The Final Report on the Analysis of the Household Budget and Expenditure Survey for St. Vincent and the Grenadines.

November 1998

Prepared by Access Consultants, Atlanta GA.

Table 1.1: Expenditure Shares

Category	1998	1981	% ¢
Food and Beverages	536.1	597.9	-10.3%
Alcoholic Beverages and Tobacco	9.5	27.9	-65.9%
Clothing and Footwear	88.7	77.2	14.9%
Housing	97.9	62.8	55.9.9%
Fuel and Electricity	29.8	62.3	-52.2%
Furniture and Domestic Appliances	48.4	31.9	51.7%
Household Supplies	13.7	34.3	-60.8%
Transport and Communications	68.5	37.2	84.1%
Other Miscellaneous	107.4	68.5	56.8%
All Items	1000	1000	n/a

1. Executive Summary

The main …nding of the analysis are:

(A) There were statistically signi…cant changes in the expenditure shares estimated from the Household Budget and Expenditure Survey (HBES) compared to the shares being currently used to weight the index of retail prices. The current estimates of expenditure shares are presented in Table 1.1. The share of expenditure allocated to transport and communication experienced the largest increase with its share rising by 84.1%. The share of expenditure allocated to food and beverages and alcoholic beverages and tobacco are estimated to have fallen from by 10.2% and 65.9% respectively. These changes add further support to the evidence that increased prosperity (as measured by per capita income calculated at purchasing power parity) correlates strongly and negatively with reductions in the expenditure share allocated to food and alcohol. The share of expenditure allocated to fuel and electricity is estimated to have fallen by 52.2% relative to the share estimated in 1981. The 1981 estimates would have re‡ected high oil prices associated with the second oil shock of 1979 and the impact of the price inelasticity of demand for fuel on the budget share for fuel. The 1997 estimates, in contrast, re‡ect the reverse side of the 1981 story, the cyclical

Table 1.2: Rural and Urban Expenditure Shares

Category	Rural	Urban	Rur.-Urb.
Food and Beverages	605.9	455.0	150.9**
Alcoholic Beverages, Tobacco	9.0	10.0	-1.0
Clothing and Footwear	87.4	90.3	-2.9
Housing	70.0	130.3	-60.3**
Fuel and Electricity	28.2	31.6	-3.4
Furniture and Appliances	32.7	31.0	1.7
Household Supplies	13.5	13.8	-0.3
Transport & Communications	66.2	71.1	-4.9
Other Miscellaneous	87.1	131.1	-44.0**
All Items	1000	1000	n/a

de‡ation in oil price and price inelasticity of demand for fuel combine to reduce the budget share allocated to fuel.

(B) There were statistically signi…cant di¤erences in the expenditure shares estimated for rural and urban consumer units shown in Table 1.2[1]. The share of expenditure allocated to food and beverage was signi…cantly higher for rural consumer units while the allocations for housing and other miscellaneous expenditures were signi…cantly higher for urban consumer units. The likely explanation for the statistically lower expenditure shares estimated for food is due to the di¤erence in the point of purchase amongst rural and urban consumer units and the underlying di¤erence in the relative prosperity of the two groups. The di¤erence in housing expenditure is largely explained by di¤erences in land tenancy; the data could not reject, at the 1% level, the hypothesis that urban consumer units had higher cost of land tenancy. 84.2% of rural consumer units and 77.8% of urban consumer units reported owning the land on which they resided.

(C) There is strong statistical evidence suggesting that urban and rural consumer units utilize di¤erent points of purchase. Approximately 1.42 % of

[1] ** indicates statistical signi…cance at ® = 0:005:

expenditure on food by urban consumer units was made at rural supermarkets and shops. In contrast, approximately 57.45% of all food expenditures by rural consumer units were transacted at rural supermarkets and shops. Approximately thirty cents out of every dollar spent on food by urban consumer units involved an urban supermarket as the point of purchase, in contrast, rural supermarkets were the point of purchase for approximately sixty-three cents out of every dollar of expenditure on food by rural consumer units. Street vendors were found to account for approximately 20% of food expenditure by urban consumer units. The data indicated that the Fish, Meat and Vegetable Markets are regular points of purchase for urban consumer units but not for rural consumer units.

The higher concentration of expenditure in rural supermarkets/shops observed amongst rural consumer units corroborates evidence[2] suggesting that the skewness of the distribution of points of purchase in urban centres reduces the choice set available to rural consumer units and leads to higher levels of concentration in expenditures in rural points of purchase.

(D) Consumption expenditure for the representative consumer unit in St. Vincent and the Grenadines was estimated at EC$1841:14 per month. The representative rural consumer unit was estimated to allocate EC$1435:55 to consumption expenditures per month, the corresponding …gure for the representative urban consumer unit was EC$2215:54. The estimated monthly consumption expenditure are weighted averages where the weights for the urban and rural consumer units are the relative importance of each month's expenditure total. The weights for the combined consumer units are the expenditure shares of expenditure for rural and urban consumer units.

(E) Assuming a population of 111,105 persons in 1996 and an average of 3.9 persons per consumer unit, it was estimated that private consumption expenditure totalled EC$629,406,238 in 1996. The estimate of private consumption expenditures is statistically signi…cant at the one percent level. This …gure is relatively high compared to the estimates published by the International Monetary Fund. International Financial Statistics estimate private consumption expenditure to be EC$ 394 million in the 1997 Year Book[3]. The IMF estimate is below the lower limit of 95% con…dence interval

[2] Douglas,S. and L. Adams, "Consumer Expenditure Patterns in Developing Countries" Report. 114, Nielsen Institute, Evanston Illinois 1997.

[3] Line 96f, page 364.

of the estimate generated from the data[4].

(F) Item by item analysis of price di¤erential for identical items in urban and rural points of purchase revealed statistically signi…cant positive di¤erence in prices. The proportion of items found to be statistically di¤erent was small and accounted for less than 5% of purchases.

(G) The collection of data on income, especially remittances, had to be abandoned due to the severe nonresponse amongst consumer units. This report makes not attempt to analyze income data.

[4] It is well known that expenditure data sometimes overstates actual expenditure while income data understates actual expenditure.

2. The Survey.

The Household Budget and Expenditure Survey was conducted in St. Vincent and the Grenadines over the period October 1995 to September 1996. The purpose of the survey was to collect data via the diary method on frequently purchased items which are normally difficult to recall. These items include expenditures on food and beverages, both at home and in eating places; housekeeping supplies and services, nonprescription drugs; and personal care products and services. The diary used in the survey is not limited to these types of expenditures, but rather, include all expenses which the consumer unit incurs in the survey period (one month).

Two separate questionnaires are used to collect diary data; a Household Characteristics Questionnaire and a Record of Daily Expenses. The Household Characteristic Questionnaire is used to record information pertaining to age, sex, race, marital status, land tenure, tenancy, housing characteristics, educational attainment and family composition as well as information relating to the work experience and earnings of each consumer unit member. The socioeconomic data contained in the Household Characteristics Questionnaire was used to calculate the likelihood of certain household characteristics being included in the sample. The daily expense record is designed as a self-reporting, product oriented diary on which respondents record a detailed description of all expenses over one month. The items reported are subsequently coded to allow for aggregational representation in the Consumer Price Index.

2.1. Sample Design[5]

Administratively, St. Vincent and the Grenadines is broken up into 14 Census Division (CDs), namely, Kingstown, the suburb of Kingstown, Calliaqua, Marriaqua, Bridgetown, Georgetown, Colonaire, Sandy Bay, Layou, Barrouaillie, Chateaubelair, the Northern Grenadines and Southern Grenadines. For ease of enumeration during the Population and Housing Census, these Census Divisions are further broken down into Enumeration Districts (EDs). The number of ED's in a Census Division varies, and range from 45 in the two largest divisions, Kingstown and Calliaqua, to eight in the Northern, seven in the Southern Grenadines, and six in Sandy Bay.

[5] Taken from Poverty Assessment Report-St. Vincent and the Grenadines, Kairi Consultants, December 1996

Table 2.1: HBES Response Rates

Month	Sample Size	Percent with Usable Data
October 1995	104	56.7
November 1995	106	75.5
December 1995	109	60.6
January 1996	104	81.7
February 1996	107	82.2
March 1996	107	71.0
April 1996	101	100.0
May 1996	106	67.9
June 1996	102	72.5
July 1996	104	71.2
August 1996	107	74.8
September 1996	103	67.0

For the HBES it was determined that a sample size of about 1160 was adequate, taking into account the administrative resources available. In addition, it was necessary to have the number of households distributed almost evenly to accommodate the Poverty Assessment Survey.

In order to incorporate the above mentioned features in the design, a two stage sample design was developed. At the …rst stage, EDs were selected with probability proportional to their size at the time of the 1991 Census. At the second stage a cluster of households was selected form each ED with probability (fb) so that the end result was that each household had the same probability of being selected. Table 2.1 shows the percentage of respondents providing usable information in the survey. Usable information is de…ned as purchase records of $50 EC or more per month. This criteria was chosen because it was assessed to have the minimum impact on the variance. The other options tested included imputation for missing values using the Solas^{TM} program for analyzing data. Non-usable data include those for which no data were received.

2.2. Controlling Measurement Errors

Survey estimates are almost never identical to the population they are trying to measure because of sampling and nonsampling errors they contain. Sampling error is the error due to surveying only a subset of the population rather than conducting a complete census, however, the estimate may still di¤er considerably from the population value as a result of nonsampling error. Nonsampling error is the di¤erence attributable to all sources other than sampling error. Nonsampling errors arise during the planning, conducting, data processing, and …nal estimation preparation.

The sources of nonsampling errors may be classi…ed as speci…cation error, frame error, nonresponse errors, processing errors, or measurement errors. Speci…cation errors occur when (1) survey concepts are immeasurable or ill-de…ned, (2) survey objectives are inadequately speci…ed, or (3) the collected data do not correspond to the speci…ed concepts or target variables. Frame errors include erroneous inclusions, omissions, and duplications in the sampling frame or process. Nonresponse errors include unit nonresponse, or incomplete data. Processing errors refer to errors in post-data collection such as coding, editing, weighting and tabulating the survey data.

The reliability of the sample data generated from the HBES was tested for reliability (presence of errors) with regards to the above mentioned errors, and was tested by assuming a single observation y_j from a randomly selected respondent j is the sum of two terms: a true value μ_j and an error ε_j: This may be written as

$$y_j = \mu_j + \varepsilon_j$$

where $\varepsilon_j \sim (0; \sigma_j^2)$, $\mu_j \sim (\mu; \sigma_\mu^2)$ and all covariances between the terms on the right are restricted to be zero. The variance of the mean $\bar{y}$ of a sample of n observations is

$$Var(\bar{y}) = \frac{\sigma_\mu^2 + \bar{\sigma}^2}{2n - k_1 + k_2}$$

where σ_μ^2 is the …nite population variance of true values, $\bar{\sigma}^2 = E(\sigma_j^2)$ is the …nite population mean of the individual variances σ_j^2: The …nite population correction factor is $2n - k_1 + k_2$. The term $\bar{\sigma}^2$ is often referred to as the simple response variance (SRV) because it is often approximated by the variance of missing responses. The reliability ratio R is de…ned as

$$R = \frac{\sigma_\mu^2}{\sigma_\mu^2 + \bar{\sigma}^2}$$

Table 2.2: HBES Reliability Ratios Ikey

Month	Reliability Ratio
October 1995	0.65
November 1995	0.59
December 1995	0.61
January 1996	0.79
February 1996	0.52
March 1996	0.44
April 1996	0.78
May 1996	0.86
June 1996	0.57
July 1996	0.68
August 1996	0.77
September 1996	0.65

R determines the increase in the variance of the sample mean or total due to measurement error and is widely used as a measure of the stability of the response process. A ratio of R = 1 ($¾^2_{"}$ = 0) indicates total reliability whereas a ratio R=0 indicates lack of response stability. Table 2.2 presents the reliability ratio for each months sample in the HBES. The reliability ratio for the entire sample of usable data as measured by the geometric mean value was 0.78. No attempt was made to measure reliability before controlling for usable data.

2.3. Regression Estimates of Weights

The initial estimate of the expenditure weights was based on …tting a regression model within each month's sub-sample. For the p^{th} month group, consider the regression model stating that

$$y_k = x^{0}_{pk} \bar{}_p + "_k \qquad (2.1)$$

where $E_»("_k) = 0; Var("_k) = c_k ¾^2$; and $Cov_»("_k; "_t) = 0$ for all k 6= t ,where the subscript » indicates moments with respect to the regression model, and x^{0}_{pk}

are auxiliary variables taken from the Household and Budget Survey for which the total $X_p = \sum_{U_p} x_{pk}^{'}$ is known. The known constants c_k are determined by the variance structure of the assumed underlying regression model given by (2.1). Here the super population regression parameters $\bar{}_p$ is estimated from the monthly sub-sample parameter B_p. The population regression vector B_p is associated with the best ...t (in the sense of generalized least squares) when all units in an overall survey are observed. The monthly sub-sample estimate $\hat{B}_p$ is de...ned as the solution to

$$\sum_{Sp} \frac{a_k x_{pk} x_{pk}^{'}}{c_k} \hat{B}_p = \sum_{Sp} \frac{a_k x_{pk} y_k}{c_k}$$

This represents the system of normal equations when the data $f(y_k; x_{pk}) : k \in s_p$gare ...tted to model (2.1) . The weights a_k in this system of equations serve the purpose of making $\hat{B}_p$ a design consistent estimator of the population regression coe¢cient vector B_p .

The total for the monthly group p or $Y_p = \sum_{U_p} y_k$ is estimated by $\hat{Y}_{p¼} + (X_p ¡ X_{p¼})^{'}\hat{B}_p$;which is the sum of the Horvitz-Thompson estimator $\hat{Y}_{p¼} = \sum_{sp} a_k y_k$ and a regression adjustment $(X_p ¡ X_{p¼})^{'}\hat{B}_p$. Here, $X_p = \sum_{Up} x_{pk}$ is the known auxiliary total for the monthly group U_p and $\hat{X}_{p¼} = \sum_{Sp} a_k x_{pk}$ is the Horvitz-Thompson generalized regression (GREG) estimator of the entire population, we sum over monthly groups , that is

$$\hat{Y}_{GREG} = \sum_{p=1}^{P} [\hat{Y}_{p¼} + (X_p ¡ X_{p¼})^{'}\hat{B}_p] \tag{2.2}$$

If this estimator is written as a weighted linear sum over the sample or $\sum_{sp} w_k y_k$, it easy to verify that the weight $w_k = a_k g_k$ where g_k is given by

$$g_k = 1 + (X_p ¡ X_{p¼})^{'}\left(\sum_{Sp} \frac{a_k x_{pk} y_k}{c_k}\right) \frac{x_{pk}}{c_k} \tag{2.3}$$

The system of g-weights, calculated from (2.3) for $p = 1; 2; :::; P$, incorporates the auxiliary information associated with the particular monthly groups used in the estimation. We rewrite (2.2) as

$$\hat{Y}_{GREG} = \sum_{p=1}^{P} \sum_{Sp} a_k g_k y_k \tag{2.4}$$

The …t also produces the regression residuals $e_k = y_k - x_{pk}^{0}\hat{B}_p$ for $k \in S_p$. These are needed in computing $\hat{V}(\hat{Y}_{GREG})$; the estimated variance for $\hat{Y}_{GREG}$ or $\hat{V}$ for short. The variance estimator is given by

$$\hat{V} = \sum_{s} \sum \frac{¢_{kt}}{¼_{kt}} \frac{g_k e_k}{¼_k} \frac{g_{ke} e_t}{¼_t} \tag{2.5}$$

where $¢_{kt} = ¼_{kt} - ¼_k ¼_t$; $¼_{kk} = ¼_k$ and $\sum\sum_s$ is a compact notation for the double sum $\sum_{k \in s} \sum_{t \in s}$.

2.4. The statistical analysis

Two types of statistical procedure were employed in this report, testing di¤erences between means, and adjustment of means after controlling for covariance among a group of variables. Each procedure is described below

2.4.1. Di¤erence Between Means

The descriptive comparisons were tested in this report using Student's t statistic. Di¤erence between estimates are tested against the probability of a Type I error, or signi…cance level. These signi…cance levels were determined by calculating the Student's t values for the di¤erences between each pair of means or proportions and comparing these with published tables of signi…cance levels for two-tailed hypotheses testing.

Student's t values were computed to test the di¤erence between estimates with the following formula

$$t = \frac{¹_1 - ¹_2}{\sqrt{se_1^2 + se_2^2}}$$

where $¹_1$; $¹_2$ are the estimates and se_1^2; se_2^2 are their corresponding standard errors. This formula is valid only for independent estimates. When the estimates are not independent a covariance term must be added to the formula. If the comparison is between the mean of a subgroup and the mean of the total group, the following formula is used

$$t = \frac{¹_{sub} - ¹_{Tot}}{\sqrt{se_{sub}^2 + se_{Tot}^2 - 2½se_{sub}^2}}$$

where ½ is the proportion of the total group contained in the subgroup.

When comparing two percentages from a distribution that adds to 100 percent, the following formula is used:

$$t = \frac{{}^{1}_{1} - {}^{1}_{2}}{\sqrt{se_1^2 + se_2^2 - 2\,\rho\, se_1 se_2}}$$

where ρ is the correlation between the two estimates.

There are hazards in reporting statistical tests for each comparison. First, comparison based on large t statistics may appear to merit special attention. This can be misleading since the magnitude of the t statistic is related not only to the observed differences in means or percentages, but also to the number of households in the specific categories used for comparison.

A second hazard in reporting statistical tests for each comparisons occurs when making multiple comparison among categories of an independent variable. For example, when making paired comparisons among different expenditure levels, the probability of a Type I error for these comparisons taken as a group is larger than the probability for a single comparison. When more than one difference between groups of related characteristics are tested for statistical significance, one must apply a standard that assures a level of significance for all those comparisons taken together.

2.4.2. Weighting

The statistical estimation of the population quantities of interest, such as the average expenditure on a particular item by a consumer unit or by the total number of consumer units in a particular demographic group is conducted via a weighting scheme. Each consumer unit included in the survey is assigned a weight which is interpreted as representing the number of similar families in the universe of interest. The population total

$$T = \sum y_{pop}$$

of a variable of interest y is estimated as

$$T^s = \sum_{i2s} w_i y_i$$

where s denotes sample and

w_i = The weight of the i^{th} consumer unit in the sample

y_i = the value of y for the i^{th}consumer unit in the sample:

The population average $\bar{Y}$ of y is estimated as

$$\hat{\bar{y}} = \frac{T^s}{\sum_{i \in s} w_i}$$

Several factors are involved in the weight for each sampled consumer unit for which a usable report is received. Each consumer unit is initially assigned a base weight (bswt) which is the inverse of the probability of selection of that consumer unit.

3. The Findings

In this section, the …ndings of the analysis are discussed in detail. This analysis is based on a data set which had been adjusted for the following de…ciencies:

1. Inconsistencies in the reporting of outlet codes.
2. Absence of codes for some modes of transportation.
3. Irregularities in reporting of expenditure.
4. High correlation between reported education levels and completeness of expenditure reports.
5. Inconsistency in reported household numbers and reported selected household.
6. Low coverage errors
7. Processing errors were relatively low but were particularly high where the choice involved selecting 'Not Stated' relative to "Other".
8. Processing errors were relatively low but were particularly high where the choice involved selecting 'Not Stated' relative to "Other".

The main …nding of the analysis has to do with the expenditure weights. It was found that there were statistically signi…cant changes in the expenditure shares estimated from the Household Budget and Expenditure Survey (HBES) compared to the shares being currently used to weight the index of retail prices. The current estimates of expenditure shares are presented in Table 3.1. The share of expenditure allocated to transport and communication experienced the largest increase with its share rising by 84.1%. The share of expenditure allocated to food and beverages and alcoholic beverages and tobacco are estimated to have fallen from by 10.2% and 65.9% respectively. These changes add further support to the evidence that increased prosperity (as measured by per capita income calculated at purchasing power parity) correlates strongly and negatively with reductions in the expenditure share allocated to food and alcohol. The share of expenditure allocated to fuel and electricity is estimated to have fallen by 52.2% relative to the share estimated in 1981. The 1981 estimates would have re‡ected high oil prices associated with the second oil shock of 1979 and the impact of the price

Table 3.1: Expenditure Shares

Category	1998	1981	% ¢
Food and Beverages	536.1 (§42:8)	597.9	-10.3%
Alcoholic Beverages and Tobacco	9.5 (§2:9)	27.9	-65.%
Clothing and Footwear	88.7 (§16:2)	77.2	14.9
Housing	97.9 (§23:6)	62.8	55.9
Fuel and Electricity	29.8 (§5:7)	62.3	-52.2
Furniture and Domestic Appliances	48.4 (§10:3)	31.9	51.7
Household Supplies	13.7 (§3:3)	34.3	-60.8
Transport and Communications	68.5 (§12:5)	37.2	84.1
Other Miscellaneous	107.4 (§15:5)	68.5	56.8
All Items	1000	1000	n/a

inelasticity of demand for fuel on the budget share for fuel. The 1997 estimates, in contrast, re‡ect the reverse side of the 1981 story, the cyclical de‡ation in oil price and price inelasticity of demand for fuel combine to reduce the budget share allocated to fuel. The …gures in parentheses in the second column of Table 3.1 are the bounds of the point estimates as measured by the 95% con…dence interval. Table 3.2 presents the revised item weights.

The estimated weights are indirectly comparable to the weights being used in other OECS economies. Table 3.3 presents the expenditure weights for select OECS economies. There is some di¤erence in how the expenditure categories are de…ned in each country so caution must be exercised in making direct inferences. The food and beverages category is similarly de…ned in the economies listed in Table 3.3. The share of expenditure allocated to Food and Beverages is relatively similar in St. Kitts, St. Vincent, and St. Lucia irrespective of the wide di¤erence in base years. Some of the di¤erences in the allocations re‡ect di¤erences in topographical and economic structures. Dominica's allocation to transportation is almost one and half standard deviations higher than the average for other countries in the table. The share of expenditure going to Housing is also disproportionately high in St. Lucia and Dominica relative to St. Kitts and St. Vincent. The high allocation to housing in St. Lucia and Dominica

Table 3.2: The Revised Item Weights

Item	Weight
1.1 Meat	70.6
1.2 Fish	46.6
1.3 Dairy Products	48.5
1.4 Oils and Fats	41.7
1.5 Bread and Cereals	138.8
1.6 Vegetables and Fruits	123.3
1.7 Sugar and Confectioneries	47.1
1.9 Non-Alcoholic Beverages	11.9
1.10 Carbonated Drinks	4.2
1.11 Non-Carbonated Drinks	3.5
2.1 Alcoholic Beverages	7.2
2.2 Tobacco	2.3
3.1 Clothing	54.4
3.2 Textile Material	16.6
3.3 Tailoring and Dressmaking	3..2
3.4 Footwear	14.5
4.1 Rent	55.7
4.2 House Tax	20.2
4.3 Insurance	7.3
4.4 Water	9.8
4.5 Repairs and Decoration	4.9
5.1 Fuel and Light	29.8
6.1 Furniture	9.3
6.2 Furnishings and Appliances	39.1
7.1 Soaps and Detergents	13.7
8.1 Transportation	44.0
8.2 Telephone and Postage	24.5
9.1 Medical Expenses	10.1
9.2 Education	34.3
9.3 Recreation	15.9
9.4 Personal	47.1

Table 3.3: Expenditure Shares in Selected OECS Countries

Consumer Price Indices	Dominica	St. Kitts	St. Lucia	St. Vincent
Weights by Categories	1994=100	1978 = 100	1984=100	1996=100
Food	401.8	500.0	467.5	536.1
Alcoholic Bev. and Tobacco	16.2	55.6	28.2	9.5
Housing and Utilities	133.7	76.1	135.3	97.9
Fuel and Light		66.0	45.0	29.8
Furniture, Household Equip.	57.8	36.8	57.7	48.4
Transportation	162.0	43.4	63.5	68.5
Clothing and Footwear	68.4	75.0	64.0	88.7
Health Expenses			22.8	
Recr., Education, Culture			32.4	
Household Supplies		57.1		
Miscellaneous	160.2	90.0	82.7	107.4
All Items	1000.0	1000.0	1000.0	1000.0

has implication for the measurement of in‡ation in these countries. Traditionally, housing prices are updated via an annual survey of housing prices and rental rates. Historically, housing surveys have been done with disquieting infrequency in the Caribbean and it is likely that the large weight given to housing in the CPI in St. Lucia and Dominica implies a strong downward bias in the constructed index relative to the true level of in‡ation. Asset markets are relatively undeveloped in the OECS. Housing and real estate tend to be the only real asset available in these economies. Housing prices and rental rates[6] have historically run ahead of in‡ation. Any price index constructed and maintained without and accurate data on housing prices and rental rates lacks a critical element of in‡ation dynamics and is likely to understate true in‡ation.

The expenditure shares estimated for St. Vincent were found to be robust. Figure 1 presents four measures of the central tendencies, the arithmetic, geometric and harmonic means as well as the median, and one measure of dispersion, the

[6] Fixed price leasing agreements pose a problem in tracking housing and rental rates.

standard deviation. The expenditures are relatively invariant to how the central tendency is measured and as Figure 1 illustrates, all the measures are clustered around the measures of central tendencies. The standard deviation was not higher than any of the measures of central tendencies for all categories and was comparatively very small for the food, clothing, and other miscellaneous categories.

There were statistically signi…cant di¤erences in the expenditure shares estimated for rural and urban consumer units as shown in Figure 2. The share of expenditure allocated to food and beverage was signi…cantly higher for rural consumer units while the allocations for housing and other miscellaneous expenditures were signi…cantly higher for urban consumer units. Detailed results of the statistical test for urban and rural consumer units are presented in the Appendix. The likely explanation for the statistically lower expenditures shares estimated for food is due to the di¤erence in the point of purchase amongst rural and urban consumer units. The di¤erence in housing expenditure is largely explained by di¤erences in land tenancy. The data could not reject, at the 1% level, the hypothesis that urban consumer units had higher cost of land tenancy. 84.2% of rural consumer units and 77.8% of urban consumer units reported owning the land on which they resided.

The variation in expenditure patterns observed across urban and rural consumer units also held across these consumer units by months. Table 3.3[7] presents data on the monthly allocations by consumer units. The allocation of expenditure to food was higher in rural consumer units for nine of the twelve months of the HBES. There are other interesting features in the monthly allocations of expenditures. For urban consumer units, December is associated with the greatest allocation of expenditure on food and alcohol, while for rural consumer units, the share of expenditure allocated to furniture and alcohol was highest in this month. The allocation to clothing was highest in November for rural consumer units and April for those in urban areas.

Monthly expenditure outlays di¤ered across urban and rural consumer units but there were broad similarities. As shown in Table 3.4. The …rst two columns of Table 3.4 present the month's expenditure by urban and rural consumer units respectively as a percentage of each group's total expenditure over the period of the HBES. The third and fourth columns of Table 3.4 present the monthly expenditure of each group as percentage of total expenditure by both groups over the period of the HBES. In other words, the …rst two columns show the share

[7] The highest values for urban consumer units are indicated by , ¤ indicates the high values for rural consumer units.

Table 3.4: Expenditure Shares-Rural vs Urban by Months

	Food	Alcohol	Clothes	House	Fuel	Furnit.	Supplies	Transp.
Oct.-Rural	0:52	0:005	0:08	0:18	0:01	0:04	0:01	0:06
Oct.-Urban	0:58	0:01	0:08	0:06	0:02	0:17	0:01	0:02
Nov.-Rural	0:56	0:01	0:16	0:02	0:02	0:01	0:01	0:09
Nov.-Urban	0:44	0:01	0:05	0:06	0:01	0:03	0:01	0:32
Dec.-Rural	0:53	0:02	0:07	0:02	0:02	0:08	0:02	0:19
Dec.-Urban	0:53	0:04	0:08	0:08	0:03	0:03	0:03	0:03
Jan.-Rural	0:70	0:03	0:07	0:05	0:02	0:06	0:02	0:02
Jan.-Urban	0:48	0:02	0:06	0:06	0:03	0:06	0:01	0:02
Feb.-Rural	0:69	0:01	0:05	0:06	0:02	0:03	0:02	0:09
Feb.-Urban	0:39	0:004	0:08	0:29	0:02	0:05	0:01	0:19
Mar.-Rural	0:67	0:00	0:08	0:06	0:02	0:02	0:01	0:03
Mar.-Urban	0:52	0:00	0:15	0:05	0:05	0:04	0:01	0:02
Apr.-Rural	0:57	0:00	0:12	0:10	0:03	0:01	0:02	0:06
Apr.-Urban	0:35	0:01	0:17	0:05	0:05	0:14	0:04	0:03
May-Rural	0:64	0:02	0:08	0:08	0:04	0:04	0:01	0:00
May-Urban	0:46	0:00	0:04	0:12	0:03	0:05	0:01	0:18
Jun.-Rural	0:65	0:02	0:05	0:03	0:05	0:05	0:01	0:05
Jun.-Urban	0:30	0:00	0:09	0:28	0:03	0:13	0:01	0:02
Jul.-Rural	0:56	0:00	0:06	0:13	0:03	0:02	0:01	0:05
Jul.-Urban	0:35	0:01	0:08	0:30	0:03	0:04	0:01	0:04
Aug.-Rural	0:44	0:00	0:14	0:09	0:06	0:03	0:01	0:09
Aug.-Urban	0:51	0:01	0:06	0:13	0:03	0:06	0:01	0:06
Sep.-Rural	0:69	0:00	0:10	0:02	0:03	0:00	0:02	0:08
Sep.-Urban	0:50	0:00	0:15	0:08	0:03	0:01	0:02	0:01

Table 3.5: Expenditure Shares by Months

Measure / Month	$100\frac{\text{Month}_{\text{Urban}}}{\sum_{i=1}^{12}\text{Urban}}$	$100\frac{\text{Month}_{\text{Rural}}}{\sum_{j=1}^{12}\text{Rural}}$	$100\frac{\text{Month}_{\text{Urban}}}{\sum_{j=1}^{12}\sum_{i=1}^{12}\text{Month}}$	$100\frac{\text{Month}_{\text{Rural}}}{\sum_{j=1}^{12}\sum_{i=1}^{12}\text{Month}}$
Oct.	5.1	13.1	2.5	6.5
Nov.	14.9	13.4	7.5	6.7
Dec.	10.6	9.8	5.4	4.9
Jan.	11.6	10.3	5.9	5.1
Feb.	6.8	13.5	3.4	6.7
Mar.	10.1	5.0	5.1	2.5
Apr.	7.4	4.4	3.7	2.2
May	10.2	3.3	5.1	1.7
Jun.	6.9	5.6	3.5	2.8
Jul.	7.9	7.8	4.0	3.7
Aug.	5.1	4.1	2.6	2.0
Sep.	3.4	10.0	1.7	4.9
Total	100	100	50.4	49.7

of annual income spent each month by each group. The last two columns show the share of annual expenditure attributable to each group. The period November through January accounted for 37% of total expenditure by urban consumer units, the corresponding …gure for rural consumer units is 35%. October, February and September's share of total expenditure for rural consumer units were found to have statistically large positive di¤erences relative to urban consumer units. Receipts from banana exports was found to explain 60% of the di¤erence observed in the monthly share of expenditures for the periods in question. The importance of the "end of year-start of year" seasonal component of expenditure is visible in the two last columns of Table 3.4, just under 40% of expenditure is transacted during the period November through January.

There is strong statistical evidence suggesting that urban and rural consumer units utilize di¤erent points of purchase. Under 1.5% of expenditure on food by urban consumer units was made at rural supermarkets/shops, in contrast, over 60% of all food expenditures by rural consumer units were transacted at rural super markets. Approximately thirty cents out of every dollar spent on food by urban

consumer units involved an urban super market/shop as the point of purchase, in contrast, rural supermarkets were the point of purchase for approximately sixty-three cents out of every dollar of expenditure on food by rural consumer units. The higher concentration of expenditure in rural supermarkets/shops observed amongst rural consumer units corroborates evidence[8] suggesting that the skewness of the distribution of points of purchase in urban centres reduce the choice set available to rural consumer units and leads to higher levels of concentration in expenditures in rural points of purchase.

Figures 3 and 4 show the percentage of purchases made at urban and rural supermarkets by each type of consumer unit. Urban consumer units use rural supermarkets far less frequently than the corresponding …gure for rural consumer units at urban supermarkets. For eleven of the 12 months of the HBES, the data could not reject the hypothesis that the proportion of purchases being made at rural supermarkets by urban consumer units was statistically not di¤erentiable from zero. In contrast, the proportion of purchases being made by rural consumer units at urban supermarkets was markedly higher, the data rejected the hypothesis that purchases by rural consumer units at urban consumer units was statistically equivalent to zero in seven of the twelve months of the HBES. When the data was aggregated for all points of purchase the results presented in Figures 3 and 4 remained virtually unchanged. Anecdotal evidence suggest that the clustering of points of purchases in urban areas result in there being a greater likelihood of …nding rural consumer units transacting business at urban points of purchase rather than vice versa.

One interesting feature revealed by the data is the role of street vendors. On average eighteen cents out of every dollar spent by urban consumer units is spent with a street vendor, the corresponding …gure for rural consumer units is eleven cents. This …nding has important implications for the construction and updating of the basket of goods used to construct the CPI. Research[9] has shown that the inventory turnover is relatively high for street vendors due to the small scale of their operations. One result of this high turnover is a greater frequency of brand changes, in particular brand substitution as vendors try to maximize cost e¢ciency. It seems plausible that the higher the proportion of expenditure being spent with street vendors will correlate with higher frequency of brand change.

[8] Douglas,S. and L. Adams, "Consumer Expenditure Patterns in Developing Countries" Report. 114, Nielsen Institute, Evanston Illinois 1997.

[9] Douglas, S., "Informal Commerical Enterprise: Street Vendors in Kingston" Research Report.1995 Temple University, Philadelphia, PA.

This is likely to necessitate an increase in the frequency of update of items in the representative consumer basket.

An interesting reversal of the usual pattern of urban consumer units having the higher proportion of expenditure transacted with urban points of purchase was observed for the points of purchase labeled "Syrian Stores". Rural consumer units were observed to spend 31.6 % of every unit of expenditure at this type of establishment. Urban consumer units were observed to spend 28.6% of every unit of expenditure at the said establishment. The data failed to reject the hypothesis that the difference between the percentages observed for the consumer units was zero. The sampling frame used in collecting price information should reflect the importance of these points of purchase in the allocation of consumer unit expenditure.

Consumption expenditure for the representative consumer unit in St. Vincent and the Grenadines was estimated at EC$1841:14 per month. The representative rural consumer unit was estimated to allocate EC$1435:55 to consumption expenditures per month. The corresponding figure for the representative urban consumer unit was EC$2215:54. The estimated monthly consumption expenditure are weighted averages where the weights for the urban and rural consumer units are the relative importance of each month's expenditure total. The weights for the combined consumer units are the expenditure shares of expenditure for rural and urban consumer units. Thus, private consumption C_p can be written as

$$C_p = \pm_r \sum_{i=1}^{12} \pm_m^r C_r + (1 - \pm_r) \sum_{j=1}^{12} \pm_m^u C_u$$

where $C_r; C_u$ are the monthly consumption expenditures for the rural and urban consumer units respectively, $\pm_r$ is the share of total expenditure contributed by rural consumer units, and $\pm_m^r; \pm_m^u$ are the month's share of expenditure for each consumer unit. Table 3.5 shows the estimated average consumption expenditure per consumer unit per month. The weighted averages were used in calculating private consumption expenditure.

Assuming a population of 111,105 persons in 1996 and an average of 3.9 persons per consumer unit, it was estimated that private consumption expenditure totalled EC$629,406,238 in 1996. This figure is sensitively dependent on the assumption regarding the proportion of consumer units classified as urban and rural as is shown in Table 3.6.

Table 3.7: Private Consumption Expenditure and Assumptions of Urban-Rural Population Shares

Urban-Share	Rural-Share	Consumption
0.1	0.9	$517,416,415.41
0.2	0.8	$544,080,658.95
0.3	0.7	$570,744,902.49
0.4	0.6	$546,720,282.35
0.5	0.5	$581,832,669.83
0.6	0.4	$616,945,057.32
0.7	0.3	$652,057,444.28
0.8	0.2	$687,169,832.28
0.9	0.1	$722,282,219.77

4. Recommendations

(A) To compensate for the observed di¤erences in expenditure shares amongst urban and rural consumer units, it is recommended that at least two rural points of purchase be included in the sample frame in which prices are collected. To facilitate maximum coverage, it is recommended that one of the sampled rural point of purchase be situated on the leeward side of St. Vincent, the other sampled points of purchase should be on the windward side of the island.

(B) The next update of the CPI weights should be completed by the sta¤ of the Statistical Unit. The combination of Ms. Louise Tash, Mr. Lanceford Weekes and Ms. Gatlin Roberts should be able to complete the update with minimum supervision. This assessment assumes that the data from the HBES has been formatted in a spreadsheet such as MS Excel. It also assumes that the Unit has taken the appropriate steps to ensure that these sta¤ members are kept current regarding spreadsheet skills. The work associated with the update should be apportioned with Mr. Weekes being given most of the responsibility for the technical analysis, Ms .Tash should be made responsible for most of the programming in the spreadsheet, and Ms.

Roberts should be given the responsibility for maintaining data consistency.

(C) Once the assumptions outlined in (B) hold, a maximum of three days work by an external consultant will be su¢cient to complete the update of the HBES. The primary responsibility of the external consultant will be to ensure the internal consistency of the work done by the sta¤ of the Statistical Unit.

(D) There should be a quarterly check of items in the CPI basket. This can be done by requiring that the Statistical Clerks assigned to conducting the survey of prices inquire as to the most popular like-item for any item currently not available or any item observed to change frequently. Particular emphasis should be placed on ensuring the currency of the food and beverages and clothing categories. The basket of goods was found to be particularly de…cient for these two categories. There are risks inherent in substituting most popular item for discontinued items. If the discontinued items and the replacement are considered directly comparable, i.e., the characteristics of the new item are essentially the same as the discontinued item's characteristics, the base-period price should be set equal to the base-period price for the old speci…cation and the price comparison between the items used in the index. It is recommended that the Statistical Unit substitute for discontinued items if, and only if, the replacement item is directly comparable to the discontinued item.

(E) During the next running of the HBES, participants should be instructed to take care in the recording of prices and quantity information. Enumerators should be instructed to inquire for the likely value of missing information.

(F) The IMPS software should be augmented with software such as Win-R Plus to ensure easy migration of data to spreadsheet applications for data manipulation. The IMPS is e¢cient and e¤ective when designing questionnaire screens, calculating sample variance and doing broad analysis of highly aggregated data. IMPS is severely limited in areas such as data manipulation. In addition, IMPS does not readily cope with numbers larger than three digits.

(G) The Household Budget Survey should not be run in conjunction with any other survey requiring data collection using the diary method.

(H) Enumerators should be instructed to examine returned diaries for data content. Where the diary content appears inconsistent with the minimum ex-

penditure expected over the period of the survey, respondents should be asked to indicate the reason for the paucity or absence of data. Such information is useful in assessing the e¤ect of nonresponse on the sample variance.

(l) Given, the relative importance of small to medium scale and non-traditional businesses such as street vendors as points of purchase, it is recommended that an update of outlet points of purchase be conducted every three years and, at a minimum, the HBES should be conducted every 5-7 years. The increased frequency with which the HBES is conducted would obviate the need for a seperate Survey of Housing.

5. The Revised Basket

On the basis of the data generated from the HBES and with cross validation from a selection of urban points of purchase, the basket of goods used to construct the CPI has been updated. The …ndings of the analysis indicate strong invariance in the items being purchased by the representative consumer unit. Where there have been changes, they tend to be associated with (i) new products or (ii) new varieties of old products.

The clothing category of the current basket was found to be least consistent with the information contained in the HBES. This …nding is not unexpected[10] and has been documented in other developing countries. Analysis of the source of the inconsistency reveal little evidence of shift in consumption to other items instead the data revealed changes in the variety of a particular good being chosen. This evidence appears to reinforce expectations regarding the likely impact of having relatively high proportion of expenditure being spent with street vendors.

It appears that the strategy adopted by the Statistical Unit to cope with product discontinuation or obsolescence is to report the last observed price of the product. This strategy should be replaced with a commitment to substitute like items, if this is done, it would help to alleviate the current CPI's downward bias.

[10] Douglas,S. and L. Adams, "Consumer Expenditure Patterns in Developing Countries" Report. 114, Nielsen Institute, Evanston Illinois 1997.

Table 5.1: The Revised Basket

Item	Item Description	Unit
1.1 Meat		
Beef		
(a)	Frozen-ordinary cuts with bones	Lb
(b)	Local Fresh-All Cuts	Lb
Pork	Local Fresh-All Cuts	Lb
Mutton	Local Fresh-All Cuts	Lb
Chicken		
(a)	Whole legs	Lb
(b)	Whole legs	Lb
(c)	Backs and Necks	Lb
(d)	Wings	Lb
Other Meats		
(a)Corned Beef	Imported	Tin
(b) Pork Sausage	Imported	Tin
(c)Pig Feet	Imported	Lb
(d) Pig Tail	Imported	Lb
1.2 Fish	Imported	
Fish (Fresh)		
(a)Deep Sea		Lb
(b)Jacks		Lb
(c)Robin		Lb
Fish (tinned)		
(a)Sardines		Tin
(b)Herrings		Tin
Fish (Other)		
(a) Cod...sh		Lb
1.3 Dairy Products		
Milk		
(a) Diamond Single		Pack
(a) Powdered-Loose		Lb
(b) Powdered-Tinned		Lb

Table 5.2: The Revised Basket Cont'd

Item	Item Description	Unit
Other Milk Products		
(a) Milk	Evaporated	Tin
(b) Condensed Milk	Nestle -14 oz	Tin
(c) Cheese	Cheddar-Imported	Lb
Eggs	Medium Sized	Doz
1.5 Bread & Cereals		
(a)	Sandwich Loaf	Each
(b)	Panbread loaf	Each
Flour		
(a)	Loose -Local	Lb
(b)	Packaged -Easy Bake-Local	Lb
Rice	Loose (white)- Imported	Lb
(a)	Imported -Unseasoned	Pack
Cornmeal	Imported	Lb
Other Cereals		
(a) Cream of Wheat	Nabisco-14 oz	Box
(b) Corn‡akes	Kellogs-12oz	Box
(c) Corn‡akes	Sunshine-12 oz	Box
Biscuit and Cakes		
(a) Soda Biscuits	Crix -5 oz	Pkt
(b) Sweet Biscuits	Shirley-4.2 oz	Pkt
(c) Rock Cakes		Pkt
1.4 Oils and Fats		
Butter		
(a) Table	Sun‡ower- 1lb	
(b) Cooking	Clover- Queen	
Margarine	Mello Kream - 1lb	
Lard	Velvo Kris -1lb	
Cooking Oil	Loca-Whiskey	
Olive Oil	James Plaginol	

Table 5.3: The Revised Basket Cont'd

Item	Item Description	Unit
1.6 Vegetables and Fruits		
Fruits		
Limes	Local	Lb
Oranges	Local	Each
Grapefruits	Local	Each
Mangoes	Local-Grafted	Lb
Bananas	Local	Lb
Papaya	Local	Lb
Coconuts	Local-Dry	Each
Pears	Local	Each
Vegetables		
Breadfruit	Local -Medium	Each
Egg Plants	Local	Each
Tomatoes	Local	Lb
Carrots	Local	Lb
Carrots	Imported	Lb
Peas	Local-Dry	Lb
Lettuce	Local	Head
Onions	Imported	Lb
Cabbages	Imported	Lb
Plantains	Local	Lb
Pumpkins	Local	Lb
Tubers	Local	Lb
Dasheens	Local	Lb
Tannias	Local	Lb
Sweet Potatoes	Local	Lb
Yams	Local	Lb
Eddoes	Local	Lb
English Potatoes	Local	Lb

Table 5.4: The Revised Basket Cont'd

Item	Item Description	Unit
1.7 Sugar and Confectioneries		
Sugar		
(a) White	Loose	lb
(b) Brown	Loose	lb
Sweets	Chocolate	
(a)		Pkt
(b)		Pkt
(c)		Pkt
(d)		Pkt
1.9 Non-alcoholic Beverages		
Co¤ee	Most Popular Brand	Bot
Tea	Most Popular Brand	Pkt
Chocolate Sticks		Stick
Cocoa Drinks	Most Popular Brand	Tin
Other Foods		
(a) Garlic		Pkg
(b) Chive		Bundle
(c) Salt		Lb
(d) Baking Powder	Most Popular Brand	Pkt
Tomato Ketchup	Most Popular Brand	Bot.
Black Pepper	Most Popular Brand	Pkt
Curry Powder	Most Popular Brand	Pkt
Guava Jelly	Most Popular Brand	Bot
1.10 Non-carbonated Drinks		
Grapefruit Juice	Imported-19 oz.	Tin
Orang Juice	Imported-19 oz.	Tin
Coconut Water		
Mauby	10 oz. Glass	Glass

Table 5.5: The Revised Basket Cont'd

Item	Item Description	Unit
2. Alcoholic Beverages and Tobacco		
2.1 Alcoholic Beverages		
Rum	26 oz.	Bot
(a) Mount Gay	26 oz.	Bot
(b) Sunset	26 oz.	Bot
Whiskey	26 oz.	Bot
Beer	Heineken -not cold	Bot
	Hairoun -not cold	Bot
Stout	Guinness	Bot
Wine	Most Popular Brand	Bot
2.2 Tobacco		
Cigarettes		
(a) Empire	Local-10's	Pkt
(b) 555's	Imported -20's	Pkt
3. Clothing and Footwear		
3.1 Clothing		
Women's Dress	Most Popular Brand	Each
Women's Underwear	Most Popular Brand	Each
(a)Panties	Most Popular Brand	Each
(b) Half Slip	Most Popular Brand	Each
(c) Bra	Most Popular Brand	Each
Men's Shirt /Shirt-jacks	Most Popular Brand	Each
Men's Trousers	Most Popular Brand	Each
(a) Denim	Most Popular Brand	Each
(b) Synthetic Textile	Most Popular Brand	Each
Men's Underwear		
(a) Vest	Most Popular Brand	Each
(b)Brief	Most Popular Brand	Each

Table 5.6: The Revised Basket Cont'd

Item	Item Description	Unit
Men's Socks	Most Popular Brand	
Stocking	Most Popular Brand	Pair
3.2 Textile Material		
(a) Khaki	Men's Pants	Yard
(b) Terylene	Ladies-60"	Yard
(c) Polyester	Men's Pants	Yard
(d) Polyester-Cotton	Ladies-36"	Yard
(e) Terylene	Men's Pants-60"	Yard
3.3 Tailoring and Dressmaking		
(a) Ladies' Dress	Most Popular Brand	Each
(b) Men's Pants	Most Popular Brand	Each
(c) Men's Pants	Most Popular Brand	Each
Thread and Yarn	Carona 100yds	Each
3.4 Footwear		
Women's Shoes		
(a) Casual	Most Popular Brand	Pair
(b) Formal	Most Popular Brand	Pair
Men's Shoes		
(a) Casual	Most Popular Brand	Pair
(b) Formal	Most Popular Brand	Pair
Children's Shoes		
(a) Casual		Pair
4. Housing		
4.1 Rent		
(a) Within City	3 Bedroom House -Unfurnished	Month
(b) In Mesopotamia	3 Bedroom House -Unfurnished	Month
4.2 House Tax		
(a) Government	22.5% Rental Value	Year
(b) Town Board	2.5% Rental Value	Year
4.3 Insurance	House-Demerara Mutual Life	Year
4.4 Water	House with 1 Sewerage (C.W.S.A)	Year

Table 5.7: The Revised Basket Cont'd

Item	Item Description	Unit
4.5 Repairs and Decoration		
(a) Galvanized Sheets	26" Gauge	Foot
(b) Cement	94 lb	Bag
(c) Oil Paint	Most Popular Brand	Gallon
(d) Emulsion Paint	Most Popular Brand	Gallon
(e) Pitch Pine	Imported -Dressed	Board Foot
5. Fuel and Light		
5.1 Fuel and Light		
Kerosene		Gallon
Charcoal	Bag -Crocus (large)	Each
Gas	Cooking-100 lb. cylinder	
Electricity	100 units	Month
6.1 Furniture and Furnishing		
Dining Room Set	6 chairs-with fabric covered seats	Each
Chair	Wooden-fabric seat	Each
Bed	Board	Each
Mattress	Foam-3'£6⁰ £ ¶"	Each
Mats	Fibre-Imported	Each
Linen		
(a) Sheets	Double-Coloured	Each
(b) Pillow Cases	Coloured	Pair
(c) Towels	Bath Size-Standard	Each
Glass Vase	Small	Each
6.2 Household Equipment		
Refrigerator	11 Cubic feet- Courts	Each
Stove (Gas)	4 Burner - Courts	Each
Utensils		
(a) Pots	12 inch -aluminium	Each
(b) Frying Pan	10 inch without Te‡on	Each

Table 5.8: The Revised Basket Cont'd

Item	Item Description	Unit
Iron	Electric -with Steam	Each
China & Silverware		Each
Teaspoon	Stainless Steel	Each
Lamp Shade		Each
7. Household Supplies		
7.1 Soaps and Detergents		
(b) Laundry Soap		Cake
(c) Powdered Soap	Most Popular Brand-16 oz	Pkt
Floor Polish	Wax	Tin
Matches	Safety	Each
Light and Tubes		
(a) Light Bulb	60 watt	Each
(b) Fluorescent Tube	24 inch	Each
Plug	Three Pins	Each
Transformer	Step-Down Medium Power	Each
Battery Cell	Transistor (AA)	Each
Cleaning and Laundering	Shirt and Trousers	Each
Wages to Servants		Month
8. Transport and Communication		
8.1 Transport		
Bicycle		Each
Repairs to Tyre	Small Patch	Each
(a) Boat Fare to Bequia	One Way	Each
(b) Taxi	Around Kingstown	
(c) Vehicular Licenses	Car	Year
Petrol	Extra	Gallon
Service and Cleaning	Oil Change and Full Service	Each
8.2 Telephone and Postage		
Telephone		
(a) Private	Rental & ro short calls (C&W)	Month
Postage	Airmail-0.5 oz -USA	Each

Table 5.9: The Revised Basket Cont'd

Item	Item Description	Unit
Other Miscellaneous Expenses		
9.1 Medical		
(a) Doctor's Fee	Dr. Rampersaud	1 visit
(b) Hospitalisation	PrivateWard	Day
Dental Service	Dr. Gatherer	1 extraction
Diagnostics	Caribbean Medical Image	1 chest x-ray
Eye Care	Dr. Adams	vision test
9.2 Education		
School Fees		
(a) St. Joseph Convent		Term
(b) Intermediate High		Term
(c) Petersville Primary		Term
Textbooks and Stationery		
(a) English Book	Form 3-G. School	Term
(b) Exercise Book	24 leaves	Each
(c) CXC	Math book _General Prof.	Each
Lead Pencil	HB	Each
Paper and Books		
(a) Magazine	Time-Roberston Bookstore	Each
(b) The Vincentian	Searchlight	Each
9.3 Recreation		
Cinema Fares	Regular Showing-Russel	Each
Personal Stereo	Most Popular Model -Courts	Each
Integrated Stereo System	Most Popular Model -Courts	Each
Television Set	Goldstar 21 inch	Each
Video Cassette	Rental-1 Night In Town Videos	Each
Video Cassette Recorder	Goldstar- Courts	Each
Cassette-Tape	Blank	Each
Nylon Fishing Line	Fine 120 mm	Each
Toys and Hobbies		
(a) Toy Car 35	Metal-Street Vendor	Each
(b) Colour Film	110/24 Roger's Photo Studio	Each

Table 5.10: The Revised Basket Cont'd

Item	Item Description	Unit
9.4 Personal		
Toilet Soap	Most popular brand	Each
Toothpaste	Colgate-134 grams	Tube
Dodorant Spray	Most popular brand	Tin
Razor Blade	Most popular brand	Pkt
Sanitary Pads	Most popular brand	Pkt
Diapers	Packet of 12	Each
Combs	plastic	Each
Haircuts and Hairdressing		
(a) Men's Haircut	Lloyd's Salon	Cut
(b) Women's Hairdress	Venus Slaon	Cream
Men's Watch	Casio-Digital	Each
Jewellry	Ring-10 carat	Each
(a) Earring	Clip on -enamel	Each
(b)Ring	Gold-10 carat	Each
Women's Handbag	Leatherette	Each
Suitcases	Elkay	Each
Meals taken away fron Home		
(a) Lunch	Manna	Fee
Dance	AquaticClub	Fee

References

[1] Balk, B., and H. M. P. Kersten (1986), "On the Precision of Consumer Price Indices Caused by the Sampling Variability of Budget Surveys," Journal of Economic and Social Measurement, 14, pp. 19-35.

[2] Barnett, V. (1983), "Principles and Methods of Handling Outliers in Data Sets" in T. Wright (ed.) Statistical Methods and the Improvement of Data Quality, Orlando, FL: Academic Press , pp131-158.

[3] Biemer , P., and S. L. Stokes (1991), "Approaches to the Modelling of Measurement Errors" in P.P. Biemer, R. M. Groves, L. E. Lyberg, N.A. Mathiowetz, and S. Sudman (eds.) Measurement Errors in Surveys, New York: Wiley, pp. 487-516.

[4] Cohen, M., and J. Sommers (1984), "Evaluations of Methods of Composite Estimation of Cost Weighted for the CPI," Proceedings of the Survey Research Methods Section, American Statistical Association, pp. 466-471.

[5] Eisenhower, D., A. Mathiewetz, D. Morgenstein (1991), "Recall Error: Sources and Bias Reduction" in P. P.. Biemer, R. M. Groves, L. E. Lyberg, N.A. Mathiowetz, and S. Sudman (eds.) Measurement Errors in Surveys, New York: Wiley, pp.127-144.

[6] Hawkins, D. M., (1980), Identi...cation of Outliers, London: Chapman Hall.

[7] Horvitz, D. G., and D. J. Thompson (1952), "A Generalization of Sampling Without Replacement from a Finite Universe," Journal of the American Statistical Association, 47, pp.663-685.

[8] Fellegi, I. P., (1964), "Response Variance and Its Estimation," Journal of the American Statistical Association, 59, pp. 1016-1041.

[9] Gorves, R. M., (1989), Survey Errors and Error Costs, New York: Wiley.

[10] Lessler, J. T., and W. D. Kalsbeek (1992), Nonsampling Error in Surveys, New York: Wiley.

[11] Longacre, J. "Calculating Response Rates in the Consumer Price Index Program," Monthly Labor Review, 115, pp. 37-39.

[12] Rao, J. N. K., (1992), "JackKnife Variance Estimation Under Imputation for Survey Data Under Hot Deck Imputation," Biometrika, 79, pp. 811-822.

[13] Redpath, B., (1986), "Family Expenditure Surveys: a Second Study of Differential Responses Comparing Census Characteristics of FES Respondents and Non-respondents." Statistical News, 72, pp. 151-171.

[14] Smith, T. W., (1995), "Trends in Nonresponse Rates." International Journal of Public Opinion Research, 7, 2, pp.627-639.

[15] Winship, C. and R. D. Mare, (1992), "Models of Sample Selection Bias." Annual Review of Sociology, Vol. 18, pp. 327-350.

[16] Yu, J., and H. Cooper, (1983), (1983), "A Quantitative Review of Research Design E¤ects on Response Rates to Questionnaires." Journal of Marketing Research, Vol. 20 pp.36-44.