Food demand and welfare in Slovenia

Erjavec E., Turk J., Mizzi L., Mergos G., Cunder T.

in

Mergos G. (ed.).
Agricultural price reform under transition in Bulgaria, Romania, and Slovenia

Chania : CIHEAM
Options Méditerranéennes : Série B. Etudes et Recherches; n. 22

1998
pages 80-96

FOOD DEMAND AND WELFARE IN SLOVENIA

Emil Erjavec, Jernej Turk, Leonard Mizzi, George Mergos and Toma Cunder

ABSTRACT

This paper provides an econometric analysis of food demand that contributes to a better understanding of changes taking place in the structure and evolution of food demand in Slovenia. Its objective is to estimate price and income elasticities of food demand in Slovenia and draw inferences about the impact of transition. Since the use of time-series data is inappropriate, Household Budget Survey data for 1988 and 1993 were used to estimate consumption trends and undertake an analysis of food demand for the two years. The paper estimates a LA/AIDS demand system for seven food groups. The estimated price and income elasticities are of magnitudes usually found in demand analysis of developed market economies.

Keywords:

SLOVENIA, FOOD DEMAND ANALYSIS, TRANSITION ECONOMIES

1. Introduction

This study was undertaken in order to analyse the demand for basic food commodities during the first stage of a transformation of the economic system in Slovenia, i.e. at the beginning of the 1990s. The hypothesis is that a process of transition generally enhances sensitivity in consumer behaviour on food markets (higher price elasticities), but this enhancement may not be so vigorous in the case of Slovenia where by comparison with other Central and Eastern European countries (CEECs) no such drastic macroeconomic changes have taken place.

Indeed, Slovenia and Poland are the only two CEECs which retained small and highly fragmented agricultural structures that are characterised by a diffuse system of part-time farms with self-subsistent production. However, these farms constituted an important source of market supply for fruit, vegetables and several types of meat. Hence agricultural households would have quite different consumption habits to those of non-agricultural households. Numerous sources infer that discrepancies in the levels of socio-economic standard emerging across the various strata of Slovene society are increasing steadily. These changes would mainly affect the greater percentages of the population belonging either to lower or higher income groups. A major objective of this empirical study was to capture these transitional effects on the demand for food products in Slovenia.

The sole econometric analysis of food demand in Slovenia was made with the estimation of Engel curves, using the budget survey data from 1983 (Nose). A system demand approach is a common feature of the vast majority of modern empirical demand analyses. A whole body of modern literature on food demand analysis is almost exclusively tied to demand models based on large statistical sets of information which originate from various budget (expenditure) surveys. A problem arises, however, when an attempt is made to identify complex demand systems in transition economies, for which the available data do not always permit the estimation of sophisticated econometric models. The reviewing of, and simultaneous accounting for, possible data discrepancies are therefore two

crucial tasks involved in an evaluation of consumer behaviour within a non-market regulated socio-economic environment. In this study, however, attempts have been made to apply a more sophisticated food demand analysis in order to evaluate the changes in consumption patterns during the transitional period. Undoubtedly, this constitutes a refinement on the approach made by Nose.

A study of the demand for food products in Slovenia is made so that consumption patterns during two different development stages in the Slovene economy (pre-transitional and post-transitional periods) can be compared. The structure of the paper is as follows; firstly, the literature on some recent demand studies is reviewed, and advantages and/or shortcomings of different methodological procedures are discussed accordingly. After an analysis of the relevance of the various approaches which met the objectives, a comparison is undertaken of behavioural patterns exhibited by consumers during two different economic periods. A demand system approach has been chosen to estimate food consumption parameters in Slovenia. In the light of this, special emphasis is placed upon the existing data structure used in the empirical analysis. Finally, empirical results are used to derive policy conclusions.

2. Methods

2.1. Methodology in Demand Analysis - a review of the literature

From the beginning, price liberalisation has been the most difficult and painful element of change in the transition process in the CEECs. As those countries liberalise their economies and move from a planned to a market-orientated environment, the emerging difficulties and uncertainties at macroeconomic level are substantial; however, their impact at the micro-level is even stronger, affecting not only welfare but also people's attitudes towards reform. The realignment of severely distorted prices and changes in real income levels is having considerable impact on the structure of food consumption and nutrition, with significant implications for household welfare. As food still constitutes a large proportion of total consumption expenditure, analysing own-price and cross-price effects at a micro-level becomes fundamental to an assessment of the impact of price policies on welfare.

Different food demand structures evolve from different socio-economic, demographic and institutional factors. These differences within a food distribution network can be detected from several price and expenditure elasticities. Nowadays, two basic approaches are generally used in demand analysis. The first is the traditional one, based on the estimation of Engel curves whence food expenditure and income elasticities are subsequently derived. This approach is frequently applied in cases where the available data do not permit very sophisticated modelling techniques. Another way to arrive at an econometric estimation is to construct a demand system and from it compute compensated (Hicksian) and/or uncompensated (Marshallian) price and expenditure elasticities.

Within the context of setting up empirical demand analysis in the CEECs, one of the most illustrative examples of how to conduct simple demand analysis using the single equation estimation approach is to be found in the work of Shaffer. He uses estimated Engel curves to analyse household expenditure patterns in Lithuania. Semilog and double-log functional specifications were chosen in order to compute the income elasticities for urban and rural households. Engel function modelling presupposes that there is a valid empirical relationship between expenditure on various (food) products and total income. Because of poor price data and alternate curve shapes (i.e. for normal and inferior goods), Shaffer speculates that the use of the Engel function, at least in the Lithuanian case, may have certain advantages over any system demand analysis. A two-fold estimation of Engel curves was made. While in the first budgeting stage it was assumed that each household allocates its total income earned into five commodity groups (food, non-food, housing, services and savings), the second budgeting stage involved the examination of the structure of expenditure on 11

food products. In addition, a dummy variable was introduced to test for different slopes between urban and rural households. Cross-section data for seven urban and seven rural observations in 1989 were estimated using the Ordinary Least Squares (OLS) method. The main shortcoming of this modelling approach is the fact that the observations are means (averages) and do not refer to individual households. In this case, the variance will be smaller than that resulting from the use of data from individual households. Due to the absence of individual observations, the problem of heteroscedasticity, which is a plausible one, is not made apparent. Derived food expenditure elasticities for 11 food groups range between 0.51 (breads) and 1.84 (fats and oils). In both cases (urban and rural households) and for both specifications (semilog and double-log) they are the lowest for breads while at the same time the highest in other foods (non-basic food commodities). Although a simple Engel curve modelling approach was employed, the results obtained show a relatively high degree of consistency and are appropriate for purposes of policy analysis.

A demand system methodology has been widely applied in empirical work through the use of the Almost Ideal Demand System (AIDS) model, which was developed by Deaton and Muellbauer. The model has many advantages. Buse mentions that the model is "grounded in a well-structured analytical framework, accommodates certain types of aggregation, is easy to estimate, and permits testing of the standard restrictions of classical demand theory". The most popular version of the AIDS in applied demand analysis is that of "Linear Approximation" (LA/AIDS). It is based on the share-weighted Stone price index which to a great extent simplifies the estimation process. The application of the Rotterdam model as the second system demand choice was also considered by some authors in the empirical works (Alston and Chalfant). The authors recognise that the choice between the AIDS and Rotterdam models iinvolves merely an arbitrary decision as they are very similar. The only two differences appear in the alternative interpretation of the endogenous variable and in a different specification of the income term.

Halbrendt *et al.* (1994) and Fan *et al.* (1995) applied the LA/AIDS model to analyse the household demand patterns in China. A common feature of both studies is that the lowest expenditure elasticities are found in grain. There are quite a few luxurious food products included in the study by Halbrendt *et al.*, with the highest expenditure elasticities calculated for fruit (1.841). Food commodities are in general price inelastic (the exception being meat), implying that food constitutes an absolute necessity. The values of uncompensated price elasticities derived in the study by Fan *et al.* correspond with the computed price elasticities in the former study. The sole discrepancy in empirical findings between the two studies appears in the values of food expenditure elasticities, since estimates of them suggest that a vast majority of food products are necessary goods. This could be attributed to the fact that various sampling techniques and completely different data sets were employed in these two studies.

Where the more recent literature on food demand is concerned, two studies worthy of mention are those of Tiffin and Aguiar (1995), and Asche (1996). The significance of the first study, which applied to fresh fruit in Portugal in the period between 1976 and 1991, is that both linear and non-linear restrictions are imposed. It is achieved by applying the Bayesian approach for concavity restrictions. This is a special requirement since economic theory also implies that the cost function from which the share equations are derived is concave and increases monotonically in prices. The uncompensated own-price elasticities all have negative signs and indicate that demand for fresh fruit in Portugal is actually "two-sided". While demand for apples, oranges and cherries is price inelastic, demand for pears, plums and peaches, in particular, is price elastic. Likewise, Asche (1996) uses the AIDS model to examine the demand for salmon in the European Union over the period from 1984 to 1992. A methodological framework does not differ from any other form of system demand analysis. In addition to the imposition of all usual restrictions, the co-integration test is also carried out.

2.2. The LA/AIDS model formulation

Due to the relative availability of data and product coverage, the LA/AIDS model approach was chosen in order to to evaluate food demand in Slovenia. The AIDS is one of the most widely used specifications in applied demand analysis. This linear approximation of the AIDS model uses a Stone price index although Moschini argues that because it is subject to changes in units of measurement, it may severely affect the approximation properties of the demand model. LA/AIDS is a complete demand system which in reality represents the indirect cost or expenditure function. Share equations for individual food groups are set thus, with the overall price index:

$$w_i = a_i + \Sigma\, g_{ij} \ln p_j + b_i \ln(E/P) \quad (1)$$

where w_i is the expenditure share of the ith good, p_j is the price of good j, E is expenditure, and P is an overall price index approximated by Stone's geometric price index to maintain the linear specification:

$$\ln P = \Sigma_i\, w_i \ln p_i \quad (2)$$

The linear approximation of the AIDS model was selected to estimate price and expenditure elasticities since budget (expenditure) data are available. Due to the linear approximation of the original AIDS model, empirical applications are not really difficult to carry out and results comprehensible enough to be interpreted with ease. In order to ensure that the AIDS model is compatible with demand theory, the parameters of the demand equations must satisfy the following set of restrictions:

adding up; $\Sigma_i\, a_i = 1, \quad \Sigma_i\, g_{ij} = 0, \quad \Sigma_i\, b_i = 0$ (3)

homogeneity; $\Sigma_j\, g_{ij} = 0$ (4)

symmetry; $g_{ij} = g_{ji}$ for all i, j (4a)

The adding-up condition is met by the construction of the data, while the homogeneity and symmetry restriction must be imposed on the estimated parameters (Asche, 1996). Since expenditure shares clearly amount to unity, the covariance matrix of the demand system becomes singular. Hence, to prevent the variance-covariance matrix of the residual terms from being singular, one share equation must be omitted. The parameters of the equation dropped are retrieved using the adding-up condition.

The Marshallian (uncompensated) price elasticities can be computed from the estimated parameters of the LA/AIDS model as:

$$e_{ij} = d_{ij} + g_{ij}/w_i - b_i w_j / w_i \quad (5)$$

where di j = -1 when i = j, and is otherwise equal to zero.

On the other hand, the expenditure elasticities in the AIDS model are defined as:

$$h_i = 1 + b_i / w. \quad (6)$$

3. Income and Expenditure Profiles

3.1. Economic reforms between 1988 and 1993

As in the case of most Central and Eastern European countries, Slovenia has recently experienced radical socio-political and economic changes: independence from Yugoslavia, a process of transition to a market economy and the establishment of a democratic political system. In the initial stages, although these changes had the magnitude of an economic crisis, no economic shocks were experienced (i.e., a decline in GDP); als, the loss of the Yugoslav market, higher inflation and a

continuous rise in unemployment were all reflected in a lower purchasing power of a significant part of the Slovene population.

Demand for food was primarily affected through the opening of the domestic market to foreign competitors and through the establishment of new market structures. A substantial number of small wholesalers and retailers are now participating in the food supply chain. Market competition has already brought about lower food price levels in the system of agricultural supply and demand. During the period between 1990 and 1995, a newly-designed agricultural policy, though of a protectionist type, did not curtail the trend in food price reductions.

Table 1 - Basic macroeconomic indicators (1990 - 1995)

		1990	1991	1992	1993	1994	1995(e)
Area	(km^2)	20,254	20,254	20,254	20,254	20,254	20,254
Population		1,999,945	1,998,912	1,994,084	1,989,408	1,989,477	1,990,266
Demographic growth	(real %)	1.9	1.1	0.3	-0.1	0.1	0.4
Gross Domestic Product (current prices)	mio US$	17,381	12,673	12,365	12,672	14,184	18,423
GDP per capita	US$	8,823	6,450	6,133	6,368	7,200	9.352
% agric. / GDP	%	5.2	5.4	4.9	4.3	4.4	4.3
% industry / GDP	%	41.8	44.6	40.5	34.7	34.4	33.7
GDP	% change	-4.7	-8.1	-5.4	1.3	4.9	3.5
Agricult. GDP	% change	-1.6	-3.4	-5.9	-3.7	6.4	1.0
Industry GDP	% change	-10.2	-11.3	-11.6	-2.5	6.0	2.0
Service GDP	% change	-0.4	-6.3	-1.2	4.0	3.5	2.9
Inflation Retail prices	% change	549.7	117.7	201.3	22.9	18.3	8,5
Agricult. producer prices	% change	798.6	117.5	213.6	39.9	24.8	13.3
Industr. producer prices	% change	530.1	113.3	210.0	26.9	20.5	9.4
Unemployment[1]	000	44	75	118	130	128	123
	% labour force	4.7	8.2	11.5	14.5	14.5	13.9
Trade balance [2]	mio US$	-609	-262	540	-418	-441	-675
Current account balance[3]	mio US$	530	221	720	-108	170	-75
Foreign debt [4]	mio US$	1,954	1,866	1,741	1,873	2,258	1,700
Budget balance	% GDP		2.6	0.2	0.4	-0.2	-0.2
% of income for food[5]	%	25.0	26.1	26.0	23.0	26.1	23.1

e = estimated
(1) Definition of unemployment as the number of registered unemployed against the total of employees, the self-employed and registered unemployed.
(2) Only goods, excluding transactions with former Yugoslav republics, 1990 & 1991
(3) Goods & non-factor services, excluding transactions with former Yugoslav Republics, 1990 & 1991
(4) Total foreign debt (just allocated debt) without reallocation of the total Yugoslav debt
(5) 24.4% in 1986-1989
Note: Price data and GDP for 1988 and 1989 are incomplete.
Source: Institute for Macroeconomic Analysis and Development, SURS.

3.2. Data sources and explanations

The LA/AIDS model was applied in order to estimate demand for food products in Slovenia, using cross-section data. Data were collected through two annual Budget Surveys conducted in 1988 (SURS, 1989) and 1993 (SURS, 1994). Data on available and allocated income within individual households were given to the interviewers by the household members. While the available income accounts for the total revenue earned (including loans), the allocated assets include all expenditures

incurred by household members during the particular calendar year. The 1988 survey covered 3,027 households and the 1993 survey included 3,112 households, which in both cases corresponds to around 0.5% of the total Slovene population.

Table 2 - Income groups, Slovenia (1988 and 1993)

	Income intervals	
Income groups	1988 (DIN)	1993 (SIT)
I	less than 3,000,000	less than 200,000
II	3,000,001-4,500,000	200,000-300,000
III	4,500,001-6,000,000	300,001-400,000
IV	6,000,001-7,500,000	400,001-500,000
V	7,500,001-9,000,000	500,001-600,000
VI	9,000,001-10,500,000	600,001-700,000
VII	10,500,001-12,000,000	700,001-800,000
VIII	more than 12,000,000	more than 800,000

Conversion rate: 1 SIT = 15 DIN (Source: SURS)

Table 2 defines the income classes within which the individual households were ranked. For obvious reasons, different monetary units (Yugoslav DIN, Slovene SIT) were used in distinguishing the various income classes. In order to obtain comparable "two-year" estimates, monetary values from 1993 are deflated by the average annual retail price index adjusted for the monthly variations in 1988.

The data gathered were also originally classified under individual household categories (i.e., agricultural, mixed and non-agricultural types of household). A mixed type of holding is defined as one in which at least one member is fully employed outside the holding. For the sake of simplicity, we distinguished between only two types of households (agricultural and non-agricultural), since a mixed type of household is normally found in rural areas of Slovenia; therefore the latter was included with agricultural households. Table 3 shows the distribution of households over individual income groups within the two household types. Households are assigned to eight different income groups on the basis of annual per capita income earned.

There are 3,027 households included in the sample for the 1988 survey. Around 41% of all agricultural households belong to the two lowest income groups and around 11% of all agricultural households can be characterised as relatively "rich" economic entities (income groups VI, VII and VIII). The main difference between the two types of households appears in the case of the lowest income group where the corresponding share of non-agricultural households is significantly lower than that of agricultural households. In addition, more than 50% of all non-agricultural households are ranked amongst middle-income class households (III-V), which is proportionally a much higher percentage than that for agricultural households (37.5%).

Table 3 - Distribution of households sampled, Slovenia (1988 and 1993)

	Non-agricultural households				**Agricultural households**				**Total**			
	1988		1993		1998		1993		1998		1993	
Income groups	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
I	220	9.8	141	6.4	212	26.9	205	22.3	432	14.3	346	11.1
II	580	25.9	451	20.6	233	29.6	282	30.6	813	26.9	733	23.6
III	620	27.7	543	24.8	162	20.6	179	19.4	782	25.8	722	23.2
IV	340	15.2	399	18.2	86	10.9	101	11.0	426	14.1	500	16.1
V	195	8.7	209	9.5	47	6.0	63	6.8	242	8.0	272	8.7
VI	107	4.8	152	6.9	14	1.8	32	3.5	121	4.0	184	5.9
VII	67	3.0	84	3.8	13	1.6	22	2.4	80	2.6	106	3.4
VIII	110	4.9	212	9.7	21	2.7	37	4.0	131	4.3	249	8.0
Total	2,239	100	2,191	100	788	100	921	100	3,027	100	3,112	100

Data for 1993 show that 34% of all agricultural households are located in the two lowest income groups. On the basis of this piece of statistical information only, no conclusion may be drawn about the plausiblility of the global social pauperisation of a significant part of the Slovene population. There is an apparent trend where more households than before are ranked in the higher income groups. The income structure between agricultural and non-agricultural households has not altered markedly. In general, agricultural households have remained in the lower income class of households.

3.3. Structure of household expenditure

The total household expenditure has been classified into the categories of food expenditure, beverage expenditure, non-food costs (tobacco, clothes, shoes, furniture and hygiene), housing expenses (annuities, rents, insurance, water, heating and electricity costs), costs for services (education, postal and traffic expenses, costs related to "social events"), and finally other expenditure (various repairs, gifts, fees, etc.). In addition, savings have been separately included in the Slovene demand data set.

Table A1 in the Appendix records the allocation of total expenditure by household income groupings in the two surveys. It must be particularly stressed that at 28% food expenditure as a percentage of total expenditures in Slovenia is the lowest amongst all the CEECs (European Commission - Summary Report, 1995). In comparison, the amount of household income spent on food in the Balkan and Baltic countries ranges between 39% (Estonia) and 60% (Romania). A breakdown of expenditure shows that food expenses represent, on average, one quarter of the total household expenditure; a substantially higher proportion of food expenses is only applicable in the case of agricultural households. In 1988 this category spent 1/3 of its income on food, whereas the corresponding share in 1993 declined to 23.4%. For both types of households these shares, as expected, are substantially higher in the case of the lower income groups. Alongside food expenses, the biggest share of total household expenses is allocated to service costs. The trend in this case is somewhat different, since households that are ranked within higher income classes spend more on service costs than households belonging to lower income groups. There is a clear tendency for households in the lower income group to spend proportionally more on food, beverages and housing than those in the higher income group, regardless of their type. In contrast, richer families in both cases spend a proportionally greater amount of money on non-food items and services than their poorer counterparts.

Table 4 - Total and food expenditure by different household classes, 1993 (1988=100)

	Total Expenditure	Food Expenditure
Household Type	1988=100	1988=100
- all households	95	87
- income groups I, II	91	78
- income groups III, IV,V	97	91
- income groups VI, VII, VIII	100	99
- non-agricultural households	98	97
- agricultural households	86	66

Table 4 records the results for the two years selected, given the data aggregated by the individual types of household for total and food expenditure. In 1993, food expenditure as part of total household expenditure declined by 13% compared to 1988. The major reasons for this are a slight reduction in total expenses (lower food intakes), and lower food price levels. Lower and, to some extent, middle-income class households have reduced their food expenditure, whereas households belonging to higher income groups have not considerably reduced the financial resources spent on

food. It must be pointed out that these changes have taken place primarily in non-agricultural households, which in 1993 spent one third (1/3) less on food than they did 5 years ago! It is likely that this is not only due to lower food prices but also to a general reduction in food consumption.

3.4. Structure of food expenditure

A second distinction in the structure of expenditure data has been made with respect to the groupings of individual food commodities. Quantities and unit prices of seven (7) food products were selected. These were bread and cereals, meat, fruit, vegetables, milk and milk products, oils and fats and other food products. Wherever necessary, the appropriate conversion factors were applied in order to arrive at comparable estimates. Home consumption was evaluated using the existing producer price levels.

Table A2 (Appendix) indicates that there was no significant difference in the shares of food products among agricultural and non-agricultural households. In both cases the meat category represents the largest proportion of food expenditure and accounts for more than one third of total food expenses. It is interesting to observe that there is practically no difference in the consumption pattern of meat in each type of household. Likewise, there is no particular difference where expenditure on fruit, vegetables, milk, oils and fats and other food is concerned. The largest difference within a category is noted in the case of bread (non-agricultural households); in 1993, poorer families spent nearly twice as much on bread and grain as more affluent families.

The least important food items in total food expenditure in both cases tend to be oils and fats (around 3%) and fruit (around 7%). There is a clear decrease in fruit and vegetable expenditure for both types of households in 1993 as compared to that for 1988. During the same period, a relatively high increase in expenditure on meat is also recorded. As may be expected, the lowest variations in the food expenditure pattern for Slovene households are seen in the basic basket of commodities (i.e., breads, milk and oil). This shows that, regardless of the degree of magnitude of economic reform, consumption of the basic food products in the Slovenian diet is not affected to any significant degree. In this respect, Slovene consumers may not differ from consumers in neighbouring, more developed economies (e.g. that of Austria).

3.5. Socio-demographic factors

The inclusion of demographic information has constituted the final stage in the process of data compilation. This data set mainly includes the education levels achieved, sex, and age structures, information about which has been furnished by individual households. Corresponding values are given twice: (i) for a household as an entity , and (ii) per capita (per head of that particular household). No special distinction was made with respect to sex and age structure when adjusting the data for econometric estimation (i.e., no equivalence scales were estimated).

Table A3 (Appendix) demonstrates two basic demographic features. The average size of households and average age structure are sorted by each type of household into eight income classes. It is not surprising to note that in both cases lower income households have more members that their richer counterparts. In 1988, agricultural households were larger by almost one member than non-agricultural households. This size difference between the two household types has only marginally diminished over the period.

There is also a noticeable difference in age structure between the two household types in the sense that members of agricultural households are considerably older than those people living in urban flats. Over the period of two surveys this trend increased, and with more than 15% of the members of agricultural households being over 64 years of age, it may be argued that this particular type of household is already burdened with the problem of ageing. Due to the lack of accurate data, information on the education structure is only available in the case of the heads of households for

1993. The education structure indicates a situation where people "originally" from the rural areas have achieved considerably lower levels of education (i.e. there is a relatively poor social infrastructure in rural areas and a related lack of interest to pursue studies further, towards the attainment of a university degree). The huge discrepancy in education levels attained by the members of agricultural and non-agricultural households is really quite astonishing.

4. Estimation and Calculation of Demand Elasticities

4.1. Model results

Several modelling approaches were used to estimate food demand elasticities. After the different functional specifications of Engel curves had been tested, the AIDS model was applied with the incorporation of various socio-economic and demographic variables (household types, age and level of education of the household head). Due to the lack of information on education in the 1988 survey, the system estimation procedure did not include regression at various education levels.

Table 5 - Test results

No	Mode	Included Demographic Variables	Log of Likelihood Functions	System R^2	Likelihood Ratio Test of Diagonal Covariance Matrix
1	1988 - Total	d	32007.4	0.6722	3772.0
2	1988 - Agric. Households		8395.7	0.7143	1531.9
3	1988 - Non-Agric. Households		23522.4	0.6648	2798.0
4	1988 - I, II Income Groups	d	13098.2	0.6936	1540.5
5	1988 - III, IV,V Income Groups	d	15348.4	0.6874	1784.0
6	1988 - VI, VII, VIII Income Groups	d	3456.2	0.8020	483.3
7	1993 - Total	d, he, ha	34354.6	0.6449	3330.8
8	1993 - Agric. Households	he, ha	10247.0	0.5343	1056.3
9	1993 - Non-Agric. Households	he, ha	23935.5	0.6002	2461.8
10	1993 - I, II Income Groups	d, he, ha	11821.3	0.6701	1249.2
11	1993 - III, IV,V Income Groups	d, he, ha	16404.1	0.6538	1628.1
12	1993 - VI, VII, VIII Income Groups	d, he, ha	5848.6	0.6191	657.5

d = dummy household type, he = education of the head of household, ha = age of the head of household

A food demand system was estimated using standard econometric techniques. Once the model had been established, theoretical restrictions were imposed and tested (homogeneity and symmetry restrictions). Both restrictions have been accepted at 1% level of significance. With regard to the econometric aspect and the relevant empirical estimates obtained, the specification tests for the unrestricted model suggest that the sample has desirable properties. Table 5 shows the test values. These results are similar to those presented in other papers which have modelled food demand on the basis of budget survey data.

Most of the parameter estimates were significant at the 99% confidence level.[22] The log likelihood ratio test and the t-test show that the inclusion of a socio-demographic variable was justified. The implication is that various types of household, the different levels of education attained and a certain age structure have an impact on food demand.

4.2. Expenditure elasticities

Table 6 shows food expenditure elasticities for different household types for the two selected years.

[22] Detailed estimation results are available on request

The expenditure elasticities range between 0.7 and 1.4. Bread and cereals, vegetables, and other food have expenditure elasticities close to one. The most elastic expenditure is that for fruit and milk, and the least elastic that for meat. This discrepancy can be partly explained by the fact that around 85% of all milk is processed and sold through market channels, while the corresponding share for meat does not exceed 70% (e.g., home consumption, direct sales to neighbours, relatives, etc.). It is expected that with continuous economic growth more income, in relative terms, will be allocated to fruit, milk and milk products, vegetables and other food. This finding is important for the designing of a future agricultural policy framework.

Slovenia has certain comparative advantages where fruit production is concerned. Having undergone various socio-political and economic changes, domestic fruit producers have increased production potential so that it now satisfies both export needs and (gradual) increases in domestic fruit demand. The milk industry is currently facing a problem of milk surpluses. The situation is constantly deteriorating in the face of growing competition from neighbouring non-EU and EU countries.

Table 6 - Expenditure elasticities of food commodities (1988 and 1993)

	Total		Agricultural households		Non-agric. households	
	1988	1993	1988	1993	1988	1993
Bread and cereals	0.861	0.949	0.946	1.017	0.951	1.004
Meat	0.892	0.873	0.893	0.877	0.825	0.845
Fruit	1.218	1.252	1.174	1.232	1.204	1.255
Vegetables	0.991	1.053	0.987	1.045	1.022	1.068
Milk	1.163	1.173	1.100	1.170	1.201	1.187
Oils and fats	0.912	0.949	1.000	0.947	0.983	0.973
Other foods	1.083	1.032	1.236	1.051	1.097	1.039
	Income groups I, II		Income groups III,IV,V		Income groups VI,VII,VIII	
Bread and cereals	0.907	1.204	0.878	1.131	0.990	1.213
Meat	0.824	0.668	0.871	0.722	0.712	0.725
Fruit	1.267	1.295	1.228	1.300	1.192	1.242
Vegetables	1.081	1.187	1.015	1.157	1.144	1.151
Milk	1.211	1.404	1.194	1.326	1.311	1.358
Oils and fats	0.941	0.994	0.901	1.000	1.087	0.965
Other foods	1.008	0.971	1.049	0.997	1.100	0.972

There are no substantial differences in the values of expenditure elasticities across the two household types between 1988 and 1993. Differences arise when an analysis is made of consumption patterns according to individual income household groups. There was a decrease in the demand for meat by households ranked into low and middle income groups which was followed by an increase in demand for milk and milk products. The explanation for this can partly be found in the shift of consumption habits exhibited by a significant number of Slovenes who have suddenly become vegetarians, and can also partly be attributed to the lower purchasing power of many domestic consumers who are seeking new "popular" food commodities that can satisfy their needs (i.e. various milk products).

It is interesting to observe that demand for breads and cereals has been expenditure elastic for all income groups. Hypothetically, this may be the result of a large variety among high quality cereal products on the domestic market. Regardless of their income status, consumers of all sorts are now discovering new types of breads and pasta, which are increasingly becoming two very important foodstuffs in the Slovene diet.

4.3. Own-price elasticities

The uncompensated (Marshallian) own-price elasticities for commodities within the food groups are

presented in Table 7. As expected, the own-price elasticities were generally negative and inelastic. The only exception appears in the case of other foodstuffs, where they were negative and elastic; this is quite understandable given the nature of these particular food commodities - sugar, coffee, various pastries, different spices, etc. Price elasticities of demand for bread and oil were found to be the most inelastic. This is again to be expected in view of the weight that bread has in the total Slovene food demand structure. The most price elastic commodities were found to be fruit and meat, followed by milk and vegetables.

Table 7 - Own-price elasticities of food commodities (1988 and 1993)

	Total		Agricultural households		Non-agric. households	
	1988	1993	1988	1993	1988	1993
Bread and cereals	-0.331	-0.409	-0.286	-0.373	-0.310	-0.419
Meat	-0.412	-0.750	-0.360	-0.861	-0.320	-0.850
Fruit	-0.877	-0.708	-1.376	-0.756	-0.898	-0.700
Vegetables	-0.629	-0.461	-0.902	-0.581	-0.704	-0.424
Milk	-0.630	-0.677	-0.681	-0.784	-0.672	-0.700
Oils and fats	0.072	-0.404	0.187	-0.523	0.102	-0.339
Other foods	-1.273	-1.244	-1.362	-1.142	-0.964	-1.088
	Income groups I, II		Income groups III,IV,V		Income groups VI,VII,VIII	
Bread and cereals	-0.310	-0.458	-0.309	-0.459	-0.269	-0.483
Meat	-0.379	-0.813	-0.386	-0.790	-0.343	-0.910
Fruit	-0.867	-0.762	-0.825	-0.749	-1.182	-0.828
Vegetables	-0.640	-0.479	-0.612	-0.489	-0.780	-0.556
Milk	-0.668	-0.735	-0.682	-0.773	-0.584	-0.841
Oils and fats	0.173	-0.237	0.165	-0.385	0.155	-0.296
Other foods	-1.227	-1.020	-1.264	-1.076	-0.836	-1.055

During the period under discussion (1988-1993), some significant changes in the elasticity coefficients for different food products have emerged. An increase in food price elasticities for most commodities is most likely the result of changes in food consumption habits. As in some of the more developed EU countries, the consumption of fruit and vegetables has increased considerably during this period; they have become less "luxury" commodities. At the same time, a different attitude towards meat consumption has been established. Traditionally, meat was the basic commodity in Slovene food demand structure; however, it is gradually losing its position of importance in the diet. The constant increases in the demand for fruit and vegetables, coupled with a growing economic crisis between 1988 and 1993, have resulted in the situation where meat consumers have become more sensitive to changes in prices. It is not surprising, therefore, that the first effects of transition have produced a market situation where meat, meat by-products and most other food products have become more and more price elastic.

Generalisations can be made from all these findings where behavioural patterns exhibited by consumers within the different types of households are concerned. In 1988, fruit was virtually considered a luxury commodity and the demand for bread and cereals was price inelastic for most agricultural households. The discrepancies between agricultural and non-agricultural households practically disappear after five years. A particularly interesting empirical result derives from the reconfirmation of no real difference in the consumption pattern between various household types and income classes, which implies a convergent trend in the structure of food consumption and preferences, tastes and habits of the Slovene population, regardless of their socio-economic status.

4.4. Cross-price elasticities

The non-diagonal elements in Table 8 are the estimated cross-price elasticities for 1988 and 1993, respectively. Most cross-price elasticities are inelastic and close to zero. As expected, somewhat

stronger linkages are established between the demand for oils, breads and meat, and between vegetables and meat (e.g. the great importance of the potato in Slovene food demand structure).

Table 8 - Cross-price elasticities of food commodities (1988 and 1993)

	Bread	Meat	Fruit	Veg.	Milk	Oils	Others
1988							
Bread and cereals	-0.331	-0.221	-0.032	-0.124	-0.136	-0.037	0.019
Meat	-0.090	-0.412	-0.084	-0.144	-0.020	-0.040	-0.10
Fruit	-0.086	-0.385	-0.877	-0.130	-0.036	-0.091	0.315
Veg.	-0.113	-0.324	-0.057	-0.629	-0.081	-0.044	0.257
Milk	-0.151	-0.128	0.028	-0.113	-0.630	-0.66	-0.10
Oils and fats	-0.160	-0.438	-0.262	-0.220	-0.291	0.072	0.386
Other foods	-0.009	-0.304	0.237	0.289	-0.102	0.080	-0.27
1993							
Bread and cereals	-0.409	-0.171	-0.091	-0.130	-0.191	-0.064	0.108
Meat	-0.049	-0.750	-0.007	-0.053	-0.005	-0.032	0.023
Fruit	-0.201	-0.172	-0.708	-0.075	-0.055	-0.068	0.027
Veg.	-0.157	-0.235	-0.033	-0.461	-0.141	-0.051	0.025
Milk	-0.187	-0.119	-0.020	-0.120	-0.677	-0.028	-0.02
Oils and fats	-0.225	-0.355	-0.112	-0.150	-0.083	-0.404	0.380
Other foods	0.079	-0.002	0.028	0.021	-0.001	0.087	-1.24

A comparison of the data for food consumption for the two years chosen indicates that the most apparent changes occur among other foods, fruit and vegetables. Whereas in 1988 other foods were still regarded as a substitute for fruit and vegetables, this trend practically disappeared in 1993. A larger number of food products were complements before the process of economic transition commenced. This situation can mainly be attributed to the fact that the food supply in the 1980s was not very extensive and was more traditionally-orientated than it is at present.

5. Conclusions and Policy Implications

This paper attempts to contribute to a better understanding of the changes taking place in food consumption patterns in the transitional period which the Slovene economy has undergone. The budget survey data for 1988 and 1993 were used in the evaluation process. The "Linear Approximation of Almost Ideal Demand System" (LA/AIDS) model was estimated for seven different food groups. The empirical results obtained are considered reasonable and the changes observed could have important implications for producers, consumers and policy-makers.

Fruit and milk products were found to constitute luxury goods, and with continuous increases in consumer income, both are expected to register increased levels of demand. This is important for fruit, given the comparative advantage it enjoys, and also for milk products in the light of the growing problem of milk surpluses. The latter is currently being tackled by the export of milk to several former Yugoslav republics, but the problem will require further attention, especially when the expected stabilisation of former Yugoslav agricultural markets becomes a fact.

Own-price elasticities of most food categories are generally low, while cross-price elasticities generally infer complements. It seems that different income levels and relative prices are still the key factors which explain changes in food consumption in Slovenia. Similarly, socio-demographic variables (e.g. household types, age, education) exhibit a significant favourable or negative effect on the consumption of certain food products. Notwithstanding, the elasticities computed for different household types and individual income groups do not indicate any great variation in the behaviour of domestic consumers and thus point to a convergence in food consumption patterns in Slovenia.

During the transitional period from 1988-1993, some important changes have been observed in the responsiveness of Slovene consumers to price changes for several food products. Slovene

consumers reacted strongly to changes in the prices of eat and cereal products. Certain changes in the consumers' habits are also noticeable; there is a growing interest in vegetables at the expense of meat and meat products.

As far as the development of future instruments of domestic agricultural policy is concerned, some supply and demand imbalances in meat markets are expected, as is at present already the case with milk markets. This problem can even be stimulated by adopting the existing CAP mechanisms, with producer price levels for various meat which currently exceed the corresponding price levels in Slovenia. Necessary price adjustments would also bring about a negative effect on domestic milk demand.

In order to achieve a better understanding of all the major events that have occurred in Slovene food demand, an additional study, incorporating disaggregated meat, milk and dairy by-products, fruit and vegetables, would clearly be needed. The restoration of food price stability within a market economy is actually one of the prerequisites for the design of more accurate and reliable policy recommendations. The whole impact of the transitional period on food consumption patterns can only be assessed by monitoring food consumption patterns in the post-1993 period, with all possible refinements to the methodology used here.

References

Alston, J.M. and J.A.Chalfant. (1993), The silence of the lambdas: A test of Almost Ideal and Rotterdam Models, *American Journal of Agricultural Economics*, **75**, pp.304-313.

Asche, F. (1996), A system approach to the demand for salmon in the European Union, *Applied Economics*, **28**, pp.97-101.

Atkinson, A. and Micklewright, J. (1992). *Economic transformation in Eastern Europe and the distribution of income*, Cambridge University Press, Cambridge.

Balcombe, K.G. and Davis, J.R. (1994). An application of co-integration theory in the estimation of the Almost Ideal Demand System for food consumption in Bulgaria, Working Paper, Wye College, University of London.

Banse, M. (1993). A demand system with special emphasis on food consumption in Hungary, Working Paper, Institute of Agricultural Economics, Gottingen.

Buckwell, A.E .Davis, J.R., Davidova, S., and Balcombe, K. (1994). Food consumption during economic transformation. In: Schmitz, A., Moulton, K., Buckwell, A. and Davidova, S: *Privatisation of agriculture in new market economies: Lessons from Bulgaria*. Norwell, Massachusetts, pp.149-167.

Buse, A. (1994). Evaluating the linearized Almost Ideal Demand System, *American Journal of Agricultural Economics,* **76**, pp.781-793.

Davis, J. (1994). The estimation of long-run elasticities of demand for food consumption in Bulgaria, *Discussion Paper in Economics*, No. 94/14, Centre for Economic Reform and Transformation, Heriot-Watt University, UK.

Deaton, A. and Muellbauer, J. (1980). An Almost Ideal Demand System, *American Economics Review*, **70**, pp.312-326.

EUROPEAN COMMISSION (1995). Agricultural situation and prospects in the Central and Eastern European countries (Summary Report), Working Document, European Commission - Directorate General for Agriculture (DG VI), Brussels, 35 pp.

Fan, S., Wailes, E.J., and Cramer, G.L. (1995). Household demand in rural China: A Two-Stage LES-AIDS Model, *American Journal of Agricultural Economics*, **77**, pp.54-62.

Halbrendt, C., Tuan, F., Gempesaw, C., and Dolk-Etz, D. (1994). Rural Chinese food consumption: The case of Guangdong, *American Journal of Agricultural Economics*, **76**, pp.794-799.

Houssain, F. and Jensen, H.H. (1994). Food expenditures in Latvia: Analysis from the first year of Reform, Baltic Report 94-19, Centre for Agricultural and Rural Development, Iowa State University.

Institute for Macroeconomic Analysis and development (1996). Slovenian Economic Mirror. Different Sources, Ljubljana

Mergos, G.J. and Donatos, G.S. (1989). Demand for food in Greece: An Almost Ideal Demand System analysis, *Journal of Agricultural Economics*, **40**, pp.178-184

Moschini, G. (1995). Units of measurement and the Stone Index in demand system estimation, *American*

Journal of Agricultural Economics, **76,** pp.63-68.

Nose, M. et al. (1988). Prouèevanje ponudbe in povpraševanje po kmetijskih pridelkih (Supply and Demand Analyses for Agricultural Products.), Working paper. Kmetijski inštitut Slovenije, Ljubljana.

Safin, M. (1993). The own-price elasticities of food demand in Poland 1990-1992. Working Paper, Wye College, University of London.

Shaffer, C.V. (1993). An analysis of consumption and expenditures for Lithuanian households using Budget Survey data, Center for Agricultural and Rural Development, Iowa State University, Report 93-BR 8, Ames, Iowa, 51pp.

SHAZAM (1993). User's Reference Manual -The Econometrics Computer Program. Shazam, (Version 7), Vancouver, Canada.

SURS, Statistical Office of the Republic of Slovenia (1989 and 1994). Budget Survey Data Statistics for 1988 and 1993. Ljubljana.

SURS, Statistical Office of the Republic of Slovenia. (1995). Statistical Yearbook. Ljubljana.

Tiffin, R. and Aguiar, M. (1995). Bayesian estimation of an Almost Ideal Demand System for fresh fruit in Portugal, *European Review of Agricultural Economics*, **22**, pp.469-480.

Appendix

Table A1 - Average annual total per capita expenditure in Slovenia, 1988 and 1993

Expenditure groups																
	Food		Beverages		Non-food		Housing		Services		Others		Savings		Total Expenditure	
Income groups	1988 (%)	1993 (%)	1988 (%)	1993 (%)	1988 (%)	1993 (%)	1988 (%)	1993 (%)	1988 (%)	1993 (%)	1988 (%)	1993 (%)	1988 (%)	1993 (%)	1988 (DIN)	1993 (SIT)
I	40.35	39.09	3.04	4.14	17.08	19.41	17.24	15.95	10.95	13.21	6.65	4.66	4.69	3.54	2,665,816	170,717
II	34.84	33.61	3.39	3.26	19.18	19.30	14.66	15.29	13.36	14.54	8.20	7.36	6.38	6.64	3,961,750	257,355
III	30.13	29.83	3.34	3.09	20.42	19.45	13.01	13.60	15.64	16.34	9.90	8.77	7.56	8.93	5,308,832	349,321
IV	27.39	26.76	3.07	3.07	20.87	20.38	11.08	11.80	19.14	17.75	10.90	10.40	7.55	9.84	6,807,845	450,343
V	23.83	23.03	3.11	2.71	20.82	19.55	10.40	10.75	20.32	19.82	12.33	13.31	9.19	10.84	8,268,555	546,867
VI	21.38	21.07	3.29	2.89	20.59	18.59	9.84	9.86	22.46	23.46	11.88	14.73	10.57	9.22	9,779,240	650,620
VII	19.76	20.26	3.04	2.68	18.92	18.82	7.48	9.11	30.44	24.39	13.70	15.54	6.66	9.19	11,356,827	745,231
VIII	14.96	15.08	2.27	2.29	16.97	17.41	7.10	7.35	27.72	31.87	17.56	18.24	13.42	7.77	17,276,291	1,153,339
Non-agricultural households																
-total	26.83	24.26	3.10	2.85	19.65	19.00	11.48	11.10	19.19	21.57	11.34	12.53	8.42	8.68	6,168,148	470,015
I	50.11	32.52	6.56	8.36	14.03	19.96	6.51	8.96	8.45	14.17	9.25	9.52	5.10	6.52	3,709,851	185,174
II	37.09	29.12	4.80	5.19	17.31	19.84	6.87	8.56	12.06	16.69	12.99	12.94	8.89	7.67	4,970,110	280,808
III	31.87	24.64	4.03	5.07	19.22	19.36	6.22	8.96	13.85	17.00	14.41	14.88	10.40	10.11	6,362,933	372,690
IV	27.58	21.51	3.93	4.34	17.43	20.11	6.62	8.78	17.50	20.50	16.13	14.10	10.81	10.67	7,766,925	474,936
V	24.71	20.84	3.73	5.01	17.50	18.55	6.76	8.46	16.61	20.00	20.70	16.62	10.00	10.52	9,201,308	581,089
VI	21.80	19.45	3.20	3.91	18.20	21,39	9.63	9.54	25.38	20.32	18.08	15.10	3.72	10.29	10, 364,018	671,566
VII	18.57	17.96	3.67	3.00	16.14	15.42	5.03	6.32	23.35	30.57	17.48	14.36	15.77	12.37	12,309,547	771,892
VII	13.61	11.76	2.64	2.84	14.94	13.06	4.03	5.28	24.86	38.37	17.01	18.76	22.92	9.93	16,033,028	1,184,680
Agricultural households																
-total	32.86	23.43	4.46	4.90	17.03	18.70	6.44	8.24	14.74	20.95	14.42	14.41	10.04	9.39	5,986,739	380,827
I	45.94	35.07	5.05	6.72	15.33	19.75	11.09	11.67	9.52	13.80	8.14	7.63	4.92	5.36	3,178,166	179,283
II	35.59	31.79	3.86	4.04	18.55	19.52	12.05	12.56	12.92	15.41	9.80	9.63	7.22	7.06	4,250,739	266,378
III	30.54	28.48	3.51	3.60	20.13	19.43	11.39	12.39	15.21	16.51	10.98	10.36	8.24	9.23	5,527,201	355,115
IV	27.43	25.66	3.27	3.34	20.10	20.32	10.08	11.16	18.77	18.33	12.07	11.18	8.28	10.02	7,001,462	455,311
V	24.02	22.49	3.24	3.27	20.12	19.30	9.63	10.19	19.53	19.86	14.10	14.11	9.36	10.77	8,449,710	554,794
VI	21.43	20.78	3.28	3.08	20.30	19.09	9.81	9.80	22.82	23.05	12.63	14.80	9.73	9.41	9,846,901	654,262
VII	19.55	19.77	3.15	2.75	18.44	18.10	7.06	8.52	29.20	25.71	14.36	15.29	8.24	9.87	11,511,644	750,764
VIII	14.76	14.57	2.33	2.37	16.67	16.75	6.64	7.04	27.29	32.86	17.48	18.32	14.85	8.10	17,076,989	1,157,996
All households																
-total	28.37	24.05	3.44	3.37	18.98	18.92	10.20	10.37	18.06	21.41	12.13	13.01	8.83	8.86	6,120,923	443,620

Table A2 - Average annual per capita food expenditure in Slovenia, 1988 and 1993

Expenditure groups																
	Bread and cereal		Meat		Fruit		Vegetables		Milk		Oils		Other foods		Total food	
Income groups	1988 (%)	1993 (%)	1988 (%)	1993 (%)	1988 (%)	1993 (%)	1988 (%)	1993 (%)	1988 (%)	1993 (%)	1988 (%)	1993 (%)	1988 (%)	1993 (%)	1988 (DIN)	1993 (SIT)
I	12.81	17.21	28.41	32.87	9.40	5.61	17.63	13.18	15.21	13.94	3.55	3.88	12.99	13.31	1,023,903	61,573
II	12.35	13.70	30.18	34.67	9.62	6.42	16.32	12.06	14.62	15.38	3.09	3.47	13.82	14.32	1,254,778	77,258
III	11.00	12.15	31.20	35.54	10.10	6.84	15.52	12.00	14.75	15.08	2.89	3.16	14.54	15.23	1,446,123	90,277
IV	9.98	10.70	31,63	36.86	10.81	7.54	14.65	11.26	15.64	15.20	2.61	3.10	14.68	15.33	1,625,258	101,437
V	9.78	10.30	31.88	36.06	10.90	7.56	14.36	12.01	15.64	15.54	2.69	2.80	14.75	15.73	1,703,281	103,140
VI	9.69	10.32	29.66	36.84	11.18	7.54	14.51	11.71	16.45	15.73	2.28	2.70	16.24	15.17	1,742,384	109,033
VII	8.65	9.48	32.06	34.41	11.24	8.33	13.78	12.85	15.19	15.30	2.43	2.93	16.65	16.70	1,818,409	120,408
VIII	8.69	8.98	31.63	34.68	10.98	8.67	14.44	11.41	14.91	16.76	2.19	2.35	17.17	17.16	2,005,819	126,832
Non-agricultural households																
-total	10.81	11.46	30.89	35.53	10.31	7.29	15.38	11.86	15.12	15.43	2.81	3.04	14.67	15.38	1,457,464	95,002
I	18.91	12.70	36.89	41.92	6.53	5.41	15.36	9.91	12.68	11.69	3.03	5.24	6.59	13.13	1,801,626	56,139
II	16.96	13.32	35.46	39.92	7.07	6.42	15.63	9.70	12.97	12.50	3.09	4.41	8.82	13.73	1,734,213	72,063
III	14.69	12.14	38.17	40.50	7.56	6.71	14.83	9.46	12.35	12.53	2.82	4.09	9.58	14.56	1,879,861	78,690
IV	14.34	12.21	35.69	39.14	8.21	7.07	14.43	9.00	13.25	13.71	2.70	3.97	11.38	14.90	1,922,821	86,998
V	11.71	11.33	39.51	38.68	8.21	7.15	14.19	9.07	11.80	14.49	2.80	3.44	11.78	15.83	2,034,485	99,098
VI	12.83	10.83	34.42	41.68	8.79	6.56	13.44	7.71	15.11	13.98	2.79	3.34	12.62	15.90	2,099,530	102,250
VII	9.44	9.99	41.88	35.22	8.96	8.61	13.50	9.23	11.66	16.30	2.91	3.79	11.64	16.86	1,989,000	113,735
VIII	14.66	10.48	31.82	41.39	6.86	7.00	16.14	9.18	13.80	12.57	2.91	3.12	13.81	16.26	1,860,936	109,505
Agricultural households																
-total	16.07	12.28	36.70	40.16	7.30	6.58	15.09	9.40	12.76	12.91	2.94	4.20	9.14	14.49	1,834,856	76,841
I	16.65	14.64	33.74	38.03	7.59	5.50	16.20	11.32	13.62	12.65	3.22	4.66	8.97	13.21	1,405,561	58,353
II	13.99	13.56	32.06	36.60	8.71	6.42	16.07	11.19	14.03	14.32	3.09	3.81	12.03	14.10	1,392,182	75,259
III	11.93	12.15	32.97	36.65	9.46	6.81	15.34	11.44	14.15	14.51	2.87	3.37	13.28	15.08	1,535,975	87,404
IV	10.98	10.97	32.56	37.26	10.21	7.46	14.60	10.86	15.09	14.94	2.63	3.26	13.92	15.25	1,685,330	98,519
V	10.21	10.53	33.59	36.65	10.30	7.47	14.32	11.35	14.78	15.31	2.71	2.95	14.08	15.75	1,767,605	102,205
VI	10.12	10.40	30.30	37.64	10.86	7.38	14.36	11.05	16.26	15.44	2.35	2.81	15.75	15.29	1,783,707	107,853
VII	8.79	9.58	33.78	34.57	10.84	8.39	13.73	12.13	14.57	15.50	2.51	3.10	15.77	16.73	1,846,128	119,024
VIII	9.59	9.17	31.66	35.56	10.36	8.45	14.69	11.12	14.74	16.21	2.30	2.45	16.66	17.05	1,982,592	124,257
All households																
-total	12.42	11.67	32.68	36.70	9.39	7.11	15.29	11.24	14.40	14.79	2.85	3.33	12.97	15.16	1,555,708	89,629

Table A3 - Demographic characteristics of households in Slovenia, 1988 and 1993

	Total population		Average age structure of population						Average age of		Average size of	
	Living in households		Up to 16 years of age		Between 16 and 64 years of age		Over 64 years of age		Heads of households		Households	
In-come group	1988 (%)	1993 (%)	1988 (%)	1993 (%)	1998 (%)	1993 (%)	1988 (%)	1993 (%)	19883 (%)	1993 (%)	1988 (%)	1993 (DIN)
I	802	478	35.29	26.36	49.50	62.97	15.21	10.67	52	47	3.41	3.62
II	2,016	1,444	32.94	25.14	57.79	63.02	9.28	11.84	49	49	3.31	3.35
III	2,032	1,664	27.12	19.05	66.83	72.24	6.05	8.71	48	48	3.11	3.19
IV	1,080	1,182	27.22	16.92	68.61	72.50	4.17	10.58	46	50	2.96	3.07
V	607	643	23.56	16.02	71.17	78.05	5.27	7.93	47	49	2.92	3.17
VI	329	427	24.32	15.69	67.78	74.24	7.90	10.07	46	50	2.77	2.93
VII	216	239	26.85	16.74	71.30	74.90	1.85	8.37	45	49	2.97	2.89
VIII	286	561	25.52	15.69	69.58	78.61	4.90	5.70	46	46	2.31	2.67
Non-agricultural households												
-total	7,368	6,638	29.13	19.64	63.37	70.74	7.51	9.61	48	46	2.31	2.67
I	960	766	29.90	19.58	56.35	57.18	13.75	23.24	54	55	4.39	4.38
II	1,020	1,066	24.12	16.04	65.98	67.17	9.90	16.79	52	52	4.3	4.3
III	688	631	21.95	13.31	69.33	74.80	8.72	11.89	50	51	4.14	3.76
IV	343	329	22.74	10.33	68.51	78.72	8.75	10.94	51	51	3.87	3.54
V	174	209	19.54	12.44	69.54	75.60	10.92	11.96	48	53	3.62	3.49
VI	43	112	1395	16.96	74.42	78.57	11.63	4.46	53	48	2.86	3.5
VII	52	76	23.08	18.42	69.23	77.63	7.69	3.95	44	48	4	3.5
VII	79	126	26.58	11.11	65.82	84.13	7.59	4.76	47	49	3.57	3.32
Agricultural households												
-total	3,359	3,315	24.86	15.44	64.51	69.26	10.63	15.29	51	52	4.26	3.99
I	1,762	1,244	32.35	22.19	53.23	59.41	14.42	18.41	53	52	3.89	4.07
II	3,036	2,510	29.97	21.27	60.54	64.78	9.49	13.94	50	50	3.59	3.72
III	2,720	2,295	25.81	17.47	67.46	72.94	6.73	9.59	48	48	3.32	3.33
IV	1,423	1,511	26.14	15.49	68.59	73.86	5.27	10.66	47	50	3.14	3.17
V	781	852	22.66	15.14	70.81	75.94	6.53	8.92	47	50	3.06	3.25
VI	372	539	23.12	15.96	68.55	75.14	8.33	8.91	47	50	2.78	3.03
VII	288	315	26.12	17.14	70.90	75.56	2.99	7.30	45	49	3.14	3.02
VIII	365	687	25.75	14.85	68.77	79.62	5.48	5.53	46	47	2.51	2.77
All households												
-total	10,727	9,953	27.79	18.25	63.73	70.25	8.48	11.50	49	49	3.54	3.4