2

Provincial Uncompensated Own-price Elasticities

	Punjab Urban and Rural	Punjab Urban	Punjab Rural	Sind Urban and Rural	Sind Urban	Sind Rural
1 Wheat	-0.09263	-0.15949	-0.12050	-0.17195	-0.16877	-0.44558
2 Rice	-0.34104	-0.40628	-0.27318	-0.20494	-0.27488	-0.36156
3 Pulses	-0.22809	-0.22261	-0.22621	-0.29203	-0.26164	-0.41782
4 Meat and Eggs	-0.87372	-0.84519	-0.79899	-0.67922	-0.66998	-0.66111
5 Milk	-0.46295	-0.55440	-0.44074	-0.33428	-0.42269	-0.54600
6 Vegetables, Fr., Sp.	-0.47906	-0.54781	-0.38922	-0.52227	-0.52694	-0.49238
7 Edible Oils	-0.27693	-0.24833	-0.18296	-0.30104	-0.27415	-0.33874
8 Sugar	-0.47080	-0.36258	-0.50130	-0.23236	-0.18081	-0.46279
9 Tea	-0.37298	-0.38702	-0.32264	-0.35127	-0.29457	-0.62637
10 Housing	-1.02894	-1.01100	-0.90488	-1.18464	-1.12403	-0.72371
11 Fuel and Light	-0.34623	-0.40089	-0.29883	-0.45700	-0.47215	-0.40731
12 Clothing	-0.39298	-0.46049	-0.33681	-0.64033	-0.66970	-0.57086
13 Other Food	-0.69855	-0.86267	-0.48826	-1.09193	-1.02951	-1.89859
14 Education	-1.31342	-1.01233	-1.59901	-1.07979	-0.92814	0.26986
15 Health and Hygiene	-0.62712	-0.63656	-0.58224	-0.81019	-0.79422	-0.85554
16 Travel and Vehicles	-2.33557	-1.78630	-2.84557	-1.53463	-1.41585	-1.62988
17 Other Non-Foods	-1.20810	-1.30212	-1.13287	-1.41830	-1.44752	-1.61349

Table 2 – (Continued)

	N.W.F.P. Urban and Rural	N.W.F.P. Urban	N.W.F.P. Rural	Baluchistan Urban and Rural	Baluchistan Urban	Baluchistan Rural
1 Wheat	-0.14371	-0.13785	-0.22642	-0.04843	-0.01533	-0.22174
2 Rice	-0.81532	-0.88387	-1.02196	-0.36093	-0.47302	-0.31424
3 Pulses	-0.29025	-0.25477	-0.38650	-0.09605	-0.10200	-0.21801
4 Meat and Eggs	-0.55743	-0.60581	-0.58084	-0.59090	-0.55299	-0.99531
5 Milk	-0.36182	-0.40724	-0.41530	-0.43857	-0.53420	-0.82562
6 Vegetables, Fr., Sp.	-0.48194	-0.52014	-0.52650	-0.46404	-0.47623	-0.71107
7 Edible Oils	-0.34327	-0.28535	-0.46863	-0.20237	-0.18538	-0.34047
8 Sugar	-0.47057	-0.27681	-0.77466	-0.31857	-0.33474	-0.41059
9 Tea	-0.28992	-0.24992	-0.39613	-0.27955	-0.32805	-0.33852
10 Housing	-0.92565	-1.04039	-0.93046	-0.92747	-0.85385	-1.10229
11 Fuel and Light	-0.33877	-0.40238	-0.38803	-0.38874	-0.40686	-0.63365
12 Clothing	-0.40332	-0.39913	-0.50399	-0.43998	-0.47365	-0.56295
13 Other Food	-0.74248	-1.01682	-0.67138	-1.66822	-1.75388	-1.70230
14 Education	-0.93766	-0.77360	-1.34403	-0.77014	-0.47524	-1.97765
15 Health and Hygiene	-0.52273	-0.50004	-0.64543	-0.89502	-0.98525	-0.65861
16 Travel and Vehicles	-2.49594	-2.15996	-3.36794	-1.83387	-1.94410	-0.75638
17 Other Non-foods	-1.77431	-2.29041	-1.56506	-1.26473	-1.33538	-1.56631

Note: See Equation (6) in the text.

considerable differences across provinces. For example, rice in Sind has an own-price elasticity of −0.20, while in NWFP it is −0.81 and in Baluchistan −0.36.

The cross-price effects (which are not shown) are also mainly negative the exceptions being in those cases where the γi's were negative and the substitution effects prevail. The cross-price effects are all however relatively small, with not suprisingly the exception of the cross-price effects with respect to wheat and milk products. These results are similar to those for 1976 (see Ahmad, Ludlow and Stern 1987), based on the 1976 MNS.

Given the significantly different patterns of consumption in rural and urban areas it was interesting to evaluate an aggregate demand response using the piece-wise LES (PLES) parameters for the urban-rural subdivision of the sample see Ahmad, Ludlow and Stern (1987) for details. This was compared with the own-price full sample estimates from Table 3, and alternative methods of arriving at the piece-wise estimates. Thus, for example, the own-price elasticity for wheat for Pakistan varies from −0.11 for the full sample, to −0.17 when the piece-wise elements are rural and urban estimates for each province.

3. INTERTEMPORAL COMPARISONS AND SENSITIVITY

A comparison of our results with those derived from the 1976 MNS by Ahmad, Ludlow and Stern (1987) suggests that there are many similarities. The own-price elasticity for wheat in 1979 appears lower than those for the equivalent sectors in 1976. There also appears to have been a substantial reduction in the own-price elasticity of rice, pulses and meat and eggs with the 1979 HIES data. Own-price elasticities for milk; vegetables, fruit and spices; edible oils; sugar and tea are all slightly lower using the HIES data. However, there is no significant change in the elasticities for housing, or other non-foods, although that for clothing is lower with the HIES data, while that for other foods is higher.

The expenditure elasticities for 1979 may also be compared with those found for the 1976 MNS (see Ahmad, Ludlow and Stern (1987) for details). In relative terms, rankings have been preserved with expenditure elasticities. In absolute terms, elasticities for food items (1)–(9) and clothing are all lower with the HIES data; while that for housing (the only other comparable item) is higher. This may, in part, be due to different classifications in the two data sets, but probably also reflects changing consumption patterns over time.

Alderman, (1987) uses AIDS to estimate an alternative functional form for 9 commodity groups, 7 of which are food-related from the HIES data. (See Table 4). AIDS is somewhat more flexible than the LES or ELES but is not as easy to estimate, given that independent price data for urban centres has to be used in conjunction with the HIES. The assumptions involve linkages between the different data sets, and similar aggregation over commodities. Another functional form is that of

Table 3

Uncompensated Own-price Elasticities for Pakistan from the 1979 HIES

(Full Sample and PLES Estimates)

	Full Sample Estimates			Piece-wise Estimates		
	Total	Urban	Rural	HTPLES	HUPLES	HRPLES
1 Wheat	−0.11439	−0.14358	−0.18456	−0.16555	−0.14897	−0.17273
2 Rice	−0.31466	−0.37802	−0.27581	−0.36605	−0.37643	−0.35828
3 Pulses	−0.25503	−0.24067	−0.28895	−0.25659	−0.23311	−0.27345
4 Meat and Eggs	−0.71542	−0.71790	−0.67784	−0.73595	−0.72923	−0.74506
5 Milk	−0.40657	−0.48509	−0.46587	−0.47561	−0.50030	−0.46194
6 Vegetables, Fr., Sp.	−0.47222	−0.52477	−0.42149	−0.48765	−0.53299	−0.44384
7 Edible Oils	−0.27579	−0.25688	−0.23470	−0.27719	−0.25835	−0.29964
8 Sugar	−0.37589	−0.26316	−0.53241	−0.41495	−0.29503	−0.54290
9 Tea	−0.30753	−0.30609	−0.34064	−0.34076	−0.30690	−0.39692
10 Housing	−1.00832	−1.02183	−0.89619	−0.98713	−1.04256	−0.89306
11 Fuel and Light	−0.34885	−0.41107	−0.34003	−0.37998	−0.42364	−0.34732
12 Clothing	−0.44013	−0.52518	−0.39366	−0.45808	−0.52509	−0.40322
13 Other Food	−0.77224	−0.96472	−0.64378	−0.87316	−0.97925	−0.76316
14 Education	−1.12959	−0.90238	−1.62487	−1.08700	−0.93889	−1.44136
15 Health and Hygiene	−0.66327	−0.72133	−0.61696	−0.65464	−0.67177	−0.64088
16 Travel and Vehicles	−1.95482	−1.67080	−2.69645	−1.97940	−1.62543	−2.61506
17 Other Non-foods	−1.26818	−1.45349	−1.27119	−1.34685	−1.45854	1.25119

Notes: The total; urban; and rural columns reflect full sample estimates for the respective sectors. The piece-wise estimates are (See Equations (8)–(10)):

   (i) HTPLES is the total own-price elasticity for Pakistan from the 8 sectors (urban and rural aggregated to the total using population weights;

   (ii) HUPLES is the urban own-price elasticity from the 4 urban sectors aggregated by the appropriate weights; and,

   (iii) HRPLES is the rural own-price elasticity from the 4 rural sectors aggregated by the appropriate weights.

Table 4

Pakistan: Comparisons of Demand Estimates over Time and for Different Formulations

| | Compensated Own-price Elasticities | | | | | | | Expenditure Elasticities | | | | | | |
| | AIDS | | | PLES 1979 | | | Rationing 1976 | AIDS | | MNS 1976 | | PLES 1979 | | Rationing 1976 |
	Total	Urban	Rural	Total	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Urban	Rural	Urban
(1)	-0.71	-0.31	-0.91	-0.36	-0.40	-0.35	-0.63	0.35	0.36	0.30	0.35	0.11–0.18	0.14–0.56	0.18
(2)	-1.51	-0.93	-1.91	-0.56	-0.65	-0.49		0.83	0.96	0.70	1.03	0.35–0.97	0.23–1.41	
(3)	-0.44	-0.33	-0.52	-0.52	-0.50	-0.54		0.42	0.55	0.31	0.53	0.18–0.22	0.18–0.46	
(4)	-0.95	-0.76	-1.06	-0.68	-0.60	-0.73		1.05	1.37					
(5)	-0.69	-1.01	-0.29	-1.04	-0.91	-1.22		1.30	1.51					
(6)		-0.08	—	—	-0.39	—		0.51						
(7)	-0.90	-1.02	-1.04	-0.74	-0.71	-0.77		0.84	0.80					
(8)	-0.76	-0.82	-0.71	-0.56	-0.55	-0.58		0.58	0.62					
(9)	-0.97	-0.89	-1.07	-0.56	-0.39	-0.75		1.21	1.22					

Notes: (i) AIDS refers to the Almost Ideal Demand System [see Alderman (1987)].

(ii) PLES (1976) refers to the piece-wise estimates [see Ahmad, Ludlow and Stern (1987)], based on the Micro-Nutrient Survey, 1976, (MNS), and Stern (1987).

(iii) PLES (1979) refers to the piece-wise estimates [see Equation (8) – (10)], based on the Household Income and Expenditure Survey for 1979.

(iv) Rationing (1976) refers to the Ahmad, Leung and Stern (1987) rationing model, based on the 1976 MNS.

The commodity groups represented along the rows are:

(1) Wheat   (6) Oils
(2) Rice   (7) Other Food
(3) Pulses   (8) Fuel
(4) Dairy   (9) Non-food.
(5) Meat

Ahmad, Leung and Stern, (1987) who examine the demand for wheat with a model of non-linear pricing incorporating rations, using the 1976 MNS urban data set.

For the purposes of comparison of price-elasticities we juxtapose Alderman's nine commodity categories with the modified LES method using the HIES data set for 1979, and the "rationing" estimates for urban wheat for 1976. The urban own-price and expenditure elasticities are quite similar for AIDS and our modified LES. However the consumption of rationed wheat results in a compensated own-price elasticity of −0.63 (Ahmad, Leung and Stern 1987), compared to −0.31 for AIDS and −0.40 for the LES. The rural elasticities vary considerably across the same sample for the LES and AIDS formulations for all commodities apart from "pulses". Note that the cross-price effects are different under the alternative formulations.

4.   CONCLUDING REMARKS

In this paper we present disaggregated demand responses for Pakistan, rural and urban areas, and the four provinces, using the 1979 HIES. This provides estimates that can be useful for policy-making in a number of contexts: for example in estimating the effects of price or tax changes on households in different circumstances. The results in this paper suggest that there are significant differences in consumption patterns between rural and urban areas and across provinces. The stability of these estimates over time has been examined with reference to similar work for 1976. It is important to correctly specify a model for given policy purposes, since the resulting elasticities can vary (considerably, in some cases) for alternative functional forms. The comparisons between AIDS and the modified LES suggests strong similarities for the urban results, but a divergence for rural estimates. However, this range of estimates can present the policy-maker with an "acceptable" sensitivity for analysis of policy issues.

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Comments on
"Aggregate and Regional Demand Response Patterns in Pakistan"

The paper presents empirical estimates of the demand for commodities using a Modified Linear Expenditure System (MLES) approach based on the 1979 Household Income and Expenditure Survey (HIES) data. Similar work has been done earlier by others, including the authors themselves, which they have duly acknowledged in their paper. One may ask at this point what is the novelty of this paper and why has such an exercise been repeated?

In my opinion the contributions of the paper are twofold:

(a)   It has undertaken a comprehensive and prolific study on demand at the regional level for the four provinces of Pakistan. Not only that, the analysis is done separately for rural and urban areas. This type of disaggregated research, I believe, is extremely important and necessary for the policy-makers to gain useful and meaningful insight in formulating policies. The authors have also presented an intertemporal comparison between 1976 and 1979 HIES data. This definitely substantiates their empirical findings.

(b)   The second important contribution of the paper is their suggestion to tackle the estimation problem of under-identification for the demand system. The problem at hand was that the marginal budget share parameters b_is can be identified whereas the minimum consumption parameters γ_is are not. The procedure proposed by the authors is to set one of the γ_is to zero. Since it is hard to measure the income variable in developing countries, they specified an extra equation (for identification) where the minimum consumption parameter now depends on the size of the household (n) parameter. Later on, Equation (5) in the paper was estimated by imposing cross-equation restrictions using a non-linear FIML technique. Using such a technique the authors found that the estimates based on the 1979 HIES show changes in parameters and elasticities over that of 1976 HIES which they argue was due to sample size or probably due to the changing behavioural patterns of the households.

Although the paper makes an innovative contribution in solving the problems of identification in the estimation technique, my criticisms on the paper are more

general and related to the methodology of the linear expenditure system. In other words, I believe that there are some greater and serious problems associated with the MLES approach.

One of the concerns in the demand studies is that whether relative prices matter in decisions regarding household savings and expenditure allocation and, even if this is so, the crucial question is by how much? Unfortunately, the crucial effect of relative prices on savings cannot be measured at all with MLES.

Another problem as pointed out by Lluch, Powell and Williams (1977) is that the MLES approach works in a static Keynesian-type of consumption and a linear framework with no lags and, therefore, a distinction between the short-run and long-run is not possible under such a paradigm. The lack of a dynamic framework makes it difficult to evaluate the impact of policies on demand.

Furthermore, the linear system behaviour is fully characterized by the focus on the point of minimum consumption and the slope of the expansion path. The problem of this type of analysis is that there is limited-scope for price substitutions between the commodity at the point of minimum consumption because of the assumption of the linear expansion path in the MLES.

Given the shortcomings of the MLES, one may look for a more flexible type of demand function such as the dynamic translog functions frequently used in the money demand studies. These demand functions will enable them, among other things, to estimate the Allen-Uzawa elasticities of substitution as well the own and cross-price elasticities.

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REFERENCE

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