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Food Consumption Pattern in Sri Lanka: An Application of the LA/AIDS Model*

by

Jadunath Pradhan
Department of Economics, Victoria University of Technology
PO Box 14428, M.C.M.C., Melbourne, Victoria 8001

Indra Tudawe
School of Agriculture, La Trobe University, Melbourne, Victoria

Abstract

The value of parameter estimates and demand elasticities of major food items is well understood in the context of a country's food and nutrition policy, basic needs concerns and its international trade decisions. Unlike the single equation approach in the previous demand studies in Sri Lanka, in this paper the linear approximation version of the almost ideal demand system (LA/AIDS) model is implemented using the 1985 and 1990 household survey data to derive theoretically consistent demand estimates and elasticities for eleven food groups. Demand theoretic constraints are formally tested and the effects of socio-demographic variables such as family size, education and location of residence on Sri Lanka's food demand system are analysed. The study also analyses the changing nature of food consumption pattern between the two periods and draws implications for food policy programs in the country.

Key Words: LA/AIDS, Food System, Demand Elasticities

I Introduction

The study of food consumption pattern in Sri Lanka is interesting for several reasons. For one thing, in complete reversal of its largely inward-looking equity oriented policies of the past, the country has continued to adopt growth focussed open economy policies since 1977. Second, Sri Lanka which served as a role model for alternative development models in the nineteen sixties and seventies with a large public sector, emphasis in basic needs and food security policies was one of the first

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developing countries to liberalise its economy including the food sector and expose it to the international markets. Public sector expenditure programmes have been abolished or down sized, agricultural subsidy and price support schemes have been phased out to significantly low levels and quantitative restrictions have been supplanted by a tariff structure. While the food sector was partially protected during the early reform period, it suffered the most in the second wave of market liberalisation (1989). These episodic changes may have altered consumer's preferences and the food demand parameters substantially.

Surprisingly, food demand studies in the Sri Lankan context are rather scarce in the published literature. To our knowledge, the latest reliable estimates of elasticities of demand for food dates back to early eighties (Shan 1984). This and other studies on demand for food, however, employed the single equation method to the neglect of much of the demand system restrictions. The approach might have compromised the quality of parameter estimates and elasticities of demand for food.

The present paper aims to fill the gap by providing recent estimates of elasticities of demand for food in Sri Lanka for the years 1985/86 and 1990/91. In the country's context, the study makes a methodological improvement by employing a systems method of estimation to derive theoretically consistent demand parameters and elasticities. The theoretical restrictions of homogeneity and symmetry are tested and food demand elasticities for the two periods are compared to assess any noticeable change in consumer's preference over food groups.

The organisation of the rest of the paper is as follows. Section two is devoted to describe the model and the variables used in empirical analysis. A brief description of the data and the method is given in Section three. Substantive results are provided and discussed in Section four. Finally, concluding remarks are narrated in Section five.

II The Model

The model used is the linear approximation (LA) version of Deaton and Muellbauer's(1980) almost ideal demand system(AIDS), commonly known as the LA/AIDS model. The popularity of this model in applied research lies in its simplicity. It is easy to operationalism the model by most readily available software packages without being concerned with the convergence problem of the true non-linear AIDS. It provides a convenient device to impose the theoretical restrictions of homogeneity and/or symmetry, or to test them formally. Expenditure and price elasticities of demand are easily derived from parameter estimates and budget shares by simple formulae. The frequent use of LA/AIDS is also due to the fact that it often produces results similar to those obtained from the complete non-linear system (Deaton and Muellbauer 1980, Ray 1980).

The model is based on the assumption of weak separability between food and non-food goods allowing two-stage budgeting. In stage one total expenditure is allocated among food and non-food goods. The second stage is concerned with the allocation problem of food expenditure among the individual food items/groups, which depends on food expenditure and prices.

The estimated equations of the food demand system took the form:

$$w_i = \alpha_i + \sum_j \gamma_{ij} \log p_j + \beta_i \log Y + \delta_i \log S + \theta_i \log E + \pi_i L$$

where i,j = indices for demand equations and food groups, w_i = budget share of the i^{th} food group, p_j = price of j^{th} food group, Y = FE/P = deflated food expenditure, FE = food expenditure, and P = Stone's (1954) price index given by:

$$\log P = \Sigma\, w_k \log p_k$$

Note that following Heien and Pompelli(1988), the basic model is modified by including three sociodemographic variables. These are S = family size, E = level of education, and L = location dummy with value 1 for urban and 0 for rural sector.

Eleven food groups are included in this study. They are: rice(w_1), other cereals(w_2), spices(w_3), pulses(w_4), vegetables(w_5), meat(w_6), fish(w_7), milk and milk products(w_8), fats and oils(w_9), fruits(w_{10}), and other foods(w_{11}).

The Marshallian uncompensated elasticities of demand for food were derived by the standard equations below:

expenditure elasticities, $\varepsilon_{iy} = \frac{\beta_i}{w_i} + 1$

own-price elasticities, $\varepsilon_{ii} = \frac{\gamma_{ii} - (\beta_i w_i)}{w_i} - 1$

and cross-price elasticities, $\varepsilon_{ij} = \frac{\gamma_{ij} - (\beta_i w_j)}{w_i}$

Similarly, the Hicksian compensated elasticities of demand were obtained by using the following formulae:

own-price elasticities, $\varepsilon^*_{ii} = \frac{\gamma_{ii} + w_i}{w_i} - 1$

cross-price elasticities, $\varepsilon^*_{ij} = \frac{\gamma_{ij}}{w_i} + w_j$

III Data and the Method

The data used in the estimation of the food demand system came from Sri Lanka's National Household Income and Expenditure Sample Survey. The survey is conducted by the Department of Census and Statistics covering 25,000 households spread over 9 provinces divided into 168 electorates of the country. The census includes 9,380 urban, 14,380 rural and 1,340 estate households. For the purpose of manageability in data handling, the study used information from 779 and 946 households respectively for the years 1985/86 and 1990/91. The sample data came from 17 contiguous electorates of the largest province of the country, the Western province which includes the capital city Colombo, and 3400 urban, 1600 rural and 60 estates in the census.

The national survey collected data on quantities of consumption and total expenditure for a large number of individual food items, as well as some selected sociodemographic characteristics of each selected household. Implicit prices of individual food items were derived from total expenditure and purchase quantities. Price indices for aggregated food groups were calculated using the geometric mean with expenditure shares as weights.

The additivity restriction in the LA/AIDS model requires that corresponding estimated parameters of the intercept term and other variables across commodity groups sum to one and zero respectively. Since the budget shares add to one by data, expenditure share functions for ten food groups were estimated by using Zellner's (1962) ITSUR (Iterative Seemingly Unrelated Regression) method with homogeneity and symmetry restrictions imposed. 'Spices' was used as the *numeraire*, whose parameter estimates were obtained by using the additivity restriction.

The mean values of variables in the two data sets are shown in Table-1. As can be seen, nominal food expenditure and education on the average increased between 1985/86 and 1990/91, while average family size recorded a small decrease from 5.42 to 5.16. Compared to 1985/86, average food budget shares shifted in favour of rice, spices, pulses, meat and milk products at the expense of rest of the food groups.

Table 1: Comparison of Mean Values of Variables

Variable	1985/86	1990/91
w1	0.1970	0.2189
w2	0.1070	0.1001
w3	0.1070	0.1115
w4	0.0373	0.0450
w5	0.1465	0.1343
w6	0.0314	0.0368
w7	0.1242	0.1148
w8	0.0538	0.0564
w9	0.0223	0.0210
w10	0.0138	0.0102
w11	0.1598	0.1508
p1	7.2653	14.9816
p2	8.3204	14.6551
p3	19.9775	47.2364
p4	25.1481	47.5645
p5	9.3494	15.5369
p6	27.5094	68.1427
p7	34.3256	61.6191
p8	53.4579	100.7566
p9	52.2872	26.1534
p10	18.1005	60.8965
p11	21.3461	44.3164
Y	22.2525	21.9474
FE	1729.17	253.20
S	5.42	5.16
E	3.09	335

IV Model Results

The structural parameter estimates are of interest for technical comparison purpose across the two demand systems pertaining to the two time periods of this study. After comparison of estimated parameters, discussion is focussed on elasticities, the key policy parameters for planners, exporters and other decision makers.

Structural Parameters

Most of the expenditure and own-price parameter estimates of the two demand systems (Tables 2 and 3)were significant. The statistical significance of these coefficients suggests that food demands in Sri Lanka are responsive to their own prices and total food expenditure level. This also means that conclusions about the nature of demand for food commodities can be drawn and comparison of elasticity values between the two periods can be made with confidence.

It is obvious from the LA/AIDS elasticity formulae that commodities with negative expenditure coefficients, $\beta_i < 0$, are income inelastic and those with positive coefficients, $\beta_i > 0$, are income elastic. From Table-1, the estimated parameters show that in 1985/86 vegetables, meats, fish and fats and oils were income elastic and rice, other cereals, pulses and spices were inelastic. By 1990/91 (Table-2), however, rice and pulses appeared to have become income elastic, whilst fats and oils changed to income elastic.

Similarly, positive own-price coefficients, $\gamma_{ij} > 0$, indicate that the goods are price inelastic and those with negative estimates, $\gamma_{ij} < 0$, are price elastic. The signs of own-price coefficients show that in 1985/86 rice, spices, pulses, vegetables, fish and other foods are price inelastic, while meat, other cereals, fruits, milk and milk products and fats and oils appeared to have changed from price elastic to price inelastic foods.

except in the rice equation, most of the cross-price parameter estimates were found to be non-significant in the 1985/86 model. In the 1990/91 LA/AIDS model, each of the demand functions contained a substantially larger number of significant cross-price coefficients. This may have been due to increase in liberalisation which fosters greater degree of competition allowing enhanced consumer choice to substitute one food commodity for another.

Table 2: Parameter Estimates of Food Demand System: 1985/86

Food	Rice	Cereals	Spices	Pulses	Vegetable	Meats	Fish	Milk Prod	Fats & oil	Fruits	Others
Rice	0.008082	0.000804	0.00863	0.0092	-0.00271	-0.0236	-0.01842	-0.0044	0.00201	-0.0071	0.01085
	(0.69)	(3.126)	(1.653)	(2.03)	(-1.141)	(-3.175)	(-3.024)	(-0.987)	(0.882)	(-2.229)	(1.435)
Cereals	0.000804	-0.009673	-0.00615	-0.00312	-2.5E-05	-0.0082	-0.00308	0.00025	-0.00078	0.00083	0.006977
	(0.126)	(-1.55)	(-1.621)	(-0.992)	(-.005)	(-1.573)	(-0.692)	(0.078)	(-0.468)	(0.363)	(2.657)
Spices	0.00863	-0.00615	0.010743	0.0041	-0.00214	-0.01719	0.004429	-0.00581	-0.00149	-0.00342	0.008291
	(1.653)	(-1.621)		(1.383)	(-0.543)	(-3.803)	(1.249)	(-2.406)	(-1.105)	(-1.689)	(1.942)
Pulses	0.0092	-0.00312	0.0041	0.01118	0.005025	-0.025061	0.0066	0.001	0.0013	-0.00669	-0.00738
	(2.031)	(-0.992)	(1.383)	(2.27)	(2.324)	(-5.936)	(2.357)	(0.567)	(1.191)	(-3.404)	(-2.326)
Vegetable	-0.0071	-2.5E-05	-0.00214	0.005025	0.013914	-0.0069	0.0073	0.001988	0.00281	-0.02575	-0.01537
	(-1.141)	(-0.005)	(-0.543)	(2.324)	(2.15)	(-1.250)	(1.785)	(0.717)	(1.783)	(-1.036)	(-3.072)
Meats	-0.0236	-0.0082	-0.0179	-0.02506	-0.0069	-0.081837	-0.01158	0.00917	-0.00428	0.00018	0.00312
	(-3.175)	(-1.573)	(-3.803)	(-5.936)	(-1.250)	(-19.13)	(-2.737)	(0.287)	(-2.341)	(0.063)	(0.550)
Fish	-0.01842	-0.00308	0.004429	0.0066	0.0073	-0.01158	0.001663	0.00684	0.00028	0.001437	-0.005656
	(-3.024)	(-0.692)	(1.249)	(2.357)	(1.785)	(-2.737)	(0.24)	(2.069)	(0.171)	(0.686)	(-1.002)
Milk Prod	-0.0044	0.00025	-0.00581	0.001	0.001988	0.00917	0.00684	-0.029392	-0.00082	0.0013	-0.0641
	(-.987)	(0.078)	(-2.406)	(0.567)	(0.717)	(0.287)	(2.069)	(-8.21)	(-0.673)	(0.952)	(-1.44)
Fats & oil	-0.00201	-0.00078	-0.00149	0.0013	0.00281	-0.00428	0.00028	-0.00082	-0.021838	-0.000702	0.0025
	(-0.882)	(-0.468)	(-1.105)	(1.191)	(1.783)	(-2.341)	(0.1771)	(-0.673)	(-7.78)	(-0.876)	(1.233)
Fruits	-0.0071	0.00083	-0.00342	-0.00669	-0.002575	0.00018	0.001437	0.0013	-0.000702	-0.019179	0.001053
	(-2.229)	(0.363)	(-1.69)	(-3.404)	(-1.036)	(0.063)	(0.686)	(0.952)	(-0.876)	(-10.56)	(0.437)
Others	-0.01085	0.006977	0.008291	-0.00738	-0.01537	0.00312	-0.005656	-0.0641	0.0025	0.001053	0.049948
	(-1.435)	(1.657)	(1.942)	(-2.326)	(-3.072)	(0.550)	(-1.002)	(-1.44)	(1.233)	(0.437)	(4.93)

Table 2 (cont): **Parameter Estimates of Food Demand Systems of Sri Lanka: 1985/86**

Food	Expenditure	HH Size	Education	Location	Intercept
Rice	-0.028822 (-3.78)	0.06456 (7.74)	-0.019312 (-4.01)	-0.0501 (-8.79)	0.3279 (13.26)
Cereals	-0.022622 (-4.05)	0.03347 (5.74)	-0.0036 (-1.08)	0.01105 (2.77)	0.155559 (9.70)
Spices	-0.032254	-0.042	-0.87	-0.00821	0.113734
Pulses	-0.003141 (-1.10)	0.00169 (0.57)	0.0005 (0.29)	-0.0026 (-1.24)	0.049138 (5.16)
Vegetable	0.007657 (1.63)	-0.0137 (-2.74)	-0.0032 (-1.10)	-0.0137 (-4.00)	0.159264 (10.76)
Meats	0.03454 (7.18)	-0.1094 (-3.44)	0.00845 (2.69)	0.01322 (3.44)	-0.1145 (-6.83)
Fish	0.021038 (3.43)	-0.0139 (-2.149)	0.00118 (0.319)	0.02441 (4.644)	0.046592 (2.66)
Milk Prod	0.001376 (0.22)	0.00174 (0.25)	0.02172 (5.49)	0.01223 (2.61)	-0.0055 (-0.31)
Fats & oil	0.008919 (4.18)	-0.01152 (-5.02)	-0.0267 (-2.02)	0.0035 (0.24)	0.012076 (1.93)
Fruits	0.013309 (5.98)	-0.014 (-5.862)	0.00635 (4.621)	0.0069 (0.416)	-0.01854 (-2.61)
Others	-0.002954 (-0.33)	-0.025 (-2.66)	-0.0071 (-1.30)	0.01088 (1.69)	0.194652 (7.99)

Table 3: Parameter Estimates of Food Demand Systems of Sri Lanka: 1990/91

Food	Rice	Cereals	Spices	Pulses	Vegetable	Meats	Fish	Milk Prod	Fats & oil	Fruits	Others
Rice	0.037652 (2.566)	0.001967 (0.297)	0.003133 (0.248)	0.000197 (0.037)	-0.0107 (-2.437)	0.01028 (4.245)	-0.00224 (-3.660)	0.0071 (1.550)	-0.01469 (-4.170)	0.00773 (2.34)	-0.0485 (-5.583)
Cereals	0.001967 (0.297)	0.04133 (7.096)	-0.01253 (-3.803)	0.000179 (0.056)	-0.0056 (-1.946)	0.002967 (0.544)	-0.00135 (-3.448)	-0.00075 (-0.256)	-0.00614 (-2.903)	0.00239 (1.277)	0.010399 (1.889)
Spices	0.003133 (0.248)	-0.01253 (-3.803)	0.00483	0.00216 (0.444)	-0.00417 (-1.947)	0.011379 (2.353)	-0.00468 (-1.558)	-0.002275 (-1.062)	-0.00656 (-3.543)	0.000414 (0.0236)	-0.01599 (-3.83)
Pulses	0.000197 (0.037)	0.000179 (0.056)	0.00126 (0.444)	0.000484 (0.112)	0.006065 (3.026)	-0.0141 (-2.681)	0.002037 (1.721)	-0.001222 (-0.626)	0.00002 (0.01)	0.002269 (1.2)	0.002814 (0.725)
Vegetable	-0.0107 (-2.437)	-0.0056 -1.946	-0.00417 (-1.947)	0.006065 (3.026)	0.007565 (2.55)	0.0013 (3.784)	-0.00815 (-2.920)	0.00304 (1.313)	0.00037 (0.279)	0.000568 (0.466)	-0.00199 (-0.486)
Meats	0.01028 (4.245)	0.002967 (0.544)	0.011397 (2.353)	-0.0141 (-2.681)	0.0013 (3.784)	-0.07186 (-5.880)	0.019626 (4.051)	-0.00355 (-1.063)	0.00246 (0.743)	-0.000847 (-2.644)	0.008319 (1.233)
Fish	-0.00224 (-3.660)	-0.00135 (-3.448)	-0.00468 (-1.558)	0.002037 (0.721)	-0.00815 (-2.920)	0.019626 (4.051)	0.042315 (8.018)	0.003362 (1.133)	-0.00534 (-2.820)	0.000577 (0.334)	-0.013879 (-2.594)
Milk Prod	0.0071 (1.550)	-0.00075 (-0.256)	-0.002275 (-1.062)	-0.00122 (-0.626)	0.00304 (1.313)	-0.00355 (-1.063)	0.003362 (1.133)	-0.0003 (-0.080)	-0.003384 (-2.587)	0.00186 (1.576)	-0.00387 (-0.892)
Fats & oil	-0.01469 -4.17	-0.00614 (-2.903)	-0.00656 (-3.543)	0.00002 (0.01)	0.00037 (0.279)	0.00246 (0.743)	-0.00053 (-2.820)	-0.00338 (-2.587)	0.0315 (17.605)	0.004682 (3.873)	-0.002908 (-1.115)
Fruits	0.00773 (2.34)	0.00239 (1.277)	0.000414 (0.236)	0.002269 (1.2)	0.000568 (0.466)	-0.00847 (-2.644)	0.000577 (0.334)	0.00186 (1.576)	0.004682 (3.873)	-0.01893 (-11.484)	0.00691 (2.915)
Others	-0.0485 (-5.583)	0.010399 (1.889)	-0.01599 (-3.83)	0.002814 (0.725)	-0.00199 (-0.486)	0.008319 (1.233)	-0.01388 (-2.594)	-0.00387 (-0.892)	-0.00291 (-1.115)	0.00691 (2.915)	0.079456 (7.416)

Table 3 (cont): Parameter Estimates of Food Demand Systems of Sri Lanka: 1990/91

Food	Expenditure	HH Size	Education	Location	Intercept
Rice	0.015696 (2.58)	0.015002 (2.28)	-0.0545 (-9.98)	-0.06365 (-11.23)	0.02543 (9.07)
Cereals	-0.0012 (-0.29)	0.010756 (2.47)	0.000339 (0.09)	0.019051 (5.12)	0.115626 (7.05)
Spices	-0.00558	-0.04077	-0.0666	-0.00381	0.140749
Pulses	0.004922 (2.01)	-0.00405 (-1.53)	0.004486 (2.03)	-0.01248 (-5.44)	0.053225 (4.67)
Vegetable	0.01553 (4.44)	-0.01501 (-3.98)	-0.005 (-1.61)	-0.00786 (-2.39)	0.106983 (8.33)
Meats	..00544 (1.28)	-0.00044 (0.10)	0.014964 (5.14)	0.022374 (5.67)	0.079147 (3.86)
Fish	0.007118 (1.67)	-0.00832 (-1.81)	0.004964 (1.30)	0.008536 (2.18)	0.019711 (1.20)
Milk Prod	-0.01704 (-3.72)	0.01053 (2.12)	0.022282 (5.04)	0.010171 (3.88)	0.06376 (3.95)
Fats & oil	-0.00246 (-1.48)	-0.00205 (-1.11)	0.005922 (3.53)	0.006338 (4.08)	0.019427 (2.55)
Fruits	0.00172 (1.15)	0.001711 (1.07)	0.004748 (3.53)	-0.00017 (-0.14)	0.019245 (2.74)
Others	-0.02417 (-3.71)	0.014404 (2.04)	0.00919 (0.32)	0.007858 (1.32)	0.127831 (5.33)

Tables 2 and 3 show that most coefficients of all the three sociodemographic variables- household size, education and location of residence- were significant in both the time periods. This suggests that these sociodemographic variables might alter food consumption pattern in important ways. Therefore, disaggregated models classified by one or more of these variables may be necessary to derive more precise estimates of elasticity values for policy analysis. For both periods, family size seemed to shift consumption pattern away from vegetables, meat, fish, fruits, fats and oils, and other food groups to more basic goods as rice, other cereals, and milk products. Better educated households appeared to consume more meat, fish, milk products, fruits and less rice, vegetables and spices. In 1885/86, education appeared to have negative effect on consumption of fatty commodities, but by 1990/91, the trend seemed to have been reversed. In both time periods, urban households tended to demand more meat, fish, milk products, fats and oils, other cereals and other foods, but less rice, spices, pulses and vegetables than their rural counter parts.

Elasticities

The food expenditure and Own-price elasticities are presented in Table 4. As it would be expected, the expenditure elasticities were found to be positive indicating that each of the food groups is a normal good. While the food groups can be characterised as relatively necessities and luxuries within a sample period, the categorisation was found to be tenuous between the sample periods. For example, rice, other cereals and pulses which were relatively necessities in 1985/86 turned out to be luxuries in 1990/91. Similarly, in ome elastic luxury food groups- fats and oils, and fruits- in 1985/86 became necessities. Thus, food consumption pattern in Sri Lanka, as judged by expenditure elasticities, changed substantially during the five year period.

Table 4: Food Expenditure and Own-price Elasticities of Demand: 1985/86 and 1990/91

Food Group	Expenditure 1985/86	Elasticities 1990/91	Own-price 1985/86	Elasticities 1990/91
Rice	0.85	1.07	-0.93	-0.84
Other Cereals	0.79	0.99	-1.07	-0.59
Spices	0.81	0.95	-0.70	-0.84
Pulses	0.92	1.11	-0.70	-0.99
Vegetables	1.05	1.16	-0.91	-0.96
Meat	2.10	1.15	-3.65	-2.96
Fish	1.17	1.06	-1.02	-0.64
Milk Products	1.03	0.70	-1.55	-0.99
Fats and Oils	1.40	0 88	-1.99	-0.85
Fruits	1.97	1.17	-2.40	-2.86
Other Foods	0.98	0.84	-0.68	-0.45

The price responsiveness of food demands, as measured by own-price elasticities, also showed marked changes in consumption pattern between the sample periods. The own-price elasticities of the food groups had negative sign in both years indicating absence of Giffen goods in the Sri Lankan Food System. Demand for meat and fruits remained price elastic, while that for rice, spices, pulses, vegetables, and other foods remained price-inelastic in both sample periods. With the exception of pulses, vegetables and fruits where own-price responses increased marginally, price elasticities of demand for all other food groups declined substantially. The decline in price responsiveness became so severe that four food groups- other cereals, fish, milk products, and fats and oils- which were price elastic in 1985/86 became price inelastic in 1990/91. The general decrease in price sensitivity of demand for food in Sri Lanka may have been due to its market liberalisation which induces low competitive food prices and income-growth led high volume consumption.

Like the expenditure elasticities, own-price elasticities of demand for food varied significantly in magnitude over a relatively short period of five years. The above results suggest structural change in the food demand system of the country. It may ,therefore, be necessary to re-estimate food demand parameters more frequently and compute the necessary elasticities for effective policy making.

V Conclusions

The paper provided useful parameter estimates and food demand elasticities for the two sample years, one each during the two waves of market liberalisation in Sri Lanka. Most own-price and expenditure coefficients of the food budget share equations were significant. This indicates that households in the country will respond well to price and income policies of the government. Given the relatively large number of income elastic food groups compared to own-price elasticities in the latest sample year 1990/91, poverty and income distribution goals may be best served by income transfer policies than generally distortionary price policies.

The LA/AIDS results indicated that expenditure and own-price elasticities of demand for food altered significantly over a span of just five years, often reversing income inelastic commodities to elastic goods, and conversely. Frequent estimation of food demand parameters and derivation of key elasticities of demand may be necessary for effective policy making, especially during periods of rapid restructuring. Own-price elasticities of demand for most food commodities declined between 1985/86 and 1990/91. Only meat and fruits were persistently price elastic, where exporters and domestic traders alike may benefit by under cutting prices.

The commodity substitution possibilities, as judged by significant estimated parameters, seemed to have increased appreciably between the two sample periods. This and the general reduction in own-price elasticities tend to suggest that the liberalisation of the Sri Lankan economy may have contributed to increased competition, lower food prices (higher volume consumption) and income growth to allow greater consumer choice.

The sociodemographic variables- family size, education, and location of residence- affected the food budget share equations significantly. More precise estimates of food demand parameters and elasticities may ,therefore, be derived from demand systems disaggregated by the above variables for reliable food production and distribution policies. Urban dwellers and more educated households in general consumed more of high food-value commodities such as meat, fish and milk products, and less of rice, vegetables and spices . Households with more family members tended to spend more on subsistence foods such as rice and other cereals and less on meat, fish, fats and oils, fruits and vegetables.

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Appendixes

Table 5: Uncompensated Elasticities: 1985/86

	Rice	Cereals	Spices	Pulses	Vegetable	Meats	Fish	Milk Prods	Fats	Fruits	Others
Rice		0.0776	0.0602	-0.1355	-0.0872	-0.1244	-0.0508	-0.1563	0.0087	-0.1330	0.1101
Cereals	0.1463		-0.4998	0.0554	-0.1230	-0.1481	-0.1283	-0.0789	-0.0574	0.1804	0.1965
Spices	0.1258	-0.1061		-0.2094	-0.1382	-0.1475	-0.2609	0.1597	-0.2773	0.0272	0.1446
Pulses	-0.1866	0.0682	-0.3447		0.1802	0.6830	-0.1397	0.0462	-0.5645	0.1838	0.2474
Vegetable	-0.1600	-0.0345	-0.2999	0.0519		-0.1006	-0.3326	0.0390	-0.1451	0.0241	0.1804
Meats	-0.4932	-0.4622	-0.6012	0.7235	-0.2289		0.6240	0.2646	-0.1477	0.0503	0.1122
Fish	-0.1735	0.2183	-0.2510	-0.0429	-0.5501	0.1021		0.0702	-0.1452	0.0154	-0.0006
Milk Prods	-0.2978	-0.2684	0.4222	0.1175	0.5448	0.1598	1.2285		0.1448	-0.2147	-1.1245
Fats	0.2127	-0.2834	-0.5183	-0.0343	-0.0482	-0.1720	-0.4724	0.0701		0.3200	0.2116
Fruits	-0.5755	0.5678	0.3522	0.4743	1.7182	0.1489	0.4304	-0.1106	0.5104		-0.8116
Others	0.1494	0.1005	0.0956	0.0616	0.1568	0.0325	0.0168	-0.2056	0.0249	-0.2766	

Table 6 - Uncompensated Elasticities : 1990/91

	Rice	Cereals	Spices	Pulses	Vegetable	Meats	Fish	Milk Prods	Fats	Fruits	Others
Rice		0.060056	0.09232	0.106777	-0.11463	-0.21518	-0.10519	-0.30325	0.0750	-0.03489	0.078427
Cereals	0.222093		-0.03417	0.037255	-0.44868	-0.10047	-0.04398	-0.13074	-0.14457	0.010422	0.22267
Spices	0.143373	-0.18193		-0.18158	-0.18979	-0.13042	-0.17137	0.067054	-0.14425	0.023497	0.013623
Pulses	0.097744	0.028669	-0.25216		0.145823	0.322279	0.073558	0.04104	-0.26137	0.052938	0.099603
Vegetable	-0.1038	-0.1492	-0.13384	0.063769		-0.14336	-0.14723	0.045935	-0.16761	0.021107	0.077168
Meats	-0.39767	-0.8383	-1.40417	0.368345	-0.35045		0.495792	0.186775	-0.07364	0.226733	0.448623
Fish	-0.23439	-0.16405	-0.16443	0.027588	-0.11128	0.178988		0.041608	-0.01952	0.123275	0.266567
Milk Prods	-0.19217	-0.16335	0.307312	0.132243	0.546522	0.10509	0.344329		0.062482	-0.6887	-0.11426
Fats	0.849962	-0.22225	-0.2343	-0 0638	-0.55679	-0.09134	-0.17407	0.199683		0.09563	0.242871
Fruits	-0.7955	0.217627	0.215346	0.215156	0.2098	0.076901	0.25244	-0.48681	1.825584		-0.70473
Others	0.096285	0.098292	0.044936	0.031818	0.051655	0.065946	0.125665	-0.3407	0.02546	-0.37435	