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Mishev P., Tzoneva M., Ivanova N.

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FOOD DEMAND IN BULGARIA OVER THE TRANSITION PERIOD

Plamen Mishev, Maria Tzoneva and Nedka Ivanova

ABSTRACT

The objective of this paper is to explain the changes in the consumption of food products observed during the transition period and to estimate price and income elasticities of food demand. The paper uses cross-section household budget survey data for the 1990-1994 period. Engel curves are estimated, then with the use of the Frisch parameter of the marginal utility of income complete matrix of price elasticities for five broad consumption groups and for ten food products is established. The results show very low price elasticities and quite high income elasticities of food demand. On the basis of this observation it is deduced that the major factor in the decline of food consumption during transition is the decline in real incomes rather than the increase in food prices.

Keywords:

BULGARIA, FOOD DEMAND ANALYSIS, TRANSITION ECONOMIES

1. Introduction

The dynamic changes in the Bulgarian economy over the transition period from a command to a market economy have led to considerable changes in the levels and ratios of food prices. They have also brought about a substantial decline in real incomes, and a significant change in income distribution. All this has affected the purchasing power of consumers and their behaviour in the food markets. Some attempts at an analysis of the consumption of food products in Bulgaria during the transition period have been made by Buckwell et al. (1993) and Davis (1993), using data from a consumer panel that covers the 1989-1992 period.

Due to the fact that prior to 1990 the economy was centrally planned and there was practically no variation in prices, with relative prices remaining unchanged, the data available for previous years are considered largely inappropriate for the purposes of the present analysis. The partial liberalisation of prices from Government controls only began in 1990 and was further carried out on a large scale in 1991. Although structural reforms in Bulgaria have been sluggish over the past few years, they continue to play a decisive role in shaping the welfare of the population. Moreover, given that the adaptability of consumption to changes in prices and incomes takes a certain period of time, further research in this area becomes all the more important.

The present study aims to analyse the consumption of food products in Bulgaria over the 1990-1994 period. It also aims to analyse the changes that have occurred in household incomes, expenditure and consumption, and to reveal the effects of the changes in household incomes and increased retail prices of food products on consumption. For this purpose, income and price elasticities of demand are estimated and used to analyse consumer response to the changes in the economic environment of the country.

The paper comprises the following parts: (i) description of data , (ii) specification of a model and

pattern for the estimation of price elasticities of demand, 8iii) analysis of incomes, expenditure and consumption, (iv) empirical results, and (v) conclusions and policy implications.

2. Description of Data

This research on food consumption behaviour draws upon a cross-sectional analysis using Household Budget Surveys of the period 1990-1994. Each survey covers 2,508 households up to 1st June 1994, and 6,108 after that date. The last sample corresponds to 0.21% of the total population of Bulgaria. Due to the lack of access to the original data on individual household surveys we rely here on the average annual data on household incomes and expenditure by income group, as taken from the NSI official publications "*Household Budget Surveys in the Republic of Bulgaria*" over the 1991-1995 period. The households in the sample fall into ten income groups according to their average annual per capita income in leva. Table 1 classifies the income groups, and hence the income ranges. The annual per capita income and expenditure variables are average values for each of the ten income groups. Over the 5-year research period, the ten income groups had provided 50 observations for each variable. It can clearly be seen from Table 1 that there is a considerable difference among the income groups according to the year, which is intimately related to the high rate of inflation. In order to make them comparable, income and expenditure levels have been deflated by the CPI in the corresponding year (1990 base).

Table 1 - Income groups, Bulgaria, 1990 - 1994

	1990	1991	1992	1993	1994
	Leva per capita per year				
I	less than 1,670	less than 4,520	less than 6,000	less than 8,000	less than 12,000
II	1,671 - 2,150	4,521 - 5,940	6,001 - 9,000	8,000 - 12,000	12,000 - 19,000
III	2 ,151 - 2,630	5,941 - 7,360	9,001 - 12,000	12,000 - 16,000	19,000 - 25,000
IV	2,631 - 3,110	7,361 - 8,780	12,001 - 15,000	16,000 - 20,000	25,000 - 32,000
V	3, 111 - 3,590	8,781 - 10,200	15,001 - 18,000	20,000 - 24,000	32,000 - 38,000
VI	3,591 - 4,070	10,201 - 11,620	18,001 - 21,000	24,000 - 28,000	38,000 - 45,000
VII	4,071 - 4,550	11,621 - 13,040	21,001 - 24,000	28,000 - 32,000	45,000 - 52,000
VIII	4,551 - 5,030	13,041 - 14,460	24,001 - 27,000	32,000 - 36,000	52,000 - 58,000
IX	5,031 - 5,510	13,461 - 15,880	27,001 - 30, 000	36,000 - 40,000	58,000 - 65,000
X	over 5,510	over 15,880	over 30,000	over 40,000	over 65,000

The total household expenditure is divided into five commodity groups: expenditures on food items, on non-food items (alcoholic beverages, tobacco, clothing and footwear, personal belongings), housing (purchase and maintenance, furniture and household appliances, electricity and heating), services (education and leisure, healthcare, transport and communications) and "other" expenditure. The system currently adopted to register household expenditure disregards savings, payments made and loans acquired.

The breakdown of food expenditure into individual food items and commodity groups is as follows: bread and products, potatoes, vegetables, milk and dairy products, eggs, sugar and products, oils and fats, and other food items. Expenditure also includes consumption arising from own production, the latter being estimated at average retail market prices.

3. Specification and Estimation

A double-log specification of the Engel function has been chosen in order to estimate income elasticities of demand on the basis of the e l e e data. A double-log function has

proved the most appropriate way of estimating the income elasticity of demand in developed countries, as it generates more realistic income elasticities. (Salathe 1979; Prais and Houthakker 1955; Mergos 1991). The results of the present study support the above-mentioned practice.

The model specification of a double-log Engel curve is as follows:

$\ln (E_{ij})=\alpha + \beta \ln(Y_j)$,

where $\mathbf{E_{ij}}$ denotes the average annual per capita expenditure on a commodity group (or individual item) **i** of households from income group **j**. **Yj** is the average total per capita income of households from income group **j**, calculated as the average annual total per capita expenditure of households in group **j**.

The income elasticities of demand are estimated for the whole aggregate as well as at different income levels, given a breakdown of the aggregate into three parts: (i) ouseholds with low incomes, encompassing income groups I, II and III, (ii) households with average incomes, encompassing income groups IV, V, VI and VII, and (iii) households with high incomes, encompassing income groups VIII, IX and X.

The econometric analysis was carried out via the TSP (version 4.2 A) programme/software package.

Due to the limited information available, price elasticities of demand cannot be directly estimated. We resort here to the possibilities suggested by theory (Frisch 1959) that has also been applied by Mergos (1991a). The complete matrix of own and cross-price elasticities has been estimated from income elasticities on the basis of Frisch's ω-parameter of the marginal utility of income.

$e_{ii}= -\eta_i [S_i - \varphi(1-S_i\eta_i)]$

$e_{ij}= -\eta_i S_j (1+\varphi\eta_j)$,

where e_{ii} and eij are own and cross-price elasticities,

η_i is an income elasticity,

S_i and S_j are the expenditure shares of commodity items i and j,

φ is the reciprocal value of ω , which is the income elasticity of the marginal utility of income.

In order to estimate Frisch's ω-parameter in the Bulgarian case we rely on its standard estimations of the relationship between ω and per capita GDP, designated in the formula by **X**:

$\omega \sim -36\ X^{--0,36}$

Per capital GDP has been estimated as an average over the 1991-1994 period. It has been deflated per year by the CPI (1991 base).

The period 1992-1994 is characterised by the powerful intervention of the Central Bank on the currency market in Bulgaria. The result was successive periods of overvaluation and then undervaluation of the national currency. To avoid the influence of these interventions the dollar value of per capita GDP over the years surveyed is obtained using the official foreign exchange rate for 1991. The Frisch parameter has been estimated in the Bulgarian case on the basis of the data given in Table 2.

Table 2 - Data for calculating the Frisch Parameter

	1991	1992	1993	1994
GDP (mill lv)	135,711	200,832	298,934	548,015
CPI	538.5	179.5	164	221.09
Exchange rate	16.678	23.339	27.648	54.247
GDP deflated by CPI	135,711	111,884	101,547	83,893
GDP (mill US$)	8,137	4,794	3,673	1,546
GDP per capita (139 US$)	947	565	434	183

4. Analysis of Household Incomes and Expenditure

The data in Table 3 reveal that at the end of the period surveyed 34% of all households and 37% of the population fall into the first three groups of the cohort with the lowest incomes, 44% of the population and households have average incomes (groups IV, V, VI and VII), while 21% of households and 19% of the population fall into the groups with the highest incomes. Changes have occurred in the low-income group as well as in the high-income groups. The share of the former began to decrease while that of the latter rose by 7-8 percentage points, notwithstanding the general decrease in real income in the country.

Table 3 - Distribution of households and household members by income classes in 1994, in %

Groups	Share of households				
Total	100.00	100.0	100.0	100.0	100.0
I	8.7	8.5	6.8	5.5	5.3
II	14.4	16.4	18.2	12.1	11.6
III	17.6	20.3	18.9	16.1	17.4
IV	16.1	16.6	15.3	16.3	16.2
V	12.7	12.2	11.1	12.3	12.8
VI	8.3	7.4	8.0	9.2	8.8
VII	6.9	5.8	5.7	6.7	6.5
VIII	4.2	3.5	4.1	4.7	4.6
IX	3.4	2.3	2.8	3.7	3.3
X	7.7	7.0	9.1	13.4	13.5
Share of household members					
Total	100.0	100.0	100.0	100.0	100.0
I	8.8	10.0	7.6	7.1	7.1
II	15.2	16.8	17.1	12.7	12.5
III	19.4	20.9	18.9	16.1	17.3
IV	16.8	17.7	16.4	16.2	16.1
V	13.7	12.5	11.8	12.5	13.0
VI	8.0	7.3	8.2	9.3	8.8
VII	6.1	5.1	5.6	6.8	6.3
VIII	3.5	3.0	4.0	4.4	4.4
IX	2.8	1.9	2.6	3.5	3.1
X	5.7	4.8	7.8	11.4	11.4

Over the 1990-1994 period, the average annual per capita income of households increased from 3,102 leva to 39,560 leva, or by 1,275%, while the average annual CPI went up by 2,842%. Therefore, there was a 2.2-fold reduction in real incomes. Incomes from salaries constituted the largest share of household incomes. Their relative share, however, fell from 57% in 1990 to 38% in 1994 due to rising unemployment during the same period and the imposition of certain Government restrictions on salary growth. Household plots have proved a viable alternative for the raising of incomes by households in the transition period. Their relative share within overall incomes rose from 14% in 1990 to 26% in 1994. Pensions, grants and welfare allowances, whose relative share amounted to 19% in the end-period, ranked third as a complex income-source for households. The period examined shows a growing differentiation among social strata according to the level of income. Whereas in 1990 the average per capita income of households in the highest income group (X) had been five times greater than that in group I, it had already become 14 times greater in 1994.

On the basis of the structure of total and food expenditure ais given in Tables 4 and 5 (see Appendix), we can arrive at the following conclusions:

i) The structure of household expenditure changed substantially in the period under survey. On average, the share of food expenditure of all households increased from 36% in 1990 to 45% in 1994. Food expenditure in the groups with the lowest income amounted to 55% of all expenditure. It increased at the cost of a decrease in the remaining groups of expenditure.

ii) On average for all households, meat and its products occupied the largest share (24%) within the

structure of food expenditure. In the second place was expenditure on bread and bakery products and milk and dairy products, each group amounting to 13%, with vegetables ranked third at 10%.

However, there was no notable difference in the relative share of expenditure on meat and meat products among the groups. It was only in the group with the highest income that up to 31% of all food expenditure was spent on meat and meat products in the end-period. As far as expenditure on bread and bakery products is concerned, there was notable distinction among groups. The low-income groups spent twice as much on bread and bakery products, as compared to the high-income groups. All income groups tended to cut down their expenditure on fruit and vegetables while increasing expenditure on oil and fats. This tendency was most clearly pronounced in the groups with lower incomes.

5. Empirical Results

Table 6 (see Appendix) presents the estimates of the income elasticities of demand in the five aggregate expenditure groups as well as individual estimates for the low-, average- and high-income groups of households. In most cases, expenditure on food is, as expected, income inelastic. Expenditure on housing is more elastic, with elasticities, as expected, close to 1. The demand for non-food goods, services and other goods has a higher income elasticity. Due to the higher degree of expenditure aggregation, there are no obvious differences in income elasticities between the various income groups (i.e. low, average and high).

Table 7 (see Appendix) presents income elasticities of demand according to individual food commodities and food commodity groups. They vary from 0.365 to 1.395 for the whole aggregate. All food commodities have positive income elasticities of demand, i.e. they are normal commodities. The only exception is in the case of high-income households for milk and dairy products. The income elasticity of demand for them is negative but the relationship is not statistically significant. Goods such as oils and fats, bread and bakery products as well as milk and dairy products (from 0.365 to 0.396) have the lowest income elasticity of demand. Contrary to expectations, the income elasticity of the demand for meat and its products, though perceived as being largely influenced by changes in income, is less than 1. This fact, however, is mainly associated with peculiarities in the eating habits and diet in Bulgaria. The same peculiarities explain why the income elasticities of demand for potatoes, vegetables and fruit exhibit some of the characteristics of those for luxury goods. Their income elasticities vary between 1.116 to 1.395. The data included in Table 7 confirm a well-known relationship, namely that the demand of consumers with low and average incomes demonstrates higher income elasticities for certain food items when compared to that of more affluent consumers.

Table 8 (see Appendix) shows the estimated own- and cross-price elasticities according to individual food items and food commodities' groups, using the procedure proposed by Frisch (1959). All own price elasticities are negative, with values well below 1. The demand for any of the food items over the transition period proved rather inelastic when set against price changes. The demand for potatoes, vegetables and fruit, and meat, as well as for the group of other food commodities, was more sensitive to changes in their prices. The estimated cross-price elasticities (given in a non-diagonal order) are only negative, implying that all food goods can be considered as complementary goods. The exerted effect is, however, is very weak. The coefficients of the cross-price elasticity converge at 0.

The results of the study can be summarised into the following conclusion: under transition, due to the high relative share of food expenditure and high inflation in Bulgaria, changes in income have a greater impact on demand for food when compared to the effect of relative price changes. This is the main reason for the presence of a strong complementary effect and the absence of the substitution effect.

6. Conclusions and Policy Implications

The present paper attempts to clarify the reasons for the changes in the consumption of food products in the transition period. Cross-sectional household budget survey data over the 1990-1994 period have been used for the purpose of the analysis. A set of models designed to facilitate the estimation of income elasticities of demand has been conceived by means of a double-log specification of the Engel curve. Altogether, five larger expenditure groups and ten individual food items and commodity groups have been used for the estimation. We have established the complete matrix of own- and cross-price elasticities of demand, with reliance on the method proposed by Frisch and an estimate of the parameter of the marginal utility of income. The results obtained are only relevant to the present situation. Due to the uncertainty of the transition period they cannot serve as a point of departure in the provision of long-term forecasts of consumption. However, they highlight certain economic effects that may prove central to the decision-making process in the short-term. Such effects are as follows:

i) Changes in consumer income have proved to be the key factor in changes in consumption over the transition period. Their impact is stronger than the effect exerted by relative price changes.

ii) Low and average-income households, which account for the greater part of consumption, demonstrate a higher degree of responsiveness to income level changes. Therefore, in order to promote the expansion of food demand, Government policies should be targeted at increasing real incomes and decreasing income differentiation.

iii) The higher price elasticity of the demand for potatoes, vegetables and fruit proves that they are not staple foods in the Bulgarian diet. Important policy implications can be drawn from a comparison of the changes in production, consumption and the relative share of expenses on potatoes and vegetables in the total food expenditure. Potatoes and vegetables are among the few commodities of which the production and consumption either do not decrease or decrease only insignificantly in the transition period. Conversely, their share in relative expenses decreases where total food expenditure is concerned. One of the main factors for these tendencies is the total liberalisation, not only of their producer prices but also their prices at all stages of the chain.

iv) Swift and severe structural reforms, as well as radical privatisation, are expected to bring about further changes in income levels and distribution, food price levels and ratios. Therefore research covering longer periods of time and aimed at a clear and comprehensive assessment of the changes in food demand should be continued.

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Appendix

Table 4 - Average annual household per capita expenditure in Bulgaria, 1990-1994

Expenditure groups (percentage)						
Income Groups	**Total Expenditure leva**	**Food**	**Non-food**	**Housing**	**Services**	**Others**
I						
1990	1,499	48.77	17.01	11.27	11.07	11.87
1991	4,015	54.57	16.51	8.52	10.06	10.34
1992	6,191	54.30	12.15	14.36	10.74	8.45
1993	8,798	52.41	11.95	13.15	13.61	8.89
1994	13,381	52.50	12.81	14.81	12.38	7.50
II						
1990	1,922	43.60	18.26	10.25	13.32	14.57
1991	5,629	53.31	14.96	9.43	11.81	10.48
1992	8,138	50.41	11.00	13.44	12.69	12.46
1993	11,040	50.59	11.64	13.49	12.82	11.47
1994	16,872	50.85	11.34	13.73	13.51	10.57
III						
1990	2,324	40.02	18.59	11.49	13.90	16.01
1991	6,849	49.50	14.83	11.49	12.31	11.87
1992	10,123	47.72	12.21	12.91	11.98	15.17
1993	13,839	48.80	12.28	12.89	13.54	12.49
1994	22,067	48.86	11.01	13.70	13.91	12.51
IV						
1990	2,740	37.15	19.09	11.28	14.53	17.96
1991	7,943	46.22	15.64	10.66	12.85	14.63
1992	12,171	44.45	13.14	12.26	12.74	17.41
1993	16,818	46.28	12.37	13.33	13.44	14.57
1994	27,008	47.26	11.79	12.77	14.58	13.60
V						
1990	3,110	34.82	18.75	11.96	15.14	19.32
1991	8,913	44.36	15.27	10.21	12.97	17.19
1992	14,099	43.54	13.21	11.45	13.16	18.63
1993	19,328	44.60	12.97	13.39	12.92	16.12
1994	32,090	44.96	12.02	12.86	15.05	15.11
VI						
1990	3,680	34.05	15.82	14.67	15.11	20.35
1991	9,773	44.34	14.99	11.34	11.93	17.41
1992	16,314	41.12	13.20	12.60	13.44	19.64
1993	23,147	41.03	12.95	14.70	14.30	17.02
1994	36,288	44.95	12.73	11.88	13.80	16.64
VII						
1990	3,952	33.20	17.18	11.49	15.31	22.82
1991	10,621	44.15	14.11	11.25	10.24	20.24
1992	17,855	40.32	13.73	12.97	12.67	20.31
1993	25,430	40.20	13.41	12.74	14.66	19.00
1994	40,909	43.26	12.77	12.69	14.30	16.99
VIII						
1990	4,306	33.77	17.44	13.14	14.49	21.16
1991	11,091	45.34	13.98	9.21	12.33	19.13
1992	20,074	39.15	13.29	12.53	14.71	20.32
1993	27,863	40.93	13.00	13.30	13.08	19.69
1994	45,002	43.30	12.81	11.24	14.76	17.89

Table 4 - Continued

Expenditure groups (percentage)						
Income Groups	**Total Expenditure leva**	**Food**	**Non-food**	**Housing**	**Services**	**Others**
IX						
1990	4,729	29.73	15.12	10.87	16.62	27.66
1991	11,650	45.07	12.38	11.16	9.56	21.83
1992	21,030	39.52	13.40	12.43	13.17	21.47
1993	31,253	38.35	12.36	12.35	15.73	21.20
1994	48,897	42.79	12.41	11.61	14.54	18.64
X						
1990	5,975	28.02	14.14	10.01	16.10	31.73
1991	13,938	45.16	11.81	8.04	8.53	26.46
1992	27,047	37.24	11.03	12.21	14.92	24.61
1993	39,578	36.92	11.53	14.05	14.89	22.61
1994	61,949	40.56	10.96	13.70	13.93	20.85
All groups						
1990	2,920	36.30	17.40	11.60	14.60	20.10
1991	7,772	47.40	14.70	10.30	11.80	15.80
1992	13,234	43.40	12.50	11.20	13.50	19.40
1993	20,089	42.90	12.40	12.00	14.10	18.60
1994	31,743	45.00	11.80	11.20	14.10	17.90
Average	15,152	43.00	13.80	11.30	13.60	18.30

Table 5 - Average annual per capita food expenditure in Bulgaria, 1990-1994

Expenditure groups (percentage)											
Income Groups	Bread products	Pot-atoes	Vege-tables	Fruit	Meat and its products	Milk and dairy products	Eggs	Sugar	Oil and other fats	Other	Total food (leva)
I											
1990	13.13	3.01	12.18	8.21	22.85	12.72	2.19	5.06	4.24	16.42	731
1991	15.52	3.88	11.36	7.62	20.45	15.75	2.74	5.29	5.11	12.28	2,191
1992	18.44	1.67	6.40	4.34	22.69	16.39	3.90	7.85	6.72	11.60	3,362
1993	19.93	1.73	6.40	5.31	21.86	16.68	2.91	6.66	6.01	12.49	4,611
1994	20.58	2.06	8.26	4.71	20.87	14.35	2.88	6.98	6.19	13.14	7,025
II											
1990	12.03	2.89	12.15	8.54	23.95	11.67	2.29	5.42	3.97	18.17	831
1991	15.53	3.10	10.83	6.36	19.96	15.43	2.80	6.53	5.76	13.73	3,001
1992	16.55	1.54	7.17	4.46	22.23	16.65	4.12	8.51	6.46	12.38	4,102
1993	17.94	1.47	6.32	5.53	22.31	18.14	3.10	7.07	5.85	12.23	5,585
1994	18.11	1.89	8.23	5.02	21.27	16.25	2.93	7.20	6.10	13.00	8,579
III											
1990	11.51	2.80	12.37	8.60	23.33	10.22	2.15	5.38	3.66	20.00	930
1991	14.90	2.92	10.59	6.58	20.74	14.93	2.86	6.61	5.52	14.37	3,390
1992	14.99	1.39	8.40	5.57	23.04	14.78	4.14	8.09	5.86	13.81	4,831
1993	16.24	1.61	8.01	6.19	22.62	17.49	2.93	6.88	5.48	12.56	6,754
1994	15.60	1.82	9.30	5.41	22.24	16.13	3.15	7.22	5.85	13.30	10,782
IV											
1990	11.10	2.75	12.57	9.04	23.67	9.63	2.16	5.30	3.63	20.14	1,018
1991	14.63	2.72	10.71	6.97	21.22	13.10	2.83	7.22	5.09	15.53	3,671
1992	13.60	1.35	8.63	6.14	24.51	13.55	3.83	8.11	5.29	15.05	5,410
1993	14.79	1.70	8.66	6.68	23.36	16.33	2.94	6.99	5.15	13.44	7,784
1994	14.12	1.68	10.04	5.84	22.97	15.68	3.08	7.32	5.45	13.85	12,765
V											
1990	10.62	2.68	12.10	8.68	24.65	8.96	2.12	5.45	3.42	21.33	1,083
1991	14.21	2.81	11.03	6.98	21.62	12.87	3.14	6.83	5.11	15.38	3,954
1992	12.46	1.38	9.20	6.86	25.00	12.87	3.50	7.93	5.02	15.85	6,139
1993	13.99	1.65	9.11	7.23	24.27	15.38	2.93	6.81	4.81	13.86	8,621
1994	13.08	1.64	10.17	6.18	23.82	15.17	3.16	7.19	4.99	14.62	14,429
VI											
1990	9.98	2.63	12.69	9.42	24.74	8.62	2.39	5.19	3.27	21.15	1,253
1991	14.42	2.84	11.03	6.69	22.48	12.85	3.46	7.13	4.85	14.19	4,333
1992	12.07	1.43	9.64	7.05	26.26	12.51	3.49	7.80	4.71	15.17	6,709
1993	13.08	1.63	9.39	7.17	25.74	14.48	2.73	6.88	4.48	14.50	9,497
1994	12.21	1.56	10.12	6.71	24.93	14.66	3.13	7.15	4.84	14.75	16,311
VII											
1990	10.82	2.82	12.35	9.15	24.39	8.61	2.36	5.34	3.28	20.73	1,312
1991	13.50	2.92	11.39	7.06	21.99	12.63	3.52	6.82	4.76	15.42	4,689
1992	11.75	1.44	9.76	7.61	26.54	12.21	3.33	7.46	4.61	15.46	7200
1993	12.70	1.54	9.13	7.10	26.61	14.51	2.79	6.87	4.28	14.56	10,222
1994	11.77	1.54	10.66	7.06	25.73	14.38	3.07	6.96	4.45	14.40	17,696
VIII											
1990	9.63	2.96	13.20	10.04	25.45	8.32	2.34	4.40	2.96	20.77	1,454
1991	12.83	2.88	10.56	6.66	23.46	12.89	3.40	7.74	4.63	14.91	5,029
1992	11.20	1.30	9.91	7.86	27.12	11.64	3.21	7.55	4.36	15.97	7,858
1993	11.96	1.70	9.82	7.34	27.16	13.70	2.79	0.65	4.25	14.62	11,404
1994	11.02	1.57	10.58	7.25	26.51	13.96	3.01	6.98	4.32	14.87	19,487
IX											
1990	9.89	2.35	13.09	9.03	25.89	7.97	2.70	4.98	3.20	21.05	1,406
1991	13.69	2.70	11.85	7.10	24.09	11.86	4.46	6.78	4.91	12.53	5,251
1992	11.36	1.36	10.22	7.40	27.58	11.83	3.14	7.95	4.14	15.18	8,311
1993	11.75	1.78	9.62	7.63	27.47	13.86	2.76	6.67	4.15	14.39	11,986
1994	10.60	1.65	10.95	7.52	26.90	13.88	2.90	6.78	4.20	14.70	20,923

Table 5 - Continued

Expenditure groups (percentage)											
Income Groups	Bread products	Pot-atoes	Vege-tables	Fruit	Meat and its products	Milk and dairy products	Eggs	Sugar	Oil and other fats	Other	Total food (leva)
X											
1990	9.14	2.81	13.32	10.10	25.09	8.18	2.87	4.84	3.17	20.37	1,674
1991	11.79	3.00	12.50	7.48	26.07	10.74	4.42	8.31	4.32	11.36	6,294
1992	10.61	1.57	10.75	8.78	29.44	10.90	3.03	6.71	3.97	14.46	10,073
1993	10.74	1.71	9.98	7.88	30.92	13.07	2.72	6.13	3.83	13.14	14,612
1994	10.12	1.64	10.79	7.56	30.54	13.19	3.10	6.40	3.90	12.86	25,125
All groups											
1990	10.90	2.80	12.50	9.00	24.20	9.60	2.30	5.20	3.50	20.00	1,057
1991	14.40	2.90	11.00	6.90	21.70	13.60	3.20	6.90	5.10	14.30	3,681
1992	13.40	1.40	9.00	6.50	25.20	13.40	3.60	7.80	5.20	14.50	5,758
1993	13.90	1.60	8.80	6.90	25.60	15.30	2.90	6.70	4.70	13.50	8,625
1994	13.20	1.70	10.00	6.40	25.10	14.80	3.10	7.00	4.90	13.80	14,300
Average	13.20	2.10	10.20	7.20	24.40	13.30	3.00	6.70	4.70	15.20	6,684

Table 6 - Income elasticities by various expenditure groups in Bulgaria

Expend-iture group	All income groups		Low income groups (I,II,III)		Middle income groups (IV, V, Vi, VII)		High income groups (VIII,IX,X)	
	elasticities	R^2	elasticities	R^2	elastic-ities	R^2	elastic-ities	R^2
Food	0.957	0.999	0.972	0.999	0.955	0.999	0.942	0.999
Non-food	1.056	0.998	1.068	0.998	1.055	0.999	1.043	0.999
Housing	0.989	0.996	0.972	0.995	0.999	0.998	0.992	0.995
Services	1.019	0.997	1.003	0.999	1.022	0.998	1.033	0.994
Others	1.041	0.998	1.050	0.999	1.032	0.999	1.044	0.999

Table 7 - Income elasticities of food commodities

Food commodity	All income groups		Low income groups		Middle income groups		High income groups	
	elasticities	R^2	elasticities	R^2	elastic-ities	R^2	elastic-ities	R^2
Bread and products	0.396	0.766	0.411	0.806	0.437	0.596	0.369	0.397
Potatoes	1.395	0.698	1.517	0.785	1.447	0.744	1.116	0.548
Vegetables	1.116	0.836	1.400	0.880	0.996	0.911	0.872	0.818
Fruits	1.176	0.921	1.437	0.934	1.098	0.978	0.935	0.953
Meat and products	0.862	0.959	0.911	0.983	0.665	0.973	0.447	0.870
Milk and products	0.389	0.652	0.518	0.658	0.125	0.145	-0.114	0.171
Eggs	0.62	0.653	0.542	0.523	0.400	0.376	0.406	0.223
Sugar	0.569	0.388	0.561	0.693	0.379	0.538	0.516	0.055
Oil and fats	0.365	0.584	0.432	0.583	0.263	0.354	0.213	0.177
Others	1.183	0.982	1.236	0.985	1.177	0.986	1.118	0.979

Table 8 - Estimated price elasticities of various food commodity groups in Bulgaria

	Bread and products	Potatoes	Vege-tables	Fruits	Meat and products	Milk and products	Eggs	Sugar	Oils and fats	Others
Bread and products	**-0.13**	0.00	-0.01	-0.01	-0.03	-0.02	0.00	-0.01	-0.01	-0.02
Potatoes	-0.07	**-0.38**	-0.04	-0.03	-0.11	-0.07	-0.02	-0.03	-0.03	-0.06
Vegetables	-0.06	-0.01	**-0.33**	-0.02	-0.09	-0.06	-0.01	-0.03	-0.02	-0.05
Fruits	-0.06	-0.01	-0.04	**-0.34**	-0.09	-0.06	-0.01	-0.03	-0.02	-0.05
Meat and products	-0.04	0.00	-0.03	-0.02	**-0.30**	-0.04	-0.01	-0.02	-0.02	-0.04
Milk and products	-0.02	0.00	-0.01	-0.01	-0.03	**-0.12**	0.00	-0.01	-0.01	-0.02
Eggs	-0.03	0.00	-0.02	-0.01	-0.05	-0.03	**-0.17**	-0.02	-0.01	-0.03
Sugar	-0.03	0.00	-0.02	-0.01	-0.05	-0.03	-0.01	**-0.17**	-0.01	-0.03
Oils and fats	-0.02	0.00	-0.01	-0.01	-0.03	-0.02	0.00	-0.01	**-0.10**	-0.02
Others	-0.06	-0.01	-0.04	-0.02	-0.10	-0.06	-0.01	-0.03	-0.02	**-0.37**