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CENTER DISCUSSION PAPER NO. 27

URBAN/RURAL CONTRAST OF CONSUMPTION PATTERNS AND CONSUMER PREFERENCES IN YUGOSLAVIA, 1963

Charles S. Rockwell

April 29, 1967

Introduction

This paper is the first of three dealing with personal consumption in Yugoslavia from 1952 to 1963. In this study Engel curves for twelve expenditure categories are estimated for Agricultural, Mixed and Urban households in 1963. International comparisons of these results with earlier studies are performed, and a detailed statistical analysis is made of the relationship among the consumption patterns of the three Yugoslav occupational groups. The second paper in this series will deal solely with food and natural consumption but on a disaggregate commodity and geographic basis; and the third paper will treat the temporal pattern of consumption and its implications for development.

There are at least three reasons why a detailed study of 1963 consumption income relationships in Yugoslavia is interesting. The first, and a necessary prerequisite for those that follow, is the existence of a unique set of statistical data for that year. In 1963 a consumer survey of twelve thousand households was performed on the basis of a stratified random sample. The special aspects of this survey most relevant to the study of economic development are: (1) the stratification according to occupational type provides the basis for an analysis of the effects of urbanization and development upon consumption; and (2) the survey presents disaggregate data on natural consumption. The inverse relationship between natural consumption and the "marketable surplus" of the agrarian sector gives added relevance to empirical work on the determinants of non-market production.[1] The second reason why a detailed study of

[1] The absence of adequate empirical studies of consumption in agrarian and mixed households is evidenced by the fact that Houthakker's excellent 1957 summary of sixty-two budget surveys contains no purely rural surveys. Data on natural consumption is even more rare. See H.S. Houthakker, "An International Comparison of Household Expenditure Patterns, Commemorating the Centenary of Engel's Law", Econometrica, Vol. 25, No. 4. (October 1957), pp. 532-551.

the 1963 consumption-income relationships are interesting is that although Yugoslavia's post-war growth has been rapid, per capita income is still under $500 and an urban-rural income ratio of two to one exists. Thus, Yugoslavia is poised at the important and difficult conjuncture of economic events often alluded to as the "take-off". Third, to the author's knowledge, there exists no other published household surveys in a communist country of comparable quality. This survey, therefore, permits for the first time a detailed investigation of the extent to which forced industrialization in an East-European economy produces deviations from the consumption patterns observed in other countries. One might expect, for example, extreme distortions in urban housing expenditures where rationing and pre-war rent levels curtail expenditure or that poor quality and restriction upon the import of household durables would reduce the consumption of this item. On the other side, a variety of forces work to depress the price of agricultural products vis-à-vis non-agricultural products and, consequently, one would anticipate high levels of food and drink consumption.

In summary, the 1963 Household Survey provides an important set of data for studying the effects of urbanization and occupation on consumption patterns. That Yugoslavia is at an early stage of rapid industrial growth and has many characteristics in common with other Communist economies of Eastern Europe certainly does not detract from the value of such a study. The following section provides an outline of this study and a summary of the main conclusions.

Outline and Summary

The paper is divided into four parts. Part One describes the economic and statistical models used; Part Two tests the statistical model for functional form and homogeneity of the parameter estimates across occupational groups; Part Three compares expenditure shares and the derived elasticity parameters obtained in this study with comparable results for other countries; and Part Four presents a method for dichotomizing occupational differences in consumption patterns into taste and endowment determinants. A data appendix describes the source material and its underlying concepts. The summary presented below highlights the significant results of the study.

The economic model put forth in Part One is similar to that developed by Nissan Liviatan.[1] The principal difference between his model and ours is that we use the share of expenditure on an item as the dependent variable rather than the expenditure or the log of expenditure on that item. The conclusion of Liviatan's study which is of greatest interest is that we are able to obtain consistent estimates of the postulated economic model if two conditions are satisfied: the households are grouped according to income received; second the "random" element in expenditure is not correlated with the grouping variable. The functional form of the statistical model is based upon an additive, non-linear variant of the Engel curve introduced by Holbrook Working[2]

[1] Nissan Liviatan, "Errors in Variables and Engel Curve Analysis", Econometrica, Vol. 29, No. 3 (July, 1961), pp. 336-362.

[2] H. Working, "Statistical Laws of Family Expenditure," Journal of the American Statistical Association, Vol. 38 (1943), pp. 43-56.

and extended by C.E.V. Leser.[1] In this model both income and family size are used as explanatory variables which enables us to estimate separate intercept and regression coefficients for each of the three occupational groups.

On the basis of the statistical tests made in Part Two we reject the null hypothesis that the fitted Engel curves have the same parameter values for Rural, Mixed, and Urban households. This hypothesis is rejected for each of the twelve consumption categories. It is further proven by these tests that for eight out of twelve consumption categories a significantly better fit is obtained through the use of a functional form that implies neither a constant marginal nor elasticity expenditure coefficient. The significance of this result extends beyond the current study, for Leser, using much more aggregate data was only able to reach this conclusion for three of twelve categories [p. 702]. Through the use of disaggregate data stratified according to family size our study provides more conclusive evidence of the superiority of Leser's functional form over simpler specifications.

In Part Three, explicit international comparisons are limited to ten countries where per capita income is approximately equal to that of Yugoslavia. Expenditure shares for Yugoslav Urban households on Food, Clothing, Housing and Miscellaneous are within the range of the observed shares for other countries. As might be expected, Housing shared in Yugoslavia fall at the bottom of this range. However, the importance of the consistency of expenditure shares between countries is of limited

[1] C.E.V. Leser, "Forms of Engel Functions", Econometrica, Vol. 31, No. 4 (October, 1963) pp. 694 - 703.

significance due to the large variance of this measure. Rather, it is the comparison of expenditure elasticities which provides more conclusive evidence that the relationship between expenditure shares and income and family size in Yugoslavia is closely related to that in other countries where institutional settings, income levels and temporal point of observation are quite different. In the first place, the distinction between luxuries and necessities is consistent over all countries, including Yugoslavia. Furthermore, expenditure elasticities on major items such as Food, Drink, Clothing, and Household items are closely related not only with the other countries mentioned in this paper, but also with the large body of work on Engel curves not discussed here. Consequently, we may conclude that the determinants of expenditures for Urban families are not substantially different for Yugoslavia than for developed countries organized under different economic systems.

Although the tests presented in Part Two show a statistically significant difference between the expenditure patterns of Rural, Urban, and Mixed households, this need not imply an economically important difference. Part Four compares Urban and Mixed expenditure shares with those of Agricultural households. The unweighted difference in expenditure shares is great, averaging ninety percent for the Urban-Rural comparison and fifty percent for the Mixed-Rural comparison. However, through some algebraic manipulation it is shown that only one-third of these differences can be attributed to the income and family size endowments of the households. The remaining two-thirds is due, therefore, to differences

in the statistical estimates of the parameters. These differences are interpreted as representing differences in "tastes". In fact, much of the apparent differemees in "tastes" may be a consequence of difference in the prices of consumer goods in the Rural and Urban sectors. This hypothesis is suggested by the fact that the expenditures share for luxuries (which we might expect to have an own-price elasticity greater than one) is higher for Urban than for Rural households for precisely those goods which we would expect to have relatively lower Urban than Rural prices. A final conclusion to be drawn from the result in Part IV is that while the expenditure shares and elasticity estimates for Mixed households differ substantially from those for Rural households, both of these measures can be expressed as "convex combinations" of the corresponding Urban and Rural estimates. That is, the taste patterns of Mixed households seem to represent a relatively equal combination of Urban and Rural influences.

From this study we conclude that consumption patterns in Yugoslavia do not differ greatly from those in other countries. However, the evidence obtained from such international comparisons is weakened by the fact that we find statistically and economically significant differences in the consumption patterns of Rural, Mixed and Urban households within Yugoslavia. While part of the occupational variation may be explained in terms of price differences, the unexplained residual is still apt to be large. Consequently, until better data and theories are developed, it is important to make separate projections for Rural, Mixed and Urban households.

Part I: The Expenditure Model

Following Leser[1], we use the functional form,

$$(1) \quad W = \frac{V}{M} = \mu + \gamma \log M + \delta\frac{1}{M} + \lambda \log S,$$

where V is expenditure on a particular item, M is total expenditure, S is family size, and W is the share of V in M (or average expenditure). This function has several desirable properties: it is additive; it does not involve the logarithm of the dependent variable; and it permits the testing of three hypotheses with one estimated regression. The three hypotheses are: (a) the marginal expenditure on V with respect to M is constant; (b) the elasticity of V with respect to M is approximately constant; and (c) neither the marginal nor the elasticity coefficients are constant. Marginal expenditure is given by:

$$\frac{\partial V}{\partial M} = \mu + \gamma(1 + \log M) + \lambda \log S.$$

In the above equation, marginal expenditure is a constant (independent of M) when $\gamma = 0$, and, consequently (a) holds. Similarly, if $\delta = 0$, then the expenditure elasticity denoted by η, takes the form:

$$\eta = \frac{\mu + \gamma(1 + \log M) + \lambda \log S}{\mu + \gamma \log M + \lambda \log S}$$

which is relatively insensitive to changes in M. In general, since both $\frac{\partial V}{\partial M}$ and η may depend on M, it is useful to know how sensitive these coefficients are tochanges in total expenditure. Therefore, we also present two additional elasticity measures (evaluated at the geometric mean of M, S and W):

$$\xi = \frac{\partial \log \frac{\partial V}{\partial M}}{\partial \log M} = \frac{\gamma}{\mu + \gamma(1 + \log M) + \lambda \log}$$

[1]Leser, op. cit., pp. 694-703.

and

$$\rho = \frac{\partial \log \eta}{\partial \log M} = \xi - \eta + 1.$$

Large absolute values of ξ or ρ occur when the hypothesis of a constant marginal or elasticity coefficient is not satisfied.

Given that (1) is to be fitted by the technique of least squares, we need to ascertain the conditions under which these parameters provide consistent estimates of the structural relationships of economic theory. Liviatan[1] shows that if households are grouped according to measured income and if the random component of V is not associated with measured income, then least squares estimates of (1) are consistent estimates of the structural relationship. The reason for this is that the observations on W and M are conditional on the value of measured income used for grouping. Consequently, measured income serves as an instrumental variable.

For the Yugoslav data, we may presume that there is a high correlation between measured and "true" income and, therefore, that the use of measured income as an instrumental variable will yield efficient estimates. However, the requirement of a zero correlation between income and the random component of V is not apt to be fulfilled in all cases. For example, net unrepaid consumer credit is included in income in our data so that a bias is undoubtedly present in the estimates of (1) for durable purchases by mixed and urban households. This is less of a problem than it would be in a more developed economy, since the share of durables in

[1] Liviatan, op. cit., pp. 336-362.

total expenditure is comparatively small even for urban workers. A more important source of bias is apt to stem from the inclusion of natural consumption in income. This item which is predominantly food consumption constitutes over fifty-seven percent of agricultural incomes and thirty-five percent of mixed incomes. Therefore, there is apt to be an important correlation between income and the random part of food consumption inclusive of own production. For our other categories, there is no reason to expect important direct correlations between measured income and the random part of expenditure.

Although the conceptual characteristics of the variables are not ideal from an econometric point of view, the author feels that they do provide a satisfactory basis for estimating structural relationships. To reiterate, the great strength of the data derives from the fact that it is presented in a highly disaggregate form based upon a stratified random sample. It is therefore possible to make more detailed comparisons of structural differences and more confident extrapolations of economy-wide effects than is typically the case with more aggregated data. We now turn to a discussion of the statistical specifications of the model under the assumption that there is no correlation between the independent variables and the errors in the equation.

The initial statistical model we fit is:

$$\Omega: \quad W_{ijk} = \mu + \alpha_1 + \gamma_i \log M_{ijk} + \delta_i \frac{1}{M_{ijk}} + \lambda_i \log S_{ijk} + \varepsilon_{ijk}$$

where $\sum_{i=1}^{3} \alpha_i = 0$ and the ε_{ijk} are assumed to be distributed $N(0, \sigma^2)$ with zero covariance.

The subscript i = 1, 2, 3 refers to the agricultural, mixed and non-agriculture occupational groups respectively; j = 1, 2...7 refers to family

size where j = 7 is for families of seven or more members; and k = 1, 2...9 refers to the nine income levels. The three dummy variables α_i are stated as deviations from the grand intercept μ. Therefore, we fit the regressions subject to the a priori side restriction $\Sigma\alpha_j = 0$.[1] The possible existence of heteroscedasticity is reduced by using the number of households in each employment group as weights in all regressions.

If we wish to impose more restrictive assumptions on the parameters of Ω, we may do so by adding an additional hypothesis denoted by H. The union of Ω and H define a new model which we call ω. Therefore, $\omega = \Omega \cup H$. An F test of any hypothesis, H, is performed by computing the statistic $F = \frac{n-r}{q} \frac{S_\omega - S_\Omega}{S_\Omega}$, where S_Ω is the error sum of squares under Ω, S_ω is the error sum of squares under ω, and q is the number of separate restrictions needed to state H. For all tests, n, the number of observations is 187; and, r, the number of independent parameters under Ω is twelve.

Part II: Tests of Occupational Homogeneity and Functional Form

Test 1

The first test we make is whether the parameters α_i γ_i δ_i and λ_i are the same for all three occupational groups. This tests the equivalence of

[1] In this parameterization, the observation vector corresponding to μ is a column of ones, whereas the three vectors corresponding to α_i consist of either zeros or ones. These dummy variables satisfy the condition that, for any one observation, the sum of the three employment dummies is one. Obviously, as they stand, the columns of independent variables associated with μ and the dummies are linearly dependent so that the combined matrix of dummy and regression variables (X'X) is singular. This problem is solved by adding one dummy observation for each side condition. This observation takes the form $0 = W_{ijk} = \Sigma\alpha_i 1$ which simultaneously makes X'X non-singular and forces conformity with the side conditions. Subsequent computations of residuals drop these observations. The theory underlying this parameterization is presented in Henry Scheffé, The Analysis of Variance, John Wiley & Sons, Inc., New York, 1964, pp. 15-19. Further imposition of linear restriction on the parameters follows the procedure described by Arthur S. Goldberger, Econometric Theory, John Wiley & Sons, Inc., New York, 1964, pp. 255-258.

consumer preferences across occupational groups. The formal statement of this hypothesis is:

$$H_1: \quad \alpha_1 = \alpha_2 = \alpha_3 = 0,$$
$$\gamma_1 = \gamma_2 = \gamma_3,$$
$$\delta_1 = \delta_2 = \delta_3,$$
$$\lambda_1 = \lambda_2 = \lambda_3.$$

The F statistics for H_1 are presented in column 9 of Table I. The hypothesis that there are no occupational differences in tastes is strongly rejected for every consumption category. This conclusion clearly emphasizes the importance of estimating Engel parameters over homogeneous occupational categories. In a later section we discuss the economic importance of the statistical differences.

The parameter estimates in Table I are for the single model, Ω. Although they are obtained from one regression, these estimates are presented on four lines in order to facilitate comparisons across employment groups. The parenthetical values are t-statistics and not standard errors.[1]

Test 2

The second test is of the hypothesis (b) on page 7. That is, we test whether the income elasticity of expenditure is a constant. One test of this hypothesis is to examine the significance of each individual δ_i by means of a t-test. This the reader may do by inspecting the relevant t-values in Table I, column 7. Out of 33 δ_i's estimated, only twelve are significantly different from zero at the five percent level and, therefore, we reject the hypothesis of a constant elasticity only in these twelve cases.

[1] A t-value of 1.96 is significant at the .05 level for a two-tailed test.

TABLE 1

Parameter Estimates of Model Ω and F Tests of Hypothesis

(t-statistics in parenthesis)

Description	Occupational Category	ρ_Ω	μ	Parameter Estimates of Ω α_i	γ_i	δ_i	λ_i	F Statistics for Hypothesis H_1	H_2	H_3	H_4
1. Dwelling Cost	Model Ω	.988	- .007 (- .44)					74.044	.761*	5.219	14.479
	Rural			- .055 (-23.81)	.015 (3.50)	1.408 (1.19)	- .012 (- 7.20)				
	Mixed			- .019 (- .78)	.010 (2.19)	1.087 (.60)	- .011 (- 6.38)				
	Urban			.074 (3.91)	.001 (.19)	- .591 (- .71)	- .021 (-16.69)				
2. Fuel and Light	Model Ω	.995	.113 (6.80)					13.145	18.766	1.441*	26.178
	Rural			.045 (1.83)	- .018 (- 3.86)	4.299 (3.44)	- .000 (- .22)				
	Mixed			- .036 (- 1.41)	- .005 (- 1.10)	7.333 (3.81)	- .006 (- 3.05)				
	Urban			- .009 (- .43)	- .012 (- 4.33)	4.850 (5.47)	.010 (7.46)				
3. Household Goods	Model Ω	.988	- .023 (- .69)					69.906	10.312	11.955	.902*
	Rural			- .112 (- 2.29)	.028 (3.00)	2.612 (1.04)	- .007 (- 1.92)				
	Mixed			.048 (.94)	.010 (1.08)	- 6.851 (- 1.77)	- .013 (- 3.58)				
	Urban			.064 (1.59)	.014 (2.51)	- 9.219 (- 5.17)	- .009 (- 3.50)				

4.	Outerwear and Footwear	Model	Ω	.994	.000 (.02)					31.783	11.222	6.432	41.553
		Rural				- .139 (- 2.93)	.032 (3.64)	4.290 (1.76)	.010 (3.04)				
		Mixed				- .070 (- 1.40)	.022 (2.41)	3.114 (.83)	.014 (3.84)				
		Urban				.209 (5.38)	.003 (- 1.43)	- 9.437 (- 5.47)	- .020 (- 7.94)				
5.	Transportation	Model	Ω	.950	- .233 (-7.57)					7.032	12.942	10.174	7.645
		Rural				.150 (3.31)	.016 (1.85)	2.117 (.91)	- .004 (- 1.29)				
		Mixed				- .022 (- .47)	.047 (5.38)	6.723 (1.89)	- .020 (- 5.76)				
		Urban				- .127 (- 3.44)	.063 (12.23)	9.639 (5.87)	- .018 (- 7.40)				
6.	Hygiene and Health	Model	Ω	.996	.027 (3.14)					31.420	1.294*	5.988	12.488
		Rural				.006 (.45)	.004 (1.56)	- .525 (- .82)	- .009 (-10.69)				
		Mixed				- .026 (- 2.02)	.005 (1.96)	1.591 (1.62)	- .003 (- 3.19)				
		Urban				.021 (2.04)	- .001 (- .38)	- .348 (- .77)	- .007 (-11.11)				
7.	Education	Model	Ω	.993	- .076 (-4.12)					155.590	.853*	57.429	35.465
		Rural				.010 (.36)	.014 (2.66)	1.125 (.81)	.001 (.69)				
		Mixed				.065 (2.27)	.009 (1.74)	- 2.539 (- 1.18)	- .002 (- .89)				
		Urban				- .075 (- 3.36)	.039 (12.71)	- .703 (- .71)	- .017 (-11.66)				

8.	Tobacco	Model	Ω	.985	.142 (8.67)				18.087	5.659	1.254*	2.585*
		Rural				- .028 (- 1.15)	- .015 (- 3.35)	-1.694 (-1.37)	.005 (3.06)			
		Mixed				.013 (.50)	- .019 (- 3.96)	-4.251 (-2.24)	.002 (1.30)			
		Urban				.015 (.77)	- .020 (- 7.20)	-2.787 (-3.18)	.008 (5.76)			
9.	Food	Model	Ω	.999	1.294 (26.19)					155.773	10.087	22.866	9.172
		Rural				.170 (2.34)	- .142 (-10.40)	-19.547 (- 5.34)	.053 (10.29)			
		Mixed				- .043 (- .56)	- .123 (- 9.04)	- 9.436 (- 1.64)	.074 (13.20)			
		Urban				- .127 (- 2.13)	- .130 (-15.73)	.613 (.23)	.000 (20.87)			
10.	Drink	Model	Ω	.991	- .010 (- .60)					152.739	2.682*	35.007	47.715
		Rural				- .057 (- 2.34)	.027 (5.03)	- .356 (- .28)	- .028 (-15.94)			
		Mixed				- .002 (- .07)	.016 (3.26)	- 2.463 (- 1.27)	- .022 (-11.68)			
		Urban				.059 (2.94)	- .002 (- .38)	- 2.245 (- 2.52)	- .007 (- 5.65)			
11.	Other	Model	Ω	.963	- .229 (-6.22)					18.484	11.552	1.785*	6.300
		Rural				.010 (.19)	.040 (3.91)	6.185 (2.23)	- .010 (- 2.56)			
		Mixed				.095 (1.68)	.032 (3.05)	5.591 (1.31)	- .013 (- 3.08)			
		Urban				- .106 (- 2.38)	.056 (9.02)	10.417 (5.29)	.003 (1.06)			

*Significant at the .025 level.

The categories with two or three significant values are Fuel and Light, Tobacco, and Other. The consumption of these commodities is, therefore, not well described by a constant elasticity model for at least two out of three occupational categories. The categories with no significant values are Dwellings, Hygiene and Education. The remaining categories have one significant parameter.

A related test seeks an answer to the question "Can we conclude, for a given consumption category, that the behavior of all three occupational groups can be adequately described by a constant elasticity model?". That is, we test whether all three δ_i's are zero simultaneously by specifying:

$$H_2: \quad \delta_1 = \delta_2 = \delta_3 = 0.$$

An F test of this hypothesis is presented in column 10 of Table I.

For only four consumption items do we accept H_2 and therefore conclude that a constant elasticity of demand specification is approximately satisfied. These items are Dwelling, Hygiene, Education, and Drink. The remaining categories all exhibit a significant variability of income elasticity when stated as a postulate applicable to all occupational strata. Combining these results with those obtained for individual parameters, it is clear that non-constant elasticities are the general rule.

The test of hypothesis (a), a constant marginal expenditure parameter, is obviously not satisfied so that no formal test is made. The only exception to this is Hygiene where none of the six γ_i and δ_i parameters are significantly different from zero at the .05 level. In this case,

we cannot reject the hypothesis that the expenditure elasticity is constant and equal to unity.

Test 3

Although we strongly reject H_1, that there are no differences in tastes across occupational strata, it is interesting to test whether this result holds for the income variables taken separately or for the family size variables taken separately. The test for the former is:

$$H_3: \quad \gamma_1 = \gamma_2 = \gamma_3,$$
$$\delta_1 = \delta_2 = \delta_3.$$

The F statistic for this test is shown in column 11 of Table I. On the basis of the F statistic, we only accept the hypothesis of equivalent "income effects" for three categories -- Fuel, Tobacco, and Other.

Test 4

To test for the equivalence of family size parameters over occupational strata we use:

$$H_4: \quad \lambda_1 = \lambda_2 = \lambda_3.$$

We can accept this hypothesis of equivalence only for Household Goods and Tobacco. The F statistics are presented in column 12. Tobacco is the only commodity for which both the income and the family size hypotheses are accepted. Thus, for Tobacco, taste patterns can be treated as roughly equivalent for different employment strata -- roughly, because the importance of differences in the intercept term, α_i, is not tested.

These four tests complete the formal statistical investigation of the set of hypotheses. We may summarize our findings by two conclusions. First, occupational differences are consistently associated with differences

in tastes as measured by Engel curves. For only one commodity, Tobacco, is there any question about the statistical significance of the disparity in taste patterns. Second, both hypotheses, (a) a constant marginal expenditure parameter and (b) a constant elasticity of expenditure, are rejected for eight of the twelve consumption categories. For these eight categories, the hypothesis of a linear functional relationship between V and M or between log V and log M must be rejected. The importance of these non-linearities in consumption is heightened by the fact that the eight expenditure items which exhibit this property are the most important in the household budget, constituting eighty-four percent of total expenditure.

Part III: International and Occupational Differences in Consumption Coefficients

Table II provides a perspective on how expenditure shares in Yugoslavia correspond with those in other countries. The data on the other ten countries is taken from Houthakker's 1957 article written on the centennial of Engel's law.[1] The countries selected for inclusion in the table are those with dollar expenditures per household between $200 and $800. This range brackets the Yugoslav urban expenditure of $486. It is appropriate to use Yugoslav Urban households for comparison since with few exceptions all of the studies cited by Houthakker are for urban workers.

While the variation in international expenditure shares is large, there is no indication of anomalous results for Yugoslavia. In terms of sample size, income level, and time period, the most comparable survey

[1] Houthakker, op. cit., pp. 548-9.

TABLE II

International Comparison of Expenditure Shares[a]

	Geometric Mean of Expenditure in 1963 U.S. $[b]	Geometric mean of Family Size	Proportion spent on: Food	Clothing	Housing	Miscellaneous
Yugoslavia (1963)						
Agriculture	334[c]	3.8	62	9	8	22
Mixed	539[c]	4.4	52	10	7	31
Urban	486[c]	2.9	42	7	9	37
Belgium (1853)	240	6	64	14	14	8
Brazil (1953)	382	4.4	49	8	15	28
Ceylon (1953)	352	4.2	65	8	5	22
China, Peiping (1927)	322	4.5	47	7	21	26
Ghana, Accra (1954)	500	4.2	59	12	11	18
India, Bombay (1921) Workers' Families	270	4	58	9	16	17
Japan (1953)	680	4.8	50	8	12	30
Latvia (1936/37)	804	2.9	34	15	15	36
Poland (1927)	506	4.7	64	11	9	16
Portugal (1950/51)	696	4.4	58	7	15	20

[a]The data on countries other than Yugoslavia is from Houthakker, op. cit., Table IV, pp. 548-49.

[b]Houthakker's expenditures in 1950 dollars are converted into 1963 dollars by means of the United States Consumer Price Index.

[c]Yugoslav dinar expenditures are converted at 1000:1 rather than the official 750:1 in order to better reflect actual transaction rates.

is the one for Japan in 1953. The principal difference between the Yugoslav and Japanese surveys is a slightly higher food share for Japan (50 versus 42 for Yugoslavia) with a consequently lower Miscellaneous share.[1] Compared with our sample of ten surveys or the entire set of sixty-two surveys treated by Houthakker, the Housing share (9 percent) and the Clothing share (7 percent) for Yugoslavia are at the bottom of the observed range of values. They are particularly low in comparison with other twentieth century European states. The low value for Housing, of course, results from rent controls and the fact that a substantial part of urban dwelling expenditure is included in Miscellaneous. When this latter fact is taken into account, dwelling expenditure would appear more comparable with that in other countries. The reasons for the low Clothing share is not clear.

We turn now to an international comparison of expenditures and size elasticities[2] for the urban households presented in Table III. The most obvious generalization that can be made from the data for all eleven countries is the consistency of the classification of consumption items into "luxuries" and "necessities". This is done on the basis of the income elasticity being greater or less than unity. As would be expected, Food and Housing are necessities (Engel's and Schwabe's laws), while Clothing and

[1] Houthakker's Miscellaneous includes our items, Household Goods, Transportation, Hygiene, Education, Tobaaco, Drink and Other, which are all greater than unity with the exception of Tobacco. His Dwellings includes Fuel and Light which is a necessity and dominates our combined categories, Dwellings and Fuel and Light. (See Appendix: Data Description, for our twelve categories.)

[2] Unfortunately, only two of the low-income surveys covered by Houthakker estimate family size elasticities. These are for pre-war Latvia (1936/37) and Poland (1927).

TABLE III

International Comparison of (a) Income and (b) Family Size Elasticities

	Food		Clothing		Housing		Miscellaneous	
	a	b	a	b	a	b	a	b
Yugoslavia (1963)								
Agriculture	.87	.08	1.26	.13	.81	-.18	1.507	-.283
Mixed	.79	.14	1.17	.14	.85	-.25	1.385	-.253
Urban	.71	.18	1.10	-.17	.79	-.12	1.501	-.160
Belgium	.849	n.a.	1.338	n.a.	.794	n.a.	1.992	n.a.
Brazil	.795	n.a.	1.332	n.a.	1.227	n.a.	1.174	n.a.
Ceylon	.810	n.a.	1.108	n.a.	1.118	n.a.	1.290	n.a.
China, Peiping	.591	n.a.	1.328	n.a.	.940	n.a.	1.489	n.a.
Ghana, Accra	.840	n.a.	.967	n.a.	.635	n.a.	1.365	n.a.
India, Bombay Workers' Families	.837	n.a.	.775	n.a.	.733	n.a.	1.801	n.a.
Japan, 1953	.563	n.a.	1.398	n.a.	.906	n.a.	1.387	n.a.
Latvia	.430	.482	1.094	-.065	1.024	.002	1.567	-.516
Poland	.731	.213	1.784	-.497	.662	-.068	1.774	-.534
Portugal, Porto	.779	n.a.	1.296	n.a.	.564	n.a.	1.246	n.a.

Miscellaneous are luxuries.[1] The values of the elasticity coefficients fall within the range of those measured by Houthakker. The urban income elasticity of demand for Food, .71, is near the middle of the observed range. The size elasticity of .18 for Food, however, is somewhat lower than the .28 rule of thumb suggested by Houthakker.[2] The income elasticities for Clothing, Housing and Miscellaneous are also in the range observed for the other surveys.

We find, therefore, a high level of correspondence between this study and Houthakker's. This indicates that at aggregate levels similarities in taste patterns tend to be more important than differences in price, availability of supply, and the special institutional characteristics of the economic system. The conformity of the results for urban households over different countries suggests that our results for Agricultural and Mixed groups in Yugoslavia may be transferable to other economies, where there is a dearth or existing data for these occupational groups.

Part II established that for every consumption category occupational differences led to statistically significant variations in our parameter estimates. However, statistical significance need not indicate differences of an economically interesting magnitude in the dependent variables or in the derived marginal and elasticity statistics. In Table IV we present a full set of elasticity and marginal statistics for the three Yugoslav occupational groups. These statistics, defined in Part I, are evaluated at the geometric mean. All coefficients are based on the Model Ω and consequently do not include the results of the four hypothesis tests H_1 to H_4.

We first consider the distinction between luxuries and necessities. Dwellings, Household Goods, Clothing, Transportation, Hygiene, Education, Drink and Other all have income elasticities greater than unity are are therefore classified as luxuries. Fuel and light, Tobacoo, and Food have income elasticities

[1] The Miscellaneous elasticities for Yugoslavia are computed as weighted averages of the component categories described in ftnt 1, p.15. The weights are the values of expenditure on each item.

[2] Houthakker, op. cit., p. 545.

TABLE IV

Elasticity and Marginal Coefficients Computed from Model Ω[a]

Category	$\frac{V}{M}$ (Expenditure Share)	η (Income Elasticity)	ρ (Elasticity of η)	$\frac{\partial V}{\partial M}$ (Marginal Income Coefficient)	ξ (Elasticity of $\frac{\partial V}{\partial M}$)	$\frac{\lambda}{W}$ (Family Size Elasticity)
1. Dwellings						
a. Agriculture	1.7	1.74	-.15	.026	.59	-.79
b. Mixed	2.2	1.37	-.03	.029	.34	-.53
c. Urban	4.4	1.04	-.03	.048	.01	-.45
2. Fuel and Light						
a. Agriculture	5.9	.54	-.03	.036	-.49	-.01
b. Mixed	4.6	.61	.22	.030	-.17	-.12
c. Urban	4.6	.56	.02	.028	-.42	.20
3. Household Goods						
a. Agriculture	3.2	1.79	-.17	.045	.62	-.26
b. Mixed	6.0	1.40	-.27	.081	.13	-.23
c. Urban	10.4	1.33	-.22	.132	.11	-.09
4. Outerwear and Footwear						
a. Agriculture	8.7	1.26	.08	.096	.34	.13
b. Mixed	10.3	1.17	.03	.114	.20	.14
c. Urban	11.7	1.10	-.16	.132	-.06	-.17
5. Transportation						
a. Agriculture	1.3	2.00	-.16	.019	.84	-.44
b. Mixed	3.3	2.33	-.56	.061	.77	-.76
c. Urban	4.5	2.46	-.59	.073	.87	-.61
6. Hygiene and Health						
a. Agriculture	3.9	1.13	-.05	.045	.08	-.24
b. Mixed	2.9	1.06	.10	.031	.16	-.10
c. Urban	3.4	1.00	-.02	.035	-.02	-.21
7. Education						
a. Agriculture	2.3	1.56	-.08	.028	.48	.07
b. Mixed	4.1	1.36	-.19	.053	.17	-.05
c. Urban	8.3	1.56	-.21	.113	.35	-.24

8.	Tobacco						
	a. Agriculture	2.4	.64	-.49	.018	-.85	.19
	b. Mixed	3.0	.68	-.51	.022	-.83	.07
	c. Urban	3.2	.62	-.47	.023	-.85	.20
9.	Food						
	a. Agriculture	62.0	.87	-.12	.565	-.25	.08
	b. Mixed	51.9	.79	-.09	.427	-.30	.14
	c. Urban	41.5	.71	-.12	.318	-.41	.18
10.	Drink						
	a. Agriculture	5.8	1.53	-.20	.082	.33	-.51
	b. Mixed	5.1	1.41	-.18	.069	.23	-.45
	c. Urban	2.5	1.11	-.17	.029	-.06	-.28
11.	Other						
	a. Agriculture	2.7	2.17	-.16	.040	1.01	-.54
	b. Mixed	6.5	1.36	.03	.082	.39	-.21
	c. Urban	5.0	2.00	-.18	.068	.82	.09

less than unity and are therefore necessities.[1]

A striking characteristic of the classification of goods into luxuries and necessities is that the results are independent of occupation.[2] That is, if the elasticity is greater than unity for one occuaption, it is also greater than unity for the other two.

Another interesting characteristic of the income elasticities is the relationship between the value for Mixed households on the one hand, and Rural and Urban households on the other. For eight of the twelve categories, the elasticities of Mixed households lie between the values obtained for Agricultural and Non-Agricultural households. Further support for the hypothesis that the consumption pattern of Mixed households is a "convex combination" of the other two occupations may be obtained by using the share of expenditure rather than the income elasticity. When this criterion is applied there are only two exceptions -- Hygiene and Other; and, when marginal expenditure is used the only exception is Other.

It was anticipated that a stronger hypothesis might apply. Namely, that the taste patterns of the Mixed households would be the same as those of the Agricultural households, and that differences in expenditure shares could be attributed to income and family size variations. The above results do not support this hypothesis nor does the more detailed investigation of Part IV.

The size of the elasticity of marginal expenditure, ξ , presented in column 6 of Table IV, indicates the extent to which the hypothesis of a

[1] With one exception, Leser (p. 701) obtains the same results for U.S. Farmers in 1955. The exception being that while our aggregate commodity Hygiene and Health is a luxury, Leser finds that each of these categories is a necessity.

[2] The only possible exception to this is the .99 income elasticity of non-agriculturalists for Hygiene. This value, however, is not significantly different from one.

constant marginal expenditure statistic is not satisfied. The categories with large positive values for all occupational groups are Household Goods, Taansportation, Education and Other. Large negative values occur for Fuel and Light, Tobacco and Food. With few exceptions, large positive values of ξ are associated with luxuries while large negative values are associated with necessities.

The coefficient ρ describes the rate of change of the elasticity parameter with respect to total expenditure. (It is an "elasticity of an elasticity".) This coefficient is generally negative for all categories. There seems to be no systematic relationship between the magnitude of ρ and the classification of goods into luxuries and necessities. The largest negative values occur for Transportation (which has a particularly high value of η) and Tobacco (which has a particularly low value of η). All that may safely be concluded is that the income elasticities for these two items will fall rapidly with rising income levels.

The elasticity with respect to family size is determined by two effects: one, a negative "income effect" due to a decrease in per capita household income, and two, a "specific effect" due to increased need. (Houthakker, p. 544). Consequently, a positive value for the family size elasticity will only be encountered when the latter effect is positive and numerically greater than the former. Generally, the same sign holds for all three occupation groups over the eleven categories although there are five exceptions.

Before proceeding with Part IV, one caveat needs to be reiterated. Fifty-seven percent of the value of Agricultural consumption and thirty-five percent of the value of Mixed consumption are not purchased on the market.

This natural consumption component is predominately Food, and therefore the income elasticity for Food may have an upward bias for Rural and Mixed households.[1] One piece of evidence indicating that the bias may not be large is that our elasticity value of .88 for Agricultural households is quite similar to the value of .81 obtained by Leser for U.S. Farmers. His estimates should not be biased since natural consumption would not be important in U.S. Food expenditure.

Part IV: The Causes of Variations in Consumption Patterns

This section explains the differences in expenditure shares, (W), among occupational groups in terms of differences in tastes and differences in the two independent variables, income and family size. Suppose for any consumption category we take as our basis of comparison the predicted expenditure share of Agricultural households, W_a, according to equation (1). Denote the difference between this share and the predicted share of Mixed households by $d^m(W)$, and that of Urban households by $d^n(W)$. Thus, $d^m(W)=W_m - W_a$ and $d^n(W)=W_n-W_a$. Let the operators d^m and d^n denote corresponding differences among occupational groups of the estimated parameters or average values of the independent variables (estimated at the geometric mean). Then by substituting the above definitions into (1), suppressing the m and n superscripts, and performing some factorizations, we obtain:

$$d(W) = A + B + C,$$

where

$$A = d(\alpha) + d(\gamma) \log \bar{M}_a + d(\delta) \frac{1}{\bar{M}_a} + d(\lambda) \log \bar{S}_a,$$

[1] See Part I, page 9.

$$B = d(\log \bar{M})\gamma_a + d(\tfrac{1}{\bar{M}})\ \delta_a + d(\log \bar{S})\lambda_a,$$

$$C = d(\gamma)\ d(\log \bar{M}) + d(\delta)d(\tfrac{1}{\bar{M}}) + d(\lambda)\ d(\log \bar{S}).$$

A separate equation, of course, exists for Mixed and Urban households.

The three terms A, B and C provide measures of the extent to which differences in expenditure shares are due respectively to differences in (i) parameter estimates (tastes) (ii) endowments (income and family size) and (iii) interactions of the preceeding two factors. Empirically, the interaction measure is usually small so that an unambiguous dichotomy is obtained in terms of tastes versus endowments as explanatory factors. In the cases where the interaction effect is large a further appraisal is required in order to judge the determinants of the difference.

To facilitate comparisons across categories, we use the statistic $d(w)/W_a$ rather than $d(W)$. Thus, the total difference and each of the explanatory components is expressed as a percentage of the agricultural expenditure share. That is, we use

$$(2)\quad \frac{d(W)}{W_a} = \frac{A}{W_a} + \frac{B}{W_a} + \frac{C}{W_a}.$$

To satisfactorily interpret the results, the reader needs to know the magnitude of the differences of the mean values of total expenditure, family size, and income per family member. If these differences in endowments are nil, the result must necessarily be that term A, tastes, causes all the observed variation in consumption. In addition to total income and family size, income per family member is given because it is the best single summary measure of differences in endowments.

Geometric Mean Values of Independent Variables

Type of Household

	Agriculture	Mixed	Non-agriculture
Total Expenditure*	334	539	486
Family Size	3.8	4.4	2.9
Expenditure Per Capita*	88	122	167

*Thousands of dinars per year. To convert these figures to dollars, the official exchange rate in 1963 was 750:1. However, due to a system of multiple rates, the effective ratio was near 1000:1. For conversion on the basis of purchasing power parity a rate of 500:1 would seem approximately correct. (On this see Dr. Ivo Vinski, "Ustanovljivanje Realnog Kursa na Bazi Pariteta Domaće Kupovne Snage Nacionalrih Valuta", ("The Construction of Real Purchasing Power Equivalents for National Currencies"), Ekonomskog Pregleda, Broj 6-7, 1963.

With an observed per capita income ratio between Agricultural and Urban households of 88:167, the variation in endowments would certainly appear large enough to be a major potential source of variations in consumption.

The results of the decomposition according to equation (2) are given in Table V. At the bottom of Table V, the sum of the absolute values of $\frac{A}{W_a}$, $\frac{B}{W_a}$, and $\frac{C}{W_a}$ over the first eleven consumption categories are presented. The value of the cumulated percentage differences are:

	Mixed	Urban
$\left\lvert \frac{A}{W_a} \right\rvert$	340	610
$\left\lvert \frac{B}{W_a} \right\rvert$	180	230
$\left\lvert \frac{C}{W_a} \right\rvert$	40	180
TOTAL	560	1020

TABLE V

Decomposition of Percentage Differences in Consumption Patterns

(agriculture is used as the basis)

Category	$\frac{V}{M}$	d(M) (Total)	A (Structure)	B (Variable)	C (Interactions)
1. Dwelling					
a. Agriculture	.013				
b. Mixed	.023	.68	.55	.28	- .14
c. Urban	.049	2.69	2.21	.56	- .077
2. Fuel and Light					
a. Agriculture	.066				
b. Mixed	.050	- .24	- .066	-.20	.028
c. Urban	.050	- .24	- .063	-.16	- .013
3. Household Goods					
a. Agriculture	.026				
b. Mixed	.056	1.13	.73	.36	.047
c. Urban	.099	2.78	2.16	.38	.24
4. Outerwear and Footwear					
a. Agriculture	.073				
b. Mixed	.095	.30	.17	.16	- .039
c. Urban	.12	.62	.47	.074	.078
5. Transportation					
a. Agriculture	.011				
b. Mixed	.023	1.12	.057	.420	.646
c. Urban	.030	1.76	- .000	.461	1.30
6. Hygiene and Health					
a. Agriculture	.043				
b. Mixed	.031	- .28	- .28	.026	- .023
c. Urban	.034	- .21	- .25	.102	- .060
7. Education					
a. Agriculture	.020				
b. Mixed	.038	.89	.55	.28	.066
c. Urban	.071	2.52	1.54	.20	.788
8. Tobacco					
a. Agriculture	.028				
b. Mixed	.031	.076	.215	-.16	.019
c. Urban	.036	.27	.52	-.19	- .058
9. Food					
a. Agriculture	.65				
b. Mixed	.54	- .17	- .11	-.058	- .002
c. Urban	.45	- .31	- .20	-.075	- .033

10.	Drinks					
	a. Agriculture	.052				
	b. Mixed	.051	- .004	- .140	.174	- .037
	c. Urban	.025	- .52	- .59	.34	- .28
11.	Other					
	a. Agriculture	.019				
	b. Mixed	.058	2.13	1.76	.56	- .19
	c. Urban	.036	.94	.373	.634	- .072

From these results and those in Table V, three characteristics are immediately apparent. First, differences in expenditure shares are large. The difference between urban and agricultural consumption shares averages ninety percent over the eleven categories while the difference between mixed and agricultural shares averages fifty percent. Clearly, the joint effect of taste and endowments creates large divergences in consumption patterns.

Second, with but two exceptions, Hygiene and Other, the expenditure share of the mixed category may be treated as a convex combination of the Rural and Urban shares. This is based upon an evaluation of W at the geometric mean. In addition, for individual consumption categories the percentage A, B, and C relative to d(W) is approximately the same for Mixed and Urban families.

Third, it is the "A-Effect", taste differences, that accounts for roughly two-thirds of the observed variation in dW. If we consider tastes as an unexplained residual analogous to disembodied technological progress, then we have a result somewhat similar to that obtained in Cobb-Douglas regressions. By introducing dummy or proxy variables (occupation in the former case and time in the latter), we explain most of the variation in the dependent variable; however, when the dummy is omitted, our coefficient of determination drops sharply. In consumption analysis, what this suggests is that new variables need to be introduced to replace the "catch-all", tastes. Specific items, such as miles to work for Transportation, and number of children in school plus employed household members for Clothing, need to be introduced as explanatory variables. Still more promising would be differences in the prices between urban and rural households. In short, much of the difference between the consumption patterns

of occupational groups which is attributed to tastes has its foundation in quantifiable differences in needs. The explicit introduction of such variables would appear to be a more promising method of obtaining a valid, simple aggregate Engel relationship than would further attempts to modify the functional form of the traditional variables. In the meantime, accurate prediction of consumption patterns for Yugoslavia requires the use of separate relationships for all three occupational groups, together with projections of the rural, mixed and urban populations.

Turning once more to individual categories of consumption, the greatest absolute values[1] of $d(W)/W_a$ are for Dwellings, Household Goods, Clothing, Transportation, Education, Drink and Other. Each of these items is a luxury and, with the exception of Drink, the values are all positive indicating that expenditure shares are greater for the urban and mixed households than for the rural. The comparatively greater size of $d(W)/W_a$ for luxuries than for necessities is a consequence of the disproportionate size of Fodd in agricultural budgets. Thus a relatively small percentage difference between rural and urban consumption of Foods releases funds which result in large percentage increases in expenditure on luxury items.

The positive sign of $d(W)/W_a$ for all of the luxuries except Drink might, at first glance, be explained in terms of the higher income levels of the Mixed and Urban groups. The decomposition according to equation (2), however, shows that higher income levels explain only a minor share of the difference. It is structural differences in tastes, not incomes, that ex-

[1] The criterion chosen is that the absolute value of $d(W)/W_a$ be greater than .5.

plain most of the variation in the share of expenditure on luxuries.[1] Consequently, during the development process, the changes in taste patterns and needs associated with urbanization interact positively with the existing preferences of consumers to raise even higher the demands for luxuries and lower the demand for necessities.

The reasons for this positive interaction appear mixed. To some extent the observed differences are artificial. For example, the low Rural and Mixed expenditure on Dwellings is partially due to the omission of imputed rents. Similarly, the high Mixed and Urban expenditure on Transportation is a result of higher commutation costs and should for our purposes be deducted from income rather than added to expenditure. The phenomenon is too pervasive, however, to be totally explained in this way.

One of the most important causes of differences in tastes (as measured by the regression coefficients) is price variation. From the Slutsky-Schultz relation[2] we have that the own price elasticity equals the sum of all cross price elasticities minus the income elasticity of demand. Therefore, if the cross price elasticities are positive on balance, then the absolute value of the own price elasticity is larger than the income elasticity (which, for luxuries, is already greater than one). Insofar as luxury items are produced and distributed at lower prices in the urban areas, their share in total consumption will be larger. Price differences can therefore be expected to play an important part in explaining occupational differences in consumption. It is interesting that Drink is the one

[1] The large C value and zero A value for Transportation is a consequence of extremely large differences in the intercept and the income parameters nullifying each other (A = 0). Since the differences in the income parameters and the income variables are both positive, the interaction is positive (C > 0). The great size of the income component of A makes it valid to treat the large C value as a structural phenomenon rather than as an income phenomenon.

[2] Herman Wold, in association with Lars Juréen, Demand (cont. on p. 25)

exception to the result that Urban consumers have a larger consumption share for luxuries than Rural consumers. The Drink category is principally composed of wine and brandy which have a higher quality and lower cost on the farm than in the city. Thus this exception reinforces the conjecture tha Urban/Rural price differentials may be an important determinant of variations in consumption patterns.

The conclusion of a positive interaction between urbanization and the demand for luxuries is not surprising. It is only another way of expressing that one of the more favorable circles of development events is the association between those commodities which the individual's preference function gives the highest claim on an incremental dollar of expenditure, and those commodities whose price is most reduced by the new urban-based technologies. Therefore, the expansion of expenditure on luxuries that occurs because of the migration to urban areas where incomes are high is reinforced by the relatively lower prices of luxuries in these areas, and the fact that luxuries are apt to have large own price elasticities.

(continued from p. 24) Analysis - A Study in Econometrics, John Wiley & Sons, New York, 1953.

Appendix: Data Description

A. Description of the Survey[1]

This study is based upon the 1963 "Survey of Personal Consumption of the Population" conducted by the Yugoslav Federal and Republic Statistical Bureaus and published in Statistical Bulletins, Numbers 314, 349, 367, 368 and 399 of the Federal Institute for Statistics. The Survey was carried out between December 10 and 25 of 1963. All income and consumption variables pertain to the entire year.

The Survey is based upon a stratified random sample with the following strata:

(1) Size of households of which there are seven classes containing from one to seven or more members;

(2) Republics of which there are from six to eight depending upon whether Serbia is treated as an aggregate or is partitioned into Serbia Proper, and the autonomous provinces of Voyvodina and Kosmet and Metohia; and

(3) Occupations of which there are three according to source of income: Agricultural, Mixed, and Non-Agricultural.[2]

Since differences among the three occupational strata are our chief concern, a more detailed discussion of this classification is warranted. Of 16,567 households interviewed, 4,352 are classified as Agricultural, 4,531 as Mixed, and 7,684 as Non-Agricultural. The Agricultural households are those in which no member of the household is permanently

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[1] See Statistical Bulletin (S.B.) No. 314, pp. 5-11. An English translation is available.

[2] Throughout the paper, the terms Agricultural and Rural are used as synonyms, as are Non-Agricultural and Urban.

employed outside the agricultural holding. However, one or more members may temporarily work outside the holding to earn supplementary income. The households of landless agriculturalists who work as servants or as day-labourers on agricultural holdings are also classed as Agricultural. Mixed households have a private agricultural holding but also have one or more members in non-agricultural full-time employment. A private agricultural holding is one which either is a holding of ten or more acres or, if it is less than ten acres, sells produce from its plot or maintains a certain prescribed minimal number of livestock. The remaining category, Non-Agriculturists, have no agricultural holding (as defined above) and have at least one member employed outside of agriculture.

All data for the occupation and family size strata are presented in the Statistical Bulletins grouped according to a nine-level income variable. This income classification variable is defined as total money receipts (including the unrepaid part of consumer credit and other borrowings) plus natural consumption evaluated at local retail prices.

B. Description of the Variables[1]

The untransformed independent regression variables used in our study are:

1. average total expenditure of the household,
2. average family size, and
3. the number of households (used as a weight).

Total expenditure includes credit purchases and natural consumption of the items included in the eleven dependent variables listed below.

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[1] Unless otherwise noted, all data is from S.B. 349, Table 1-1.

The untransformed dependent variables used are dinar expenditures on:

1. Dwellings (including rent, house-tax, dwelling repair, water and services);
2. Fuel and Lighting;
3. Household Goods (including furniture, miscellaneous durables, insurance, service costs and related items);
4. Clothing and Footwear;
5. Transportation and Communications;
6. Hygiene and Health;
7. Education (including recreation, rest and membership fees);
8. Tobacco;
9. Food;
10. Drink;
11. Other (including services, the costs of supporting students, overnight lodging, and expenditure on dwellings and holdings not covered under item 1 above).

The dwelling costs included in item 1 differ from those in item 11 in that apparently construction costs for dwellings are included in the latter.[1] The Food, Drink, Fuel, Clothing, Household and Other categories each contain a natural consumption component.

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[1] This is true only for the Non-Agricultural occupation class. For this class, the dwelling component of item 11 is almost as large as item 1, while for the other two classes the dwelling component of item 11 is relatively minor.