AN ANALYSIS OF THE EXPENDITURE PATTERNS OF JAMAICAN HOUSEHOLDS*

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INTRODUCTION

The last report study of household consumption patterns in Jamaica utilized 1958 survey data (Harris, 1964). More recent results from time series analysis (Adams, 1968) and other Caribbean countries (Meyers, 1977) are available. However, the changes in food prices, availability and socio-economic features of households in Jamaica since 1958 likely have altered consumption patterns significantly. The present analysis is designed to contribute to the understanding of consumption patterns in Jamaica by providing summary results from the Household Expenditure Surveys of 1975, 1976 and 1977. These surveys were conducted by the Statistical Institute of Jamaica (STATIN) for all of Jamaica and included 3,495,486 (during 4 seasons), and 1,004 households, respectively, for the three years.

The analysis of the 1975-1977 consumer expenditure survey data proceeds from a summary of general descriptive information to the estimation of Engel curves. The descriptive analysis is for all survey years. Because this descriptive analysis shows little variation among the three years and to make the computation more manageable, the Engel curves are estimated from the 1977 survey data only, and for several partitions of the sample. In particular, these partitions consist of low income households (less than J$5,000) and high income households (above J$5,000), Kingston, other main towns and rural households and finally agricultural and non-agricultural households. Moreover, the estimated Engel curves for the agricultural and non-agricultural households allow demographic translating variables to influence household consumption of food and non-food as well.

Section 2 describes the survey data that were used in this study. Allocations of household budgets by broad expenditure groups and among

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food groups are discussed in Section 3. The purpose of this descriptive analysis is to provide a general perspective for current consumption patterns and for the Engel curve estimates. Semilog Engel curves and the methods of introducing demographic translating variables into these income consumption relationships are reviewed in Section 4. Results for the Engel curve analysis are presented in Section 5. Section 6 contains a set of concluding comments and some observations on the implications of our results.

DATA

The data for this study are from three household expenditure surveys conducted by STATIN. These surveys were conducted by STATIN in 1975, 1976 and 1977. Detailed descriptions of the three surveys and the associated data sets is contained in separate reports (Banskota, Johnson, and Stampley, 1985a, 1985b, 1985c, and STATIN 1986). However, a brief description of the survey data as they pertain to the current analysis is provided to develop a context for the results of the statistical analysis.

The consumer expenditure surveys are of standard form collecting food expenditures on a weekly basis and reflecting value of food consumed from home production and received as gifts. Expenditures are collected for other items for longer periods, 3 months for semi-durables, one year for durables, etc. As in most consumer expenditure surveys, the data on income proved incomplete and/or unreliable. Thus, the income concept used was total household expenditure (adjusted for at home production and goods received as gifts).[1]

The descriptive analysis is by major expenditure category and for food, by major survey section or food group. Per capita expenditure values were calculated for each household. The household size variable used was the number of members in a household and unadjusted for age and sex composition.

The estimation of the Engel curves used the 1977 survey only for several reasons. First, preliminary estimates of Engel curves for 1975 indicated little difference from the estimates based on 1977 data. Second, 1977 is more recent in time than 1975. Results on Engel curves estimated for 1975, however, can be found in another report (Banskota, Johnson, and Stampley 1986).

The original 1977 survey consisted of 1,004 households. During editing the data, 11 households had to be deleted. The remaining 993 households were partitioned to provide alternative estimates of the demand for food and non-food as conditioned by per capita income and household size. Households with annual total expenditure of less than J$5,000 are classified as low income households and those with an annual total expenditure greater than J$5,000 are classified as high

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1 Although STATIN made an effort to collect structured data for household income, the survey editing revealed that a large number of households had not reported their incomes. Thus, this variable as a determinant of expenditure patterns had to be abandoned. Total expenditure of the household was utilized instead of income.

income households.[2] A second set of partitionings was by location (Kingston, other towns and rural areas). Using reported occupation status of household head, households are classified as agricultural and non-agricultural. In estimating the Engel curves for the agricultural and non-agricultural households, several demographic translating variables are also utilized. Finally, Engel curves are estimated for the full 1977 sample.

ALLOCATION OF HOUSEHOLD BUDGETS

The two descriptive tables presented summarize key features of consumption patterns from the 1975, 1976, and 1977 STATIN household expenditure surveys. The discussion of these descriptive results, for all of Jamaica, is supplemented by a number of general observations that were developed based on the more detailed analyses of these data (Banskota, Johnson, Stampley 1985a, 1985b, 1985c; STATIN 1986).

Major Commodity Groups:

Table 1 provides the estimated distribution of total expenditures of households by broad commodity groups for 1975, 1976 and 1977 Household Expenditure Surveys. Specifically reported in Table 1 are the average expenditure, budget shares and the standard deviations of average expenditure for households for the three survey years. The expenditure are for 11 commodity groups, with food disaggregated to show a special category for purchased meals.

Food expenditure clearly accounted for the largest share of household budgets in Jamaica for all three of the survey years. The share for food was approximately 50 per cent when augmented by purchased meals. A moderate decline in food budget shares was recorded in 1977 relative to 1976. However, this may have been more due to sampling variations than a real shift in consumption patterns. The decline in the food budget shares in 1977, however, appeared to have been due to an increase in the household operation and transport budget shares, which ranked second and third, respectively, in all the three years. These changes may have reflected availability of food as well as changes in relative prices of fuel and energy. The health care budget shares were the lowest in all three survey years.

When household expenditure shares were analyzed for the three regions, rural households had food budget shares that were generally 15-30 and 5-15 percent higher than Kingston and other towns, respectively (see STATIN 1986, Banskota, Johnson, and Stampley 1985a, 1985b, 1985c). Household operating costs in Kingston were almost double those in rural areas. However, households in the three locations tended to allocate almost uniform proportions (about 10 per cent) of their total expenditure to transportation. Generally, Kingston households had larger purchased meals budget shares than either other towns or rural households.

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[2] The income classification (proxied by household total expenditure) (J$5,000 and below or above) was selected on the basis of a more detailed study of the survey data.

Food Commodities

In Table 2, a detailed breakdown of the distribution of household food budget shares is shown for each of the three survey years. Meats, poultry, and fish constituted the largest food budget share of households in all three years. A moderate decline in the meats, poultry, and fish budget share in 1977 relative to 1976 was compensated for by an increase in the starchy food and tubers and in the purchased meals budget shares, perhaps due to availability and changes in real income associated with increased energy prices. Cereals and breakfast drinks were the second most important shares for household food expenditures. Purchased meals also was an important component of household food expenditures.

A further breakdown of food budget shares of households by type and location revealed that the budget shares did not vary much by the location (Kingston, other towns, and rural areas). Meat, poultry, and fish group had the highest share in all locations and for all three survey years. The cereals and purchased meals budget shares had a pattern very similar to the one observed for the aggregate sample. Starchy food and tubers budget shares were the highest in the rural areas (Banskota, Johnson, Stampley 1985a, 1985b, 1985c, STATIN 1986).

This descriptive analysis provides an overview of household expenditures by broad expenditure groups. However, the manner in which expenditure patterns respond to changes in household features or their economic conditions as reflected by income is not addressed explicitly. The Engel analysis will evaluate how household expenditure patterns responded to changes in household features and their economic condition as reflected by household income. An analysis of the 1975-77 surveys relating consumption patterns to relative prices is presently underway.

THE ENGEL CURVE MODEL

The semilog Engel curve can be obtained from utility maximization when price effects are constant. With the budget shares as the dependent variables, the adding up condition (the relevant restriction on the demand functions in the absence of price effects) is also satisfied. The semilog Engel curve has received wide empirical application (Working, 1943; Prais and Houthakker, 1955; Lesser, 1961; FAO, 1972; Meyers, 1977; Harris, 1964; Adams, 1968; Deaton and Muellbauer, 1986). The semilog Engel curve can be written as

$$(1) \qquad w_i = a_i + b_i \log Y$$

where w_i is the i-th budget share, Y is income (total expenditure) and a_i and b_i are parameters to be estimated. The income elasticity of demand for the semilog specification is

$$(2) \qquad n_i = 1 + b_i/w_i .$$

A convenient method of classifying commodities consumed by households is provided by considering the sign and magnitude of the estimated income elasticity. Commodities are classified as luxuries in $n_i > 1$,

necessities if $1 > n_i > 0$ and inferior if $n_i < 0$ (see Figure 1).[3] The semilog specification implies a declining income elasticity as income rises which is plausible.

Income or expenditure has been the traditional variable hypothesized to influence household expenditure patterns. However, other socio-economic variables are important in determining expenditure pattern of households. Single person households may have different expenditure patterns than larger households. For example, single member households may spend more on meals away from home than larger households. The sex of the household head may influence expenditure patterns, i.e. female heads of households may be more efficient in food preparation than males (Capps, Tedford, and Havlicek, 1985). Urban households may exhibit different food preferences than rural households. Age of the household head may also influence expenditure patterns and finally, larger households may be more likely to experience economies of scale than smaller households.

The inclusion of these socio-demographic variables in estimating demand equations is not new (Barten, 1964). However, recently there has been increasing interest in the use of socio-demographic variables in addition to income and prices in estimating demand equations or systems (Howe, 1977; Lau, Lin and Yotopoulos, 1978; Capps, Tedford, and Havlicek, 1985; Pollak and Wales, 1981). Pollak and Wales (1981) have outlined theoretically consistent methods for introducing socio-demographic variables in estimating demand systems. The methods are known as scaling and demographic translating. Demographic "scaling" requires normalization of prices, whereas demographic "translating" effects the subsistence parameter.

In this study demographic translating as defined by Pollak and Wales (1981) has been utilized, i.e.,

$$(3) \quad a_i = a_i^* + a_{1i}\,\text{AGE} + a_{2t}\,\text{MALE} + a_{3i}\,\text{KINGSTON} + a_{4i}\,\text{OTHERTOWNS} + a_{5i}\,\log(\text{FSIZE})$$

where AGE refers to the age of the household head, MALE the household head (a qualitative variable is a male), KINGSTON and OTHERTOWNS are the locations (dummies) of the household, and FSIZE household size.[4] For the semilog function with demographic translating $\Sigma a_i^* = 1$ and $\Sigma_i a_{ki} = 0$ for $k = 1 \ldots 5$ are imposed to preserve the Engel aggregation condition. Engel curves with the demographic translating variables are estimated only for the agricultural and non-agricultural households.

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[3] The budget share elasticity with respect to income or expenditure is simply $n_i = b_i / w_i$.

[4] The variables that are implicit in the intercept term are FEMALE (if household head is a female) and RURAL (if location of household is in the rural area). Log (FSIZE) corresponds to the logarithm of household size.

RESULTS FROM THE ESTIMATED ENGEL CURVES

Location of Income Class

In Table 3 results of estimated income and scale elasticities for the three locations in Kingston, other towns, and rural areas, and for the two income groups and whole of Jamaica, using the 1977 survey data, are presented. The fruits and vegetables and cereals and starchy foods groups from Table 2 were aggregated. This was necessary since a preliminary analysis produced erratic results, perhaps due to problems that the household had in delineating between these foods. The estimated structural coefficients from equations (1) from which these estimates were derived are not reported for reasons of available space.[5] However, most of the estimated coefficients were significant at the 1 per cent level. The R^2 values were around 40 per cent, not high as anticipated in cross section analysis.

All the estimated income or expenditure elasticities were higher for low income households than for high income households. Note that for the low income households, the meat, poultry, and fish, fruits and vegetables, and non-food groups were luxuries. For the high income households only non-food was a luxury, with all food groups as necessities. Economies of scale were more prevalent among the high income households than low income households. Generally, these estimated scale economies appeared high compared to other studies. This may have been due to the fact that the household size variable did not account for the age-sex composition of the members.

All commodities that qualified as luxuries for the low income household also did not exhibit the presence of scale economies. Beverages which appeared to be a necessity for the low income households also exhibited diseconomies of scale. Also note that for total food, low income households had higher income elasticities than high income households and at the same time the former types of households did not show scale economies in overall food consumption. This combination of results may be reflecting low levels of food consumption among the low income households.

Also provided in Table 3 are the estimated income and scale elasticities for rural areas, other towns, and Kingston. In Kingston, where incomes were generally higher than in the rural areas or other towns, the estimated income elasticities were modestly lower in most cases than in rural areas and other towns. Rural areas, in most cases, had the highest income elasticities. In Kingston, miscellaneous foods, purchased meals, and non-food were luxuries. In other towns only the miscellaneous foods and non-foods were luxuries. For rural areas, purchased meal and non-food were luxuries for all regions. Most food groups exhibited scale economies except purchased meals. Non-food exhibited modest diseconomies of scale in all three regions. The income elasticity for total food was lowest in the other towns and the scale economies were highest for this region.

Agricultural and Non-Agricultural Households

Tables 4 and 5 present results on the estimates of the Engel

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[5] Note tht besides income, household size (in logarithms) is also included in the Engel curves estimated for the three locations, the two income groups and the full sample.

curves with the translating variables for the agricultural and non-agricultural households. The last two columns of these tables also report the income and scale elasticities. The influence of location on allocation of food budget shares of agricultural households was not significantly different for Kingston and other towns relative to rural households. A significant difference, however, did appear in the allocation of non-food shares between Kingston and rural households and between other towns and rural households for the purchased meals budget shares. The Kingston household had nearly 12 per cent larger total food budget shares than rural households.

The food expenditure pattern was different, however, among non-agricultural households. For instance, relative to the rural areas, Kingston households allocated nearly 2 per cent less to meat, poultry, and fish, 1 per cent more to dairy products, 3 per cent less to cereals and starchy foods, 1/2 per cent less to sugar and other sweeteners. Significant differences in the food budget shares were not observed between other towns and rural households.

Based on the 1977 survey data, the age of household head did not appear to be a factor of importance in food budget allocations for either agricultural or non-agricultural households. Among the non-agricultural households, male-headed households appeared to allocate about 3 per cent more on non-food and 3 per cent less on total food relative to female-headed households. For the agricultural households, sex of the household head was not an influence on household expenditure allocations.

The income coefficients estimated were generally more significant for non-agricultural households than agricultural households. For the agricultural households the lower statistical significance of the estimated coefficients may be due to the fact that such households consumed from their own production. Even though the income/expenditure measure attempted to account for all home produce consumed and traded by the households, this produce may not have been accurately reported by the agricultural households. External income shocks thus did not appear to have an impact on the consumption of some food groups for the agricultural households.

For the agricultural households, meats, purchased meals, and non-food were luxuries. However, total food falls in the necessity category. For the non-agricultural households, all food groups except purchased meals were necessities and coefficients were, in general, highly significant. For the non-agricultural households most foods were presumably purchased. Hence, reported income/expenditure also was a relatively stronger factor in explaining the food budget shares.

The scale coefficient estimates showed significant economies in the consumption of dairy products, oil and fats, cereals and starchy foods, fruits and vegetables, and total food for both agricultural and non-agricultural households. Non-food also exhibited diseconomies of scale for both types of households. Notice that for both groups, the economies of scale realized in the consumption of food tended to "cancel out" with the diseconomies of scale in consumption of non-food.

Comparison Studies

Finally, selected results in Table 6 reported by Harris (1964) and Adams (1968) are reproduced. A comparison of our results to those of Harris and Adams is not strictly appropriate for several reasons.

First, the food groups utilized by Harris were more disaggregated than those of this study. Second, both Harris and Adams utilized the value of actual consumption as the dependent variable while this study used budget shares. The estimated elasticities also thus become different. In the Harris study the elasticities estimated are food expenditure elasticities, whereas in this study the elasticities estimated are quantity demand elasticities. Furthermore, savings is also included along with all reported expenditures and income in kind to form the independent variable in Harris' study. Adams, on the other hand, used per capita disposable income. Harris (1964) also notes that income data were unsatisfactory. Even though the above listed differences are important, it is worth making broad comparisons of the income elasticities estimated.

For some food groups which appear to be more comparable than others, for example, beverages, sugar, purchased or outside meals (meals away from home) and total food, the elasticities reported in Tables 3 and 6 are similar. Other reported elasticities show major differences. The demand for the first food group consisting of meats and poultry appears to have become more inelastic over the 20 year period. Purchased meals demand appears to have become more elastic in Kingston in 1977 relative to 1958. Also, the income elasticity of total food appears to have increased in Kingston in 1977 relative to 1958, but remained fairly stable in other two regions.

CONCLUDING COMMENTS

For Jamaican households, food constituted the largest budget share. The tendency for food budget shares to decline with income was exhibited for the Jamaican households. Investigations of the disaggregated food budget share revealed that the meats, poultry, and fish group was the most important. Starchy food budget shares were found to be higher in rural areas than in Kingston or other towns. In general, across the three survey years, the total and food expenditure shares did not vary significantly.

Several semilog Engel curves were estimated using the 1977 survey data. Also, Engel curves with demographic translating variables, age and sex of the household head, location of the household, and household size were estimated for agricultural and non-agricultural households. Rural income elasticities were generally higher than the corresponding elasticities for other towns and Kingston. High income households had lower income elasticities than low income households. For the low income households, the meats, poultry, and fish group and the fruits and vegetables group were luxuries. The scale elasticities estimated indicated the presence generally of economies. The scale economies/diseconomies estimated were fairly large in magnitude and, perhaps a result of not accounting for the age-sex composition of the household members.

The 1977 survey data, when partitioned for agricultural and non-agricultural households, indicated in most cases lower food demand (income) elasticities for non-agricultural households than agricultural households. As translating variables, age and sex of household head were not important to agricultural household expenditure decisions. Also, changes in the location of agricultural households did not result in significant differences in household food

budget allocations. For the non-agricultural households, these differences due to translating variables were more marked. In general, the demographic translating variables were found to be more important in influencing expenditure decisions of non-agricultural households than agricultural households.

FIGURE 1: SEMI-LOGARITHMIC ENGEL CURVE

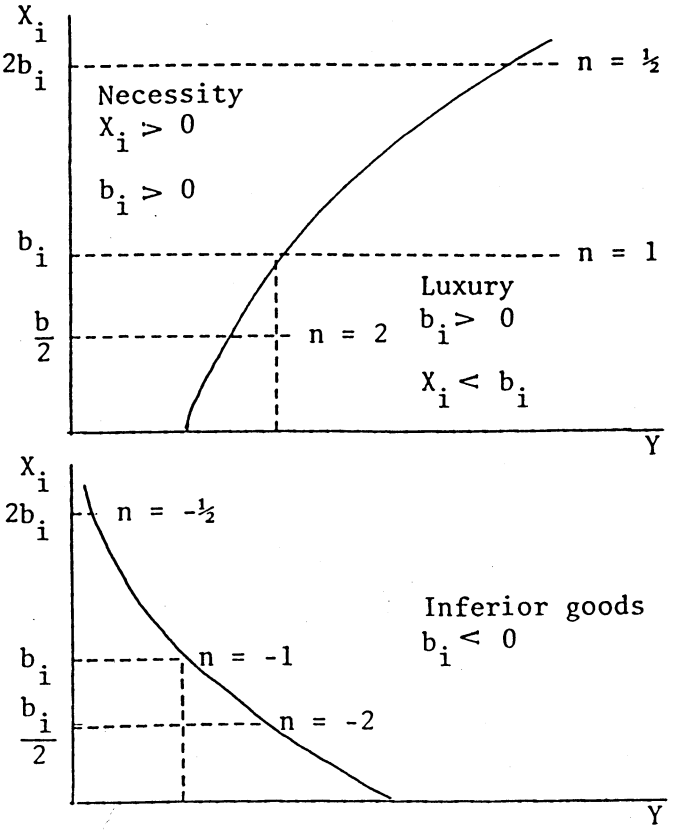

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Table 1

Distribution of Total Expenditure Shares and Average Expenditure ($J) per Household by Type of Expenditure: Jamaica, 1975, 1976, and 1977

Expenditure Type	1975			1976			1977		
	Share	Average Expenditure	Standard Deviation	Share	Average Expenditure	Standard Deviation	Share	Average Expenditure	Standard Deviation
Purchased Meals	5.49	210.16	438.05	5.49	186.27	323.86	6.17	218.56	356.56
Food	46.87	1,792.85	1,296.70	48.99	1,633.44	1,340.39	39.74	1,406.28	990.33
Fuel	4.17	159.47	172.85	3.94	133.82	204.92	4.60	162.64	170.26
Household Operation	9.41	359.93	908.31	9.60	325.80	863.81	11.45	405.22	940.33
Household Durables	2.23	85.41	262.85	2.20	74.58	314.75	2.39	84.61	232.93
Personal Care	8.27	316.32	948.30	6.14	208.54	531.13	9.73	344.12	1,352.10
Health Care	1.74	66.44	236.53	1.83	62.13	170.26	1.51	43.46	142.47
Clothes	4.84	185.27	238.92	4.33	147.13	264.15	4.89	172.99	222.14
Transportation	8.64	330.55	1,080.06	10.09	342.64	1,730.10	11.01	389.56	1,276.67
Recreation	4.78	182.92	489.24	4.23	143.53	344.50	5.18	183.45	384.78
Miscellaneous	3.55	135.86	1,022.92	3.17	107.49	295.62	3.32	117.54	286.11
Total	100.00	3,925.18	3,845.66	100.00	3,395.37	3,671.62	100.00	3,538.43	3,706.26

Source: Banskota, Johnson, and Stampley, 1985c, Report 2, Table 16.

Table 2

Distribution of Food Expenditure Shares and Average Expenditure ($J) per Household by Type of Food Expenditure: Jamaica, 1975, 1976, and 1977

Food Type	1975			1976			1977		
	Share	Average Expenditure	Standard Deviation	Share	Average Expenditure	Standard Deviation	Share	Average Expenditure	Standard Deviation
Meat, Poultry, Fish	31.29	626.84	545.73	33.12	612.55	675.18	28.75	467.11	434.30
Dairy Products	8.75	175.40	160.99	8.93	165.22	145.32	8.66	140.70	129.21
Oils and Fats	2.75	55.17	44.95	3.08	56.93	62.33	2.77	44.98	48.93
Cereals and Breakfast Drinks	13.91	278.55	203.75	13.85	256.17	198.27	13.21	214.68	166.97
Starchy Roots and Tubers	7.98	159.85	160.79	8.85	163.77	129.67	10.62	172.52	153.69
Vegetables	9.35	187.33	161.26	9.14	169.03	141.66	9.22	149.81	161.20
Fruit and Fruit Juices	3.62	72.56	121.47	2.94	54.36	74.74	3.00	48.80	70.88
Sugar and Other Sweets	2.42	48.46	48.17	2.41	44.55	43.51	2.17	35.30	40.57
Beverages	4.20	84.06	105.29	3.73	69.05	94.46	3.91	63.47	81.76
Purchased Meals	10.49	210.16	438.05	10.07	186.27	323.86	13.45	218.56	356.56
Miscellaneous	5.22	104.62	199.46	3.88	71.81	136.73	4.24	68.91	187.63
Total	100.00	2,003.01	1,465.98	100.00	1,849.71	1,483.33	100.00	1,624.84	1,158.98

Source: Banskota, Johnson, and Stampley, 1985c, Report 2, Table 17.

Table 3

Income and Scale Elasticities: Jamaica, 1977

Expenditure Groups (Budget shares)	Rural Areas		Other Towns		Kingston		Low Income Households		High Income Households		All Jamaica	
	Income Elasticity	Scale Elasticity	Income Elasticity	Scale Elasticity	Income Elasticity	Scale Elasticity	Income Elasticity	Scale Elasticity	Income Elasticity	Scale Elasticity	Income Elasticity	Scale Elasticity
Meats, Poultry and Fish	0.9544	-0.0444	0.7163	-0.1415	0.7979	-0.0163	1.0748	0.2476	0.4225	-0.5360	0.8557	0.0206
Dairy Products	0.7505	-0.2515	0.7580	-0.2100	0.6357	-0.2267	0.7017	-0.2889	0.3567	-0.6124	0.7992	-0.1827
Oils and Fats	0.8896	-0.2254	0.6095	-0.0533	0.5865	-0.3383	0.4856	-0.4038	0.4091	-0.3636	0.5081	-0.3946
Cereals and Starchy Foods	0.5460	-0.2807	0.5686	-0.2061	0.5175	-0.1882	0.6347	-0.1239	0.3404	-0.3125	0.6242	-0.1506
Fruits and Vegetables	0.9504	-0.0569	0.8545	-0.1288	0.7861	-0.0872	1.2310	0.2999	0.3140	-0.6240	0.8891	0.0024
Sugar and Other Sweets	0.5928	-0.2216	0.7122	-0.1295	0.4382	-0.2921	0.6815	-0.1529	0.2933	-0.8267	0.6453	-0.2624
Beverages	0.7336	-0.1485	0.6636	0.1106	0.1786	0.0854	0.9442	0.1717	0.4534	-0.7391	0.6986	-0.1684
Miscellaneous Foods	0.9171	-0.3679	1.3316	0.3158	1.2157	-0.5637	0.8177	-0.5521	0.6316	-0.6220	0.7897	-0.5282
Purchased Meals	1.3282	0.5110	0.8863	-0.4830	1.0026	0.2576	0.9994	-0.2357	0.3899	-0.2892	0.6889	-0.2640
Nonfood	1.3076	0.1952	1.2934	0.1979	1.2376	0.0694	1.1912	0.0172	1.4074	0.3238	1.3303	0.1617
Total Food	0.8044	-0.1241	0.7377	-0.1769	0.7509	-0.0725	0.9921	0.0324	0.6719	-0.0097	0.7813	-0.1046

Table 4

Estimated Coefficients, Income and Scale Elasticities:
Agricultural Households, Jamaica, 1977

Expenditure Groups (Budget Shares)	Estimated Coefficients							Elasticities	
	Intercept	Kingston	Other Towns	Male	Age	Income	Size	Income	Size
Meats, Poultry and Fish	0.1532 (2.45)*	-0.0231 (0.64)	0.0442 (1.73)	0.0152 (1.31)	-0.0001 (0.21)	0.0019 (0.24)	-0.0027 (0.34)	1.0112	-0.0158
Dairy Products	0.1223 (5.23)	0.0038 (0.28)	0.0065 (0.68)	0.0004 (0.10)	0.0003 (2.44)	-0.0122 (4.12)	-0.0116 (3.93)	0.7560	-0.2320
Oils and Fats	0.0796 (4.80)	-0.0107 (1.13)	-0.0111 (1.64)	-0.0009 (0.29)	-0.0001 (0.99)	-0.0067 (3.18)	-0.0076 (3.64)	0.6982	-0.3423
Cereals and Starchy Foods	0.8168 (12.25)	-0.0562 (1.47)	-0.0428 (1.58)	0.0020 (0.16)	0.0004 (1.38)	-0.0876 (10.33)	-0.0559 (6.63)	0.6148	-0.2455
Fruits and Vegetables	0.0644 (1.37)	-0.0055 (0.21)	0.0016 (0.09)	0.0022 (0.25)	-0.0000 (0.02)	0.0019 (0.32)	-0.0020 (0.33)	1.0253	-0.0267
Sugar and Other Sweets	0.0746 (6.33)	-0.0064 (0.95)	-0.0033 (0.69)	-0.0056 (2.54)	-0.0001 (1.75)	0.0068 (4.53)	-0.0038 (2.52)	0.600	-0.2176
Beverages	0.0450 (2.96)	0.0119 (1.37)	-0.0026 (0.42)	-0.0035 (1.24)	-0.0000 (0.25)	-0.0026 (1.32)	-0.0020 (1.02)	0.8870	-0.0870
Miscellaneous Foods	0.0740 (2.15)	-0.0009 (0.05)	-0.0022 (0.16)	0.0081 (1.27)	0.0001 (0.62)	-0.0082 (1.88)	-0.0125 (2.87)	0.5900	-0.6250
Purchased Meals	-0.0691 (1.75)	-0.0302 (1.33)	0.0404 (2.52)	-0.0098 (1.33)	0.0000 (0.31)	0.0124 (2.46)	0.0239 (4.77)	1.0124	0.6848
Nonfood	-0.3608 (3.70)	0.1173 (2.09)	-0.0307 (0.77)	-0.0083 (0.46)	-0.0006 (1.14)	0.1080 (8.70)	0.0741 (6.01)	1.3003	0.2060
Total Food	1.3608 (13.94)	-0.1173 (2.09)	0.0307 (0.77)	0.0083 (0.46)	0.0006 (1.14)	-0.1080 (8.70)	-0.0741 (6.01)	0.8313	-0.1157

*t-values are presented in parentheses.

Table 5

Estimated Coefficients, Income and Scale Elasticities:
Nonagricultural Households, Jamaica, 1977

Expenditure Groups (Budget Shares)	Estimated Coefficients							Elasticities	
	Intercept	Kingston	Other Towns	Male	Age	Income	Size	Income	Size
Meats, Poultry and Fish	0.3089 (8.46)*	-0.0179 (2.10)	-0.0126 (1.22)	-0.0176 (2.28)	0.0002 (0.68)	-0.0211 (4.58)	-0.0049 (0.85)	0.8562	-0.0334
Dairy Products	0.1612 (13.84)	0.0103 (3.81)	0.0062 (1.87)	-0.0049 (2.00)	-0.0000 (1.21)	-0.0144 (9.78)	-0.0107 (5.77)	0.7013	-0.2153
Oils and Fats	0.0627 (9.04)	-0.0027 (1.65)	0.0009 (0.47)	-0.0003 (0.19)	0.0000 (0.32)	-0.0063 (7.25)	-0.0024 (2.15)	0.6074	-0.1472
Cereals and Starchy Foods	0.5400 (23.34)	-0.0315 (5.85)	-0.0083 (1.28)	-0.0126 (2.56)	0.0007 (5.02)	-0.0574 (19.65)	-0.0283 (7.67)	0.5477	-0.2230
Fruits and Vegetables	0.1198 (6.63)	0.0067 (1.59)	0.0006 (0.12)	-0.0080 (2.09)	-0.0001 (0.41)	-0.0076 (3.31)	-0.0036 (1.25)	0.8746	-0.0594
Sugar and Other Sweets	0.0543 (11.48)	-0.0042 (3.84)	0.0002 (0.18)	-0.0008 (0.83)	0.0000 (0.97)	-0.0055 (9.16)	-0.0032 (4.19)	0.5600	-0.2560
Beverages	0.0653 (6.77)	0.0001 (0.03)	0.0022 (0.81)	-0.0057 (2.79)	0.0001 (0.90)	-0.0065 (5.33)	0.0002 (0.13)	0.6948	0.0094
Miscellaneous Foods	0.0036 (0.25)	0.0005 (0.14)	-0.0014 (0.35)	0.0065 (2.16)	-0.0001 (1.04)	0.0032 (1.79)	-0.0046 (2.04)	1.1658	-0.2383
Purchased Meals	0.0587 (1.56)	0.0153 (1.74)	0.0053 (0.50)	0.0127 (1.59)	-0.0004 (1.46)	0.0005 (0.10)	0.0068 (1.12)	1.0072	0.0977
Nonfood	-0.3746 (6.06)	0.0234 (1.63)	0.0069 (0.39)	0.0307 (2.35)	-0.0004 (1.05)	0.1151 (14.75)	0.0508 (5.16)	1.2412	0.1065
Total Food	1.3746 (22.26)	-0.0235 (1.63)	-0.0069 (0.39)	-0.0307 (2.35)	0.0004 (1.05)	-0.1151 (14.75)	-0.0508 (5.16)	0.7799	-0.0972

*t-values are presented in parentheses.

Table 6

Estimated Income Elasticities: Jamaica, 1958 and 1950-1961

Commodity Groups	1958: Cross Section (Semi-Log Model)			1950-1961 Time Series (Semi-Log Model)	
	Kingston	Main Towns	Rural Areas	Commodity Groups	Jamaica
Fresh Meat and Poultry	1.082	1.072	1.484	Meat	1.43
Tinned and Pickled Meat	0.790	1.314	0.212		
Fresh Fish	0.106	-0.086	1.610	Fish	0.58
Tinned and Pickled Fish	0.165	0.523	0.606		
Starchy Food	0.128	0.423	0.518	Root Crops	-0.50
Fresh Vegetables	0.600	0.606	0.594		
Fresh Fruits	0.932	1.069	1.012	Fruits and Vegetables	-0.40
Other Fruits and Vegetables	0.653	0.630	0.648		
Dairy Products and Eggs	0.853	0.760	1.479	Dairy Products	1.07
Oils and Fats	0.196	0.246	0.695	Oils and Fats	0.46
Cereals and Baked Products	0.383	0.650	0.690	Bread and Cereals	0.62
Sugar and Condiments	0.667	0.530	0.488		
Beverages	0.722	0.685	0.833	Miscellaneous Food Items	0.57
Outside Meals	0.512	1.212	1.712		
Total Food	0.575	0.702	0.849		

Source: Harris (1964), Table 5 and Adams (1968), Table 7.