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# Household Consumption and Saving Behaviour in Pakistan: An Application of the Extended Linear Expenditure System

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The paper aims at developing a complete set of income and price elasticities of household consumption and saving for Pakistan by applying the Extended Linear Expenditure System (ELES) to the data of the 1979 Household Income and Expenditure Survey. Items like Rent on Housing, Furniture & Fixture, Education, Recreation, and Travelling & Transportation were found to be income-elastic as well as fairly sensitive to changes in (own) prices. As regards the cross-price effects, food prices turned out to be the most important determinant of demand for all other commodities and also of total expenditure (hence of saving). Expenditure on education is particularly affected by the rising cost of food.

## I. INTRODUCTION

The study of consumer responsiveness to changes in income and relative prices is carried out generally in a single-equation model, i.e. by estimating demand equations one at a time. While the approach has the advantage of simplicity, its major shortcoming lies in the difficulty and often impossibility of deriving precise estimates of demand parameters since it omits the interrelationship among demand functions for different goods. This calls for a system approach which could allow one to model simultaneously the demand relations for an exhaustive list of the items in the consumer's budget, and also examine the estimated demand equations in the light of the properties of the established microeconomic theory.

The first attempt at using a system approach for demand analysis dates back to the early Fifties when Stone [20] applied a Linear Expenditure System (LES) to the analysis of British demand. More recently, an extension was made to the LES by Lluch [8], and the Extended LES (ELES) was used for an analysis of demand and

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saving, notably by Powell [16; 17], Lluch and Williams [10], and Lluch *et al.* [9]. The ELES is superior in several respects. As compared to the LES, it facilitates joint determination of saving and allocation of expenditure across various items in response to changes in both income and relative prices. As compared to single-equation model, the computation of price elasticities under the ELES does not require an arbitrary fixation of the Frisch parameter (i.e. income elasticity of marginal utility of income); in fact, the latter itself can be computed from the ELES estimates.

Apart from these gains, the system approach, in general, makes it possible to carry out sophisticated research on consumer behaviour even when available data on private consumption are inadequate. For Pakistan, as for many developing countries, time-series data on private consumption as derived from the National Accounts are not disaggregated over various commodity groups. As such, one can only use cross-section information for estimating demand parameters. Since purely cross-section data generally give no price information, inference of price effects requires strong theoretical specification.

The objective of the present study is to develop a complete set of income- and price-elasticities of household demand and saving for Pakistan through the ELES approach. Though in the past there have been studies on consumption and saving behaviour in Pakistan, some of which are listed in Table 1, the analysis proposed here differs markedly from the earlier analysis in that it is based on a single integrated framework where all of the consumer's decisions are modelled simultaneously with the use of the demand system approach and it permits joint determination of saving and the allocation of expenditure. Moreover, the study will be based on the budget data reported in the latest available *Household Income and Expenditure Survey* [13, for 1979] and as such is expected to offer a more up-to-date analysis of the present-day Pakistan's economy.

## II. MODEL: ELES VERSUS LES

Like any other demand model, the system approach is based on the standard utility maximization behaviour of the consumer. The utility function hypothesized for this purpose is assumed to be directly additive with demand function for individual commodity to be logarithmic of the kind[1]

$$U(X) = \Sigma f_i(x_i) = \Sigma a_i \cdot log(x_i - r_i) \quad \ldots \quad \ldots \quad \ldots \quad (1)$$
$$(a_i > O, r_i > O, x_i > r_i)$$

where $x_i$ represents quantity consumed of good $i$ ($i$=1, 2 . . . . . $n$), and $r$s may be interpreted as representing basic (minimum) needs or subsistence quantities. The

[1] This function is known as Klein-Rubin [7] or Stone-Geary [20] utility function.

Table 1

*Survey of Relevant Literature on Pakistan*

| | Author | Data Source and Year | Coverage | Methodology |
|---|---|---|---|---|
| 1. | Bussink [5] | [12] | Income and Price (Direct and Cross) Elasticities for 29 items | Single-Equation and Frisch Technique |
| 2. | MacEwan [11] | Time Series | Expenditure Elasticities for use in a 35x35 input- output model | Single Equation |
| 3. | Rehman [18] | Sample Survey of Rural Areas in West Pakistan, 1959 | Expenditure Elasticities for 8 Commodity Groups | Single Equation |
| 4. | Siddiqui [19] | [13, for 1971-72] | Expenditure and Family Size Elasticities for 12 items | Single Equation |
| 5. | Ali [3] | [13, for 1971-72] | Income, Expenditure and Family Size Elasticities for 10 Commodity Groups | Single Equation |
| 6. | Ali [2] | [13, for 1969-70] | Income and Price (Direct) Elasticities for use in a 23x23 input- output model | Single-Equation and Frisch Technique |
| 7. | Ahmad, Leung and Stern [1] | [14; 15] | Expenditure and Price Elasticities for 17 Commodities | LES |

budget constraint is defined in terms of total expenditure on all goods as exogenously given, i.e.

$$P_i x_i = \Sigma v_i = V \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

where $P_i$ is the price of the $i$th good. Maximizing utility function as given in (1), subject to the constraint in equation (2), yields the demand function[2]

$$v_i = p_i x_i + b_i (V - \Sigma p_i r_i) \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

The expression in equation (3) forms a system of $n$ expenditure equations which are linear in income and prices and exactly corresponds to Stone's Linear Expenditure System (LES). The system allows a consumer to allocate part of total expenditure to ensuring minimum necessary quantities of each commodity and then allocating the remaining part, $(V-\Sigma p_i\ r_i)$, technically known as supernumerary expenditure, among commodities in proportion to the $b$s. The $b$s may be thought of as marginal budget shares $(dv_i/dV)$, that is, marginal propensity to consume out of total expenditure, so that $\Sigma b_i = 1$.

The major deficiency pointed out in the LES, which also led to its extension by Lluch, is that "the effect of relative prices on saving cannot be measured at all with LES" [9, p. 15]. Since total expenditure is exogenously fixed, no matter what happens to relative prices, savings remain unaffected. Obviously, the extension required endogenization of the total expenditure. This was done by replacing $V$ by total income, $Y$.[3]

$$v_i = p_i r_i + b_i^* \ (Y-\Sigma p_i r_i) \quad \ldots \quad \ldots \quad \ldots \quad (4)$$

Here $b_i^*$ represents marginal propensity to consume (MPC) out of income so that $\Sigma b_i^* = u$, the aggregate MPC. The term $(Y-\Sigma p_i\ r_i)$ may now be thought of as supernumerary income.

[2]To combine (2) with (1) let us apply a positive monotonic transformation $U(X)' = U(X)/\Sigma a_i$ to obtain

$$U(X)' = \Sigma b_i \log (x_i - r_i)$$

where $b_i = a_i/(\Sigma a_i)$, technically called share parameters, add up to one. Now, maximizing the Lagrange function

$$L = \Sigma b_i \log (x_i - r_i) + \lambda(V - \Sigma p_i r_i)$$

and solving the expression to compute the optimal quantities yield equation (3).

[3]Even if one is not interested in the analysis of saving *per se*, estimating ELES rather than LES is preferable for obtaining the best possible estimates of $r$ and, hence, price elasticities. It has been observed that "the $r$ estimates are more stable and exhibit more regularities across countries under ELES specification" [9, p. 15].

The fact that ELES (equation 4) facilitates joint treatment of saving and allocation of expenditure follows from adding all the expenditure equations, $v_i$, to obtain

$$V = (1-u)\,\Sigma p_i r_i + uY \qquad \ldots \quad \ldots \quad \ldots \quad (5)$$

This is nothing but an aggregate consumption function. Thus ELES permits endogenous determination of total expenditure and, hence, saving.

Another superiority of ELES over LES is implicit in equation (5). It enables identification of $\Sigma p_i r_i$ in the absence of price data and, hence, obtaining of price elasticities from cross-section data. This property is of particular importance for our study since the data base of the study is purely cross-sectional.

## III. ESTIMATION METHODOLOGY

Since $r_i$ occurs in all equations, the demand system needs to be estimated as a whole by a method which imposes cross-equation constraints. In the case of time series, the procedure involves direct maximization of the likelihood function associated with the system. For cross-section, however, the term $p_i r_i$ becomes independent of the unit of observation, since each household faces the same commodity prices and may be replaced by $r_i^*$ which indicates subsistence expenditure in prices prevailing at the time of the household survey. With stochastic specification, the system may now be written as

$$v_{ih} = d_i + b_i^* Y_h + e_{ih}$$

($h = 1, 2, \ldots H$ income groups of households) $\qquad \ldots \quad \ldots \quad (6)$

and the associated ELES aggregate consumption function now becomes

$$V_h = D + uY_h + e_h \qquad \ldots \quad \ldots \quad \ldots \quad (7)$$

where

$d_i = r_i^* - b_i^* \Sigma r_i^*$;

$D = \Sigma d_i = (1-u)\,\Sigma r_i^*$; and

$e_h = \Sigma e_{ih}$ is the error term with all its classical properties.

The system in equation (6) is one of identical regressors and hence estimation of each of its equations separately by Ordinary Least Squares (OLS) would be equivalent to system's maximum likelihood (M.L.) estimation.

Once the parameters of equation (6) for all the commodities are estimated, one can obtain the M.L. estimates of $u$, $r_i^*$ and $\Sigma r_i^*$ from $d_i$ and $b_i^*$ by using the following relationships:

$$\left.\begin{array}{ll} \text{(i)} & u = \Sigma b_i^* \\ \text{(ii)} & b_i = b_i^*/\text{u} \\ \text{(iii)} & \Sigma r_i^* = \Sigma d_i/(1-u) \\ \text{(iv)} & r_i^* = d_i + b_i^* \Sigma r_i^* \end{array}\right\} \quad \ldots \quad \ldots \quad \ldots \quad (8)$$

Now the relevant elasticities and other demand parameters can be computed as follows:

1. **Elasticity of demand for good *i* with respect to**
   - (a) Income $E_{iy} = b_i^*(Y/v_i)$
   - (b) Total Expenditure $E_{iv} = b_i(V/v_i)$
   - (c) Own Price $E_{ii} = (1-b_i^*)(r_i^*/v_i) - 1$
   - (d) Price of the *j*th good $E_{ij} = -b_i^*(r_j^*/v_i)$

2. **Elasticity of total expenditure with respect to**
   - (a) Income $E_y = u(Y/V)$
   - (b) Price of the *i*th good $E_i = (1-u)(r_i^*/V)$

3. **Elasticity of saving with respect to**
   - (a) Income $E_{sy} = Y/(Y-\Sigma r^*)$
   - (b) Price of the *i*th good $E_{si} = -r_i^*(1-u)/Y-V$

## IV. DATA, RESULTS AND ANALYSIS

The study is based on *Household Income and Expenditure Survey* [13] for 1979. For the purpose of the analysis, total consumption expenditure has been disaggregated into 12 commodity groups, listed in Table 2.

The regression results for equation (6) are reported in Table 3. The results seem to have a good fit by all standards: the $R^2$ is high and the coefficients have correct signs and are significant at the 99-percent level of confidence. The negative intercept in some equations, which implies a positive correlation between the average propensity to consume and the increase in income, highlights the inadequate availability or the existing very low base of consumption of these items which identifies them as superior goods. This is more clearly reflected in the greater-than-unity income/expenditure elasticities for these commodities (Table 4).

### Income/Expenditure Elasticities

Income elasticity for six of the 12 commodity groups exceeds unity, thus categorizing them as luxuries or superior goods. These are: Rent, Furniture and Fixture, Education, Recreation, Transport and Travelling, and Others.

Table 2

*Consumption Disaggregation*

| Commodity Groups | Description | Average Budget Share* (%) |
|---|---|---|
| $x_1$ | Food and Drinks | 50.8 |
| $x_2$ | Clothing | 7.6 |
| $x_3$ | Footwear | 2.0 |
| $x_4$ | Rent on Housing | 10.8 |
| $x_5$ | Fuel and Lighting | 5.2 |
| $x_6$ | Furniture and Fixture | 1.5 |
| $x_7$ | Personal Care | 2.7 |
| $x_8$ | Medical Care | 1.8 |
| $x_9$ | Education | 0.9 |
| $x_{10}$ | Reading and Recreation | 1.1 |
| $x_{11}$ | Travelling and Transportation | 4.0 |
| $x_{12}$ | Others (Telephone & Telegraph, Laundry & Cleaning, Domestic Help, Gifts, etc.) | 11.6 |
| Total | | 100.0 |

*Weighted average of all income groups of households.

Table 3

*OLS Regressions**

$(v_{ih} = d_i + b_i^* Y_h + e_{ih})$

| Commodity Group | | $d_i$ | $b_i^*$ | $t$–Ratio $d_i$ | $t$–Ratio $b_i$ | $R^2$ (Corrected) |
|---|---|---|---|---|---|---|
| $x_1$ | Food | 49.484 | .176 | 12.72 | 12.67 | .94 |
| $x_2$ | Clothing | 5.984 | .036 | 13.48 | 22.74 | .98 |
| $x_3$ | Footwear | 1.948 | .007 | 8.92 | 8.50 | .87 |
| $x_4$ | Rent | −3.081 | .124 | −2.76 | 31.06 | .99 |
| $x_5$ | Fuel/Lighting | 6.348 | .010 | 57.04 | 27.18 | .99 |
| $x_6$ | Furniture | −1.040 | .019 | −5.17 | 27.61 | .98 |
| $x_7$ | Personal Care | 1.121 | .018 | 7.20 | 33.55 | .99 |
| $x_8$ | Medical Care | 1.492 | .009 | 7.82 | 12.52 | .93 |
| $x_9$ | Education | −.855 | .014 | −2.26 | 10.60 | .91 |
| $x_{10}$ | Recreation | −1.464 | .020 | −4.90 | 18.83 | .97 |
| $x_{11}$ | Transport | −6.519 | .074 | −5.97 | 18.89 | .97 |
| $x_{12}$ | Others | −2.145 | .121 | −2.07 | 32.65 | .99 |

*In estimation, income variable ($Y$) has been defined as disposable income. Moreover, both income and consumption have been used in per capita terms, since the households differ in size. The data relate to 12 income groups reported in the *Household Income and Expenditure Survey* [13] for 1979.

Table 4

*Demand Elasticities* Pakistan, 1979*

| | Commodity Group | Income Elasticity | Expenditure Elasticity |
|---|---|---|---|
| $x_1$ | Food | 0.438 | 0.601 |
| $x_2$ | Clothing | 0.571 | 0.778 |
| $x_3$ | Footwear | 0.452 | 0.615 |
| $x_4$ | Rent | 1.117 | 1.539 |
| $x_5$ | Fuel & Lighting | 0.250 | 0.348 |
| $x_6$ | Furniture & Fixture | 1.267 | 1.714 |
| $x_7$ | Personal Care | 0.750 | 1.054 |
| $x_8$ | Medical Care | 0.600 | 0.791 |
| $x_9$ | Education | 1.333 | 1.833 |
| $x_{10}$ | Recreation | 1.481 | 2.05 |
| $x_{11}$ | Transport & Travelling | 1.667 | 2.28 |
| $x_{12}$ | Others | 1.085 | 1.488 |
| $V$ | Total Expenditure | 0.728 | |

*While interpreting these elasticities, it should be kept in mind that these are longer-run elasticities, since they have been estimated from cross-section data.

The marginal budget shares implicit in the expenditure elasticities of demand show that if household expenditure per capita is increased by one rupee it is approximately allocated across various items as follows:

| | |
|---|---|
| Food | 28 percent |
| Rent | 20 percent |
| Transport | 12 percent |
| Clothing | 6 percent |
| All Others | 34 percent |
| **Total** | **100 percent** |

The expenditure elasticities may be interpreted as demand elasticities with respect to permanent income, as, based on the hypothesis of habit persistence in consumption behaviour, total expenditure can be taken as a proxy for permanent income. The larger numerical values of these elasticities for almost all the commodity groups suggest that the elasticities computed on the basis of reported income understate the demand responsiveness to changes in income. Alternatively, stability in income will result in higher elasticity coefficients.

Table 5

*Uncompensated Price Elasticities**

| Commodity Groups | $x_1$ | $x_2$ | $x_3$ | $x_4$ | $x_5$ | $x_6$ | $x_7$ | $x_8$ | $x_9$ | $x_{10}$ | $x_{11}$ | $x_{12}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x_1$ | .310 | .022 | .006 | .028 | .015 | .003 | .007 | .005 | .002 | .002 | .007 | .030 |
| $x_2$ | .191 | .240 | .002 | .037 | .020 | .004 | .009 | .007 | .003 | .003 | .010 | .038 |
| $x_3$ | .152 | .022 | .127 | .029 | .016 | .003 | .007 | .005 | .002 | .003 | .008 | .030 |
| $x_4$ | .377 | .056 | .015 | .488 | .40 | .008 | .018 | .014 | .006 | .007 | .019 | .075 |
| $x_5$ | .085 | .012 | .003 | .016 | .101 | .002 | .004 | .003 | .001 | .0015 | .004 | .017 |
| $x_6$ | .421 | .062 | .017 | .081 | .044 | .530 | .020 | .015 | .006 | .007 | .022 | .084 |
| $x_7$ | .254 | .038 | .010 | .049 | .027 | .005 | .325 | .009 | .004 | .004 | .013 | .050 |
| $x_8$ | .197 | .029 | .008 | .038 | .020 | .004 | .010 | .210 | .003 | .0035 | .010 | .039 |
| $x_9$ | .448 | .066 | .018 | .086 | .047 | .010 | .022 | .016 | .531 | .008 | .023 | .089 |
| $x_{10}$ | .498 | .074 | .020 | .096 | .053 | .011 | .024 | .018 | .007 | .571 | .026 | .099 |
| $x_{11}$ | .561 | .083 | .023 | .108 | .060 | .012 | .027 | .020 | .008 | .010 | .640 | .111 |
| $x_{12}$ | .365 | .054 | .015 | .070 | .039 | .008 | .081 | .013 | .005 | .006 | .019 | .473 |

*Note:-* 1. *Figures along the diagonal represent own-prices elasticities and those off the diagonal are cross-price elasticities.

2. All entries have minus signs. In principle, the cross-price elasticities can take any sign (+ or −). But given the high degree of aggregation of commodities as we have and the fact that own-price elasticities never exceed −1, the cross-price elasticities are expected to have minus signs.

3. Commodity Groups are defined as follows:
$x_1$ = Food; $x_2$ = Clothing; $x_3$ = Footwear; $x_4$ = Rent; $x_5$ = Fuel; $x_6$ = Furniture; $x_7$ = Personal Care; $x_8$ = Medical Care; $x_9$ = Education; $x_{10}$ = Recreation; $x_{11}$ = Transport: $x_{12}$ = Others.

**Price Elasticities**

The price elasticities presented in the $n \times n$ matrix can be seen in Table 5. Two implications of these elasticities are worth noting.

(i) The numerical estimates, particularly of own price elasticities, tend to lend little support to the assumption customarily made in the development literature that price elasticities are relatively unimportant. For almost half of the commodity groups considered in the study, the own-price elasticity estimates turn out to be around one-half. Even cross-price elasticities with respect to Food, Clothing, and Rent are fairly above zero. This also suggests that estimating the demand function for any commodity with income or income and own-price as the only elements will distort the value of the parameters.

(ii) Amongst prices, food prices turn out to be the most important determinant of demand for all other commodities and, hence, of total expenditure. When food prices go up, expenditure on food rises, as the demand for food with respect to its own price is inelastic. With income held constant, expenditure needs to be cut down on other (less essential or inessential) commodities to finance this additional expenditure. The expenditure on other commodities is reduced in accordance with their position in the hierarchy of wants. In our case, it was found that maximum reduction occurs in spendings on Travelling & Transport, followed by Reading & Recreation, Education, Furniture & Fixture, and Rent. With own-price elasticity of food amounting to $-.31$ and its average budget share being 50.8 percent, a 10-percent rise in food prices increases the total expenditure by 3.5 percent. On the other hand, the expenditure on all other commodities (with a combined weight of 49.2 percent) is reduced through cross effects only by 2.1 percent leading thereby to a net increase of 1.4 percent in total expenditure which amounts to a 9.3-percent decline in household saving.

Our finding that expenditure on education is reduced by 4.5 percent as a result of a 10-percent increase in the cost of food basket (with income held constant) provides an almost unconventional explanation of low literacy rates in Pakistan despite the government's heavy spending on education. The ranking of wants as implied by the observed consumption pattern suggests that the society attaches a relatively low priority to education. The longer-run gains and externalities associated with education, which are of vital importance from social point of view, seem to be of little interest to the common man. Therefore, if the objective of mass literacy is to be achieved, it is necessary to make the general public realize the true significance of education. In the absence of such a realization, achievement of this objective, besides being a difficult task, will be highly expensive since in the case of ever-rising cost of living, the only way in which poor parents can be motivated to continue schooling of their children is to compensate them for all types of expenses (not only fees) associated with education.

**Saving**

As mentioned earlier, the ELES facilitates analysis of saving with respect to changes in relative prices. The estimates of saving parameters are reported in Table 6.

The estimates seem to provide very useful insights into the saving behaviour of the households. Whereas a fairly high coefficient of income elasticity (2.75) is, on the one hand, indicative of relatively low saving base at present, it, on the other hand, highlights the potentials of the economy to generate larger amount of savings as a result of increases in per capita income. Moreover, a strong negative correlation between inflation and household saving has been indicated by the result. It was found that a 10-percent increase in the overall price level (measured as a weighted average of all commodity groups) reduces saving by 5 percent.

An attempt has been made to generate a series of household savings for the years from 1980 to 1984 by using these elasticities along with observed growth rates of personal disposable per capita income and inflation. Table 7 provides a comparison of these estimates with the saving figures derived through the Residual Approach used in the National Income Accounting System in Pakistan. Our figures show a relatively stable and less volatile behaviour of household saving than is shown by the figures under Residual Approach.

Regarding the relative price effect, it was found that though increased cost of any of the commodity groups reduced saving, the reduction was substantial in the case of food. The saving elasticity with respect to food prices is as high as almost

Table 6

*Elasticity of Saving, Pakistan: 1979*

| | |
|---|---|
| a. With respect to income | 2.75 |
| b. With respect to the price of | |
| $x_1$ | −.930 |
| $x_2$ | −.138 |
| $x_3$ | −.038 |
| $x_4$ | −.178 |
| $x_5$ | −.100 |
| $x_6$ | −.020 |
| $x_7$ | −.045 |
| $x_8$ | −.034 |
| $x_9$ | −.014 |
| $x_{10}$ | −.016 |
| $x_{11}$ | −.048 |
| $x_{12}$ | −.184 |
| c. With respect to the overall price level | −.50 |

Table 7

*Estimated Household Saving as Percentage of the GNP*

| | 1979-80 | 1980-81 | 1981-82 | 1982-83 | 1983-84 |
|---|---|---|---|---|---|
| GNP at Current Factor Cost | 231655 | 273665 | 317471 | 368190 | 416198 |
| Retained Earnings[1] | 3458 | 4060 | 5154 | 6049 | 6904 |
| Direct Taxes | 5758 | 7791 | 9324 | 9951 | 11002 |
| Personal Disposable Income | 222439 | 261814 | 302993 | 352190 | 398292 |
| Household Saving[2] | 16923 | 22482 | 28900 | 38126 | 46704 |
| GNP at Current Market Prices | 255581 | 305903 | 347564 | 403289 | 460302 |
| Household Saving as % of GNP at Market Prices | 6.6 | 7.3 | 8.3 | 9.4 | 10.0 |
| | (8.5) | (6.4) | (6.5) | (11.2) | (8.9) |

[1]Figures for 1979-80 are taken from Moin Uddin Baqai [4]. For 1982-83 and 1983-84, a fixed proportion, (1.5 percent) of the GNP at market prices was used.

[2]The figure for 1979-80 is based on average saving rate of 7.6 percent of household income as implied in the *Household Income and Expenditure Survey* [13] for 1979. Figures for other years were estimated with the income and inflation elasticities of 2.75 and −0.5 respectively.

*Note:* Figures in brackets indicate saving rates computed through the Residual Approach generally used in the National Income Accounting System in Pakistan. If $I$ and $S$ denote investment and saving and subscripts $n$, $f$, $g$, $c$ and $h$ represent national, foreign, public, corporate and household respectively, the household saving, according to the Residual Approach, would be

$$S_n = I - S_f$$

$$S_h = S_n - S_g - S_c$$

unity (−.93), implying that a 10-percent increase in the cost of food basket (with a given level of income) tends to reduce family saving by 9.3 percent. This can mainly be explained by the predominant share that food claims in the household total expenditure. The budget data for other countries with equally large food shares also reveal a similar configuration of food prices and saving (Table 8). Rent on Housing and Clothing are two other items in whose case price increases have visible impact on saving.

Table 8

*Inter-country Comparison of Food Price Elasticities of Household Saving*

| Country | Sample Period | Food Share | Elasticity |
|---|---|---|---|
| Pakistan | 1979 | .508 | −0.93 |
| Thailand | 1960-69 | .576 | −1.30 |
| Taiwan | 1955–68 | .563 | −1.29 |
| Korea | 1955–68 | .599 | −2.93 |
| U.K. | 1955–68 | .397 | −1.15 |
| Australia | 1955–66 | .333 | −0.61 |
| U.S.A. | 1955–68 | .267 | −0.33 |

*Source:* For countries other than Pakistan, [9, p. 82].

## V. SUMMARY AND CONCLUSIONS

The study attempted to carry out a quantitative assessment of consumer responsiveness to changes in income and commodity prices. The methodology adopted was based on a system approach known as Extended Linear Expenditure System (ELES) and the data used were derived from the latest available *Household Income and Expenditure Survey*, namely that for 1979.

The major findings of the study can be summarized as follows.

1. A 10-percent increase in the per capita income raises the household's total expenditure by 7.3 percent.

2. Out of an increase of every one rupee in consumption expenditure, 28 percent goes to food, 20 percent to rent on housing, 12 percent to transport and travelling, 6 percent to clothing, and the remaining 34 percent to all other items.

3. The commodity groups for which income elasticity of demand comes out to be greater than one (i.e. the items which can be classified as luxuries or superior goods) include Rent, Furniture & Fixture, Education, Recreation, Travelling & Transport, and Others (laundry, telephone, domestic help, gifts, etc.). The combined weight of these items in the total budget amounts to 30 percent. The consumption of these items was also found to be fairly sensitive to changes in their own prices (with an elasticity of around −.5).

4. Regarding the relative price effects, it was found that food prices were the most important determinant of total expenditure (hence, of saving) as well as of demand for other commodities. The cross elasticity with respect to food price ranges between −.38 and −.56 for the above-mentioned superior items. A relatively low price elasticity of demand for food suggests that expenditure on food rises by 7

percent in response to a 10-percent increase in food prices. With its average budget share amounting to 51 percent, it amounts to an increase of 3.5 percent in total expenditure which the households finance partly by reducing their consumption of less essential items (2.1 percent) and partly by dissaving (1.4 percent).

5. It is unfortunate that education was found to be one of the items on which the households cut down their spendings significantly in order to finance the increased expenditure on food resulting from higher food prices. This kind of behaviour on the part of the general consumer is likely to counteract the government's efforts to enhance literacy through increased allocation of resources to the education sector.

6. The income- and inflation-elasticities of saving were estimated to be 2.75 and −0.5 respectively.

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