SOCIO-ECONOMIC STATUS AND THE STRUCTURAL CHANGE OF DIETARY INTAKE IN HUNGARY: A PANNEL STUDY

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Abstract
Typically, big changes in the economic system lead to alterations on the disposable income of families and thus on their spending for different type of products, including food. These may imply, in the long run, a structural modification of the quality of diet of the population. After the fall of the socialist system, in the past two decades Central and Eastern European countries, including Hungary, went through a profound, and sometimes difficult transition of their political and economic systems, shifting from a centralized planned economy to an open market economy, and more importantly, the European Union integration. Economic change in lower-income and transitional economies of the world appears to coincide with increasing rapid social change. With respect to nutrition there is evidence that those countries are changing their diets and that these changes seem to be happening at a faster pace than ever before. In this paper we analyze the evolution of Hungarian dietary patterns based on socio-economic status (SES) data between 1993 and 2007. Data allows to define and profile several clusters based on aggregated consumption data, than to inspect the influence of SES variables using OLS and multinominal logit estimations.

Keywords: Transition economy, food consumption patterns, cluster analysis, logit analysis

1. Introduction, background and relevance of the research

In Hungary, food expenditures constitute the second largest expenditure position for private households (overshadowed only by expenditures for housing). Nevertheless, food expenditure shares as well as absolute expenses per household are declining (from 23.3% in 1995 to 17.5.0% in 2008, versus 14.5% and 12.7% for EU-27 respectively). A comparison of consumption behavior between East and West Germany reveals a clear tendency of convergence for most products (Grings, 2001).In 1998, nearly the same expenditure shares can be observed for fish, vegetables, sugar, sweets and non-alcoholics, some differences can still be found for bread, cereals, and meat.

Moreover, in a study of food expenditures across 47 countries (Regmi et al, 2008) found significant convergence in consumption patterns for total food, cereals, meats, seafood, dairy, sugar and confectionery, caffeinated beverages, and soft drinks. According to the authors that convergence reflects consumption growth in middle-income countries, in

which Hungary was included, due to rapid modernization of their food delivery systems, as well as to global income growth. Quoting Regmi and Gehlhar (2005) this study concludes that consumers in developing countries have used their growing incomes to upgrade diets, increasing their demand for meats, dairy products, and other higher value food products.

However, several studies (e.g., Irala-Estévez, et al, 2000; James et al, 1997; Arija et al, 1996; Ross et al 1996) show that there are large variations between individuals in the quantity and quality of food consumed. In spite of the fact that lower income consumers make bigger changes in food expenditures as income levels change (Seale et al, 2003), investigation (e.g., Hulshof et al, 2003; Cavelaars et al, 1997; Adler et al, 1994; Hoeymans et al, 1996) also shows that, in most European countries, there still are great disparities in nutrition and health with respect to socio-economic status (SES).

In general, less educated and lower income groups appear to consume a less healthy diet (Hulshof et al, 2003). According to the studies of Dowler et al, 1997 and James et al, 1997 poverty and low income may restrict the ability to buy food on the basis of health and limit access to healthy food. According to Hulshof et al (2003), particularly in the North and West of Europe, a higher SES is associated with a greater consumption of low-fat milk, fruit and vegetables (e.g, Irala-Estevez et al, 2000). Additionally, those with higher education tend to consume less fats and oils but more cheese (Hulshof et al 2003; Roos et al, 1999). Prattala et al (2003) confirmed that finding concluding that higher and lower socioeconomic groups have different sources of saturated fats.

Previous research also concluded that consumers with a higher educational level tend to be more aware of the characteristics of a healthy diet (Margetts et al,1997) and have more knowledge about food items which are healthier (Martinez-Gonzales et al, 1998; Hjartaker and Lund, 1998; Margetts et al, 1997). Hulshof et al (2003) state that this might partly explain the differences in food consumption between SES classes.

The differences in food consumption patterns between SES may also be explained by the findings of Prattala et al (2003) that higher social classes prefer modern foods and lower classes traditional foods. This conclusion is in line with Grignon (1999) that showed that higher social classes consumed more food items that indicated an increasing trend in use than lower classes. According to the authors these findings are explained by the Bourdieu's theory that the socioeconomically better-off are the first to adopt food habits (Bourdieu, 1989).

To further understand the role of SES in food consumption, in this paper we will analyze the differences in dietary intake between adults with different socioeconomic status (SES) and trends over time. Using family food consumption household data from the beginning of the transition period (1993) and from after EU accession (2007), we analyze the declared consumption of the main food groups, looking into the differences on diets of consumer groups with different SES in Hungary. This study allows for the analysis of the convergence of the Hungarian diet with the diets of other European countries and the identification of possible measures to improve the dietary intake of consumers.

The present paper is organized as follows: after this introduction a brief description of the research methodology is presented, the empirical results of the study will be discussed in section 3, after which some summary conclusions and recommendations will be presented. The conclusions will stress the main findings and discuss implications for food policies in what concerns the improvement of the Hungarian diet.

2 - Data and methodology

The Hungarian Household Budget Survey (HBS) has been conducted annually by the Hungarian Central Statistical Office since 1993. The survey covers the Hungarian population living in private households. The unit of sampling is the dwelling; the unit of observation is the household. The survey contains annually 7,000 to 10,000 households. The survey is partly based on monthly household records and partly on post facto annual interviews, providing detailed information both on income and structure of expenditures. Own consumption of self-produced food and beverages and net farm revenue are also reported.

The empirical analysis employs three multivariate techniques. First, cluster analysis is used to group households according to their food consumption habits. Then, a more detailed multivariate regression analysis follows, where healthy and less healthy food consumption habits are regressed on variables defining SES. Thus dependant variables include quantities of fat, sugar, alcohol, various meats, fruit and vegetables consumption, whilst independent variables include household size, age and education of the household head, location, income, employment, quality of house-flat (number of rooms, existence of bathrooms, etc.).

Several different measures of socio economics status, like education, location, house characteristics, were examined in this study. The aim was to compare the direction and magnitude of associations for each measures of socio-economic status witk fruit and vegetable intake. Educational level, cultural expenditures or the location in the capital or bigger city may have important influences on socio-economic status. Higher levels of education may so also increase the ability to obtain or to understand health-related information in general or dietary information in particular needed to develop health-promoting behaviours and beliefs in the field of food habits.

Analyses which have taken into account both education, occupation, income and employment status have shown that usually education is the strongest determinant of socio-economic differences. The other socio-economic variables have a similar but weaker effect that education (Roos et al. 1996)

Multivariate regressions differ from multiple regressions in that several independent variables are jointly regressed on the same explanatory variables. Although direct comparison of 1993 and 2007 regression coefficients should be done with care, since variables are not entirely the same in the two databases, the analysis gives insight not only into consumption and dietary habit differences across SES groups, but also into their change in time. The latter is a rather important issue in the post-communist economies, where the economic transformations started in 1990 had a deep impact upon population purchase power, income, and indeed food consumption habits. Finally a multinominal logit analysis is performed. Using information from the first part of the empirical analysis, cluster numbers used as dependant variables are regressed upon SES variables.

3 – Empirical results

3.1. Descriptive statistics

First, a number of SES variables were selected for the analysis. The descriptive statistics of most important ones are presented in table 1: education of household head (Edu), Income of household (Inc, monthly total personal income of household head in 1993, and the deciles the household belongs based on net income per person for 2007), location (Loc, 1- Budapest, 2 – major city, 3- town, 4 – village), number of people in the household (Num), number of larger than 12 m^2 rooms and number of 4 to 12 m^2

rooms in the household (R1 and R2 respectively), bathroom and toilet facilities in the household (BR), agricultural income (AInc), cultural expenditures (Cult).

- insert Table 1. here –

9 aggregated food consumption variables were created, based on individual food item consumption data. Number of observations, mean values, standard deviation, minimum and maximum values of the aggregated variables for 1993 and 2007 are presented in tables 2 and 3 respectively.

- insert Table 2. here-

- insert Table 3. here-

The last column of tables 2 and 3 shows the percentage of aggregated consumption variables within total food consumption (sum of all 9 categories). Surprisingly, the structure of food consumption remained almost unchanged during the 14 years time span. There is more consumption of red and white meats in 2007, but a shift from animal to vegetable fats may also be observed. The share of vegetables in total consumption had been massively reduced by 2007, however the share of fruit consumption remained stable. With the increase of 2007 carbohydrates and alcohol intakes, one may conclude that dietary habits in Hungary shifted towards less healthy consumption patterns.

3.2. Cluster analysis

Cluster analysis was applied as a two-stage process to the following 9 aggregated food intake variables: red meats, white meats, egg and milk products, animal fats, vegetable fats, vegetables, fruits, carbohydrates and alcohol. In the first stage, a hierarchical analysis was employed to provide an indication of the appropriate number of clusters. Hair *et al* (1998) suggests a procedure based upon inspection of the distance information from the agglomeration schedule. Following this procedure the appropriate number of clusters is suggested at the stage where there is a 'large' increase in the distance measure, indicating that a further merger would result in decrease in homogeneity. However Hair *et al* point out that 'the selection of the final cluster solution requires substantial researcher judgement and is considered by many to be too

subjective'. Following the hierarchical analysis, and the exclusion of outliers in both databases, the K-Means optimisation procedure was employed, together with consideration of relative cluster size and the desire for parsimony, to generate a three-cluster solution for 1993 and a two-cluster solution for 2007. Information about cluster membership, in the form of a nominal cluster identity variable, and distance to the cluster center, was saved for posterior analysis.

F tests were performed to the cluster variables. These tests are based upon differences between clusters, on the basis of a null hypothesis that average variable scores for each cluster are equal against an alternative hypothesis that they are not. The results indicate that the 9 variables have significantly different patterns between groups. Therefore, the criteria used to cluster consumers can be considered meaningful.

The next step in the analysis is to profile the clusters. A profile of each of the groups is established from the mean of the food intake variables for each group and from the identification of the SES variables for which there are significant differences between groups at a 5% level of significance on the basis of a chi-square contingency test for nominal variables, and an F test for metric variables.

Of the 3 clusters found in the 1993 panel, Cluster 3 is the biggest cluster with more than half of the members of the population in analysis (62,3%), followed by Cluster 2 (34,5%) and by a quite small Cluster 1 with only 2,7% of observations. Analysing the profiles of the clusters, significant differences at the 5% level were found in all food intake variables and in SES variables in analysis, except for the amount spent in concerts and theatres.

Cluster 3 has the lowest scores in all food intake variables and in the income variable, which may be explained by the fact that families of this cluster are smaller (average size of 2,32 members *vs* 3,28 in Cluster 2 and 3,65 in Cluster 1). These families have smaller houses than families in the other two cluster (both in number of rooms smaller and larger than 12m2) and spend relatively less on books. Additionally, they tend to live relatively more in Budapest and other cities (27,5% *vs* 16,3% in Cluster 2 and 10,8 in Cluster 1) and to have a woman has head of the household (34,7% *vs* 10,8% in Cluster 2 and 8,2% in Cluster 1). The head of the household is relatively older than in the other two clusters (54,6 *vs* 50,22 in Cluster 2 and 47,93 in Cluster 1). In what concerns education level, the profile of this cluster is somewhat mixed, since this is the cluster that has the highest proportion of people with less than 8 years of school (25,25 *vs*

15,8% in Cluster 2 and 14,8% in Cluster 1) and, at the same time, with a university or college education (8,6% *vs* 7,1% in Cluster 2 and 5,1% in Cluster 1).

As it can be understood form the previous paragraph, Cluster 1 is more different from Cluster 3 than Cluster 2 in terms of both food intake and socio-economic profile. This rule does not apply on the consumption of fruits, where Cluster 2 has the highest score, followed by Cluster 1 and then Cluster 3. The same is true for the number of rooms in the household smaller than 12m2, where the mean value of Cluster 2 is higher. It is also important to notice that Cluster 1 is the cluster with a higher proportion of people living in the countryside (59,7% *vs* 52,1% in Cluster 2 and 40,5% in Cluster 3) with 8 to 10 years of school (36,7 *vs* 31,5% in Cluster 2 and 29,6% in Cluster 3) and with a men as head of the household (91,8% *vs* 89,2% in Cluster 2 and 65,3 in Cluster 3).

The profiles of the 2007 clusters show that cluster 1 is the smallest cluster, with 26.5% of observations. The mean value of the food intake variables is always higher in this cluster. When compared to Cluster 2, consumers in Cluster 1 are characterised by relatively lower education levels and live relatively more in rural areas and small cities (71.8% versus 53.9% in Cluster 2). They live in bigger households and spend more in education, culture and holidays. These may be explained by the fact that they tend to have bigger families than consumers in Cluster 2 (mean value of 3.41 versus 2.3). The per capita total income is relatively lower in this cluster – the percentage of observations in decile 1 to 7 is significantly higher for this group. The head of household tends to be younger than in Cluster 2 (mean value of 50,3 versus 52) and a man (83,3% versus 62,3%).

In conclusion, it can be stated that this cluster is composed of more traditional families, with relatively lower per capita income, that live in the countryside, have more children and a relatively young men as head of household, with a medium level of education.

3.3. Regression analysis

OLS regressions of aggregated consumption variables, on cluster data, and SES variables are performed next. Table 4 presents regression coefficients and their significance levels for 1993, table 5. for 2007.

- insert Table 4. here –

- insert Table 5. here –

Coefficients of determination (adjusted R^2) vary considerably between regressions, from 6% (fruits, alcohols, vegetable fats, animal fats) to 30% (carbohydrates) or even 66% (egg and milk products) for 1993. Similarly dispersed, albeit somewhat higher R^2 values were obtained for 2007 as well, ranging from 7% (alcohols) to 15-20% for meat, vegetable and fruit products or 48% (carbohydrates) and 64% (egg and milk products).

Explanatory variables are generally highly significant, and their sign is persistent from 1993 to 2007 regressions. For 1993 the cluster analysis revealed that households in cluster 1 consume the most, followed by clusters 2 and 3. For the 2007 data, cluster 1 consumes more than cluster 2. The finding is reflected by the negative coefficients of the cluster variable in every regression for both 1993 and 2007. The gender variable is negative for all categories, implying that households managed by women consume less. Education, coded from 1 (less than 8 classes) to 8 (PhD) significantly reduces consumption except for vegetable fats and fruits, possibly suggesting more health conscious eating habits for highly educated households. For 1993 the income variable is only significant (positive) for red meats, vegetable fats, fruits and alcohol, the more expensive food categories. For 2007 the income variable is significantly positive for all food categories except the cheaper and possibly less income sensitive ones, as animal fats and carbohydrates. The higher number of food categories where the variable is significant in 2007 compared to 1993 might suggest the growing importance of household income when purchasing food, i.e. the increase of the food demands' income elasticity coefficient. Location (from 1, Budapest to 4, village), has significantly positive (e.g. white meats, egg-milk products, animal fats, carbohydrates for 1993) and negative effects (vegetable fats, consumed more in larger localities) depending on food category. For 2007 the variable suggests increased consumption of most food categories in smaller localities compared to bigger ones, with the exception of vegetables, fruits and alcohols. With exception of alcohols (negative for 1993, not significant for 2007) the number of household members positively influence all aggregated food categories. The negative sign of alcohols indicates that households with larger families (more children) tend to spend less on such items. The number of smaller and larger rooms (R1 and R2) are generally significant and increase consumption of all food variables. The picture is less obvious for the number of bathrooms/toilets in the household. Agricultural income seems to be an important determinant in both years, with mostly

significant positive coefficients (correlation coefficient between net income and agricultural sales/income is close to 0). There is an extra variable included in the 2007 regressions, not available for 1993 data, the cultural, artistic expenditures (cult). With exception of alcohols and fruits where significantly positive, it has negative effects upon all other food consumption categories. Perhaps those willing to spend more on culture, arts, and ultimately going out, tend to consume more alcohol in and outdoors, and in the same time reduce their intake of other food items.

3.4. Logit analysis

A multinominal logit analysis is run for 1993, with the dependant variable being the cluster (1, 2 or 3). For the 2 cluster solution in 2007 a logit regression is performed. Results for 1993 and 2007 are presented in tables 6 and 7 respectively.

- insert Table 6. here –

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The coefficients of the multinominal logit regression fit the cluster profiles presented in section 3.2: cluster 3, the base is the cluster with lowest food intake, smaller houses (R1, R2 positive in cluster 1 and 2 versus the base), live more in Budapest or bigger cities (positive coefficient for location in both clusters vs. cluster 3), smaller families (variable Num positive). In a similar fashion, those in cluster 1 are more likely to live in rural areas than those in cluster 2 or 3 (positive location and agricultural income coefficients), and they are more likely to have a man as household head.

4 – Conclusion

Results emphasize the major post 1990 socio-economic changes in the Hungarian society. Dietary intakes vary considerably across SES and also in time. A general deterioration of dietary habits is observed, however some SES groups managed to shift their food consumption towards healthier intake patterns.

Results are equally relevant for health care professionals, farmers, agro-food enterprises, and different public bodies that need to know how much and what does the population of a region or a country eat. Nutrition, or rather poor nutrition, is the main cause of morbidity and mortality in Europe and, consequently, successful nutritional

politics might prove to be a fundamental step for the improvement of health in Europe. The success of these politics depends on a clear understanding of the dietary patterns of the population, and how different socio-economic factors influence these patterns. This study hopefully adds to that understanding in the context of a European transition economy.

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Table 1. Descriptive statistics of some variables

Variable	Obs.	Mean	Std. Dev.	Min	Max	Obs.	Mean	Std. Dev.	Min	Max
		1993					2007			
Edu	7358	3.065643	1.985173	1	8	7383	4.237302	2.390157	1	10
Inc	7358	14075.39	8848.325	-3100	152710	7383	6.17134	2.826038	1	10
Loc	7358	3.146099	0.937633	1	4	7383	2.71177	1.100519	1	4
Num	7358	2.685648	1.311999	1	10	7383	2.596235	1.382701	1	11
R1	7358	1.793558	0.769598	0	6	7383	1.830692	0.93752	0	6
R2	7358	0.656157	0.750522	0	6	7383	0.83462	0.902079	0	6
BR	7358	1.543218	1.103318	1	4	7383	1.034268	0.364789	0	2
AInc	7358	18665.77	80856.31	0	2849000	7383	68731.7	201412.8	0	4067600
Cult	-	-	-	-	-	7383	148524	204833.8	0	4081308

Source: Hungarian Central Statistical Agency household survey, data cleaned by HAS Institute of Economics' Databank. Own calculations.

Table 2. Consumption patterns in 1993 (kg, l)

Variable	Obs.	Mean	Std. Dev.	Min	Max	% of totalcons
Red meats	7358	5.517532	5.654177	0	112	3.597
White meats	7358	5.162816	5.119862	0	69	3.365753
Egg and milk prod.	7358	76.13944	55.59158	0	584	49.63697
Animal fats	7358	2.941832	4.728127	0	208	1.917845
Vegetable fats	7358	2.409622	2.785216	0	98	1.570885
Vegetables	7358	25.85159	30.07418	0	509	16.85322
Fruits	7358	9.340038	15.83503	0	200	6.088976
Carbohy	7358	23.02487	15.81856	0	217	15.01042
Alcohols	7358	3.004893	7.072565	0	122	1.958956
Totalcons	7358	153.3926	89.83632	0	827	100

Source: Hungarian Central Statistical Agency household survey, data cleaned by HAS Institute of Economics' Databank. Own calculations.

Table 3. Consumption patterns in 2007 (kg, l)

Variable	Obs.	Mean	Std. Dev.	Min	Max	% of totalcons
Red meats	7383	4.11378	5.855959	0	157.07	4.325216
White meats	7383	4.101364	4.218907	0	46	4.312162
Egg and milk prod.	7383	47.13215	35.04902	0	369.98	49.55461
Animal fats	7383	0.748988	1.759469	0	35.22	0.787484
Vegetable fats	7383	2.828576	2.669028	0	38.5	2.973957
Vegetables	7383	7.514245	9.902279	0	223	7.900456
Fruits	7383	7.08544	8.523729	0	130	7.449611
Carbohy	7383	17.15278	12.0848	0	190.96	18.03438
Alcohols	7383	4.434215	8.379235	0	159.9	4.662121
Totalcons	7383	95.11154	58.32562	1.6	553.82	100

Source: Hungarian Central Statistical Agency household survey, data cleaned by HAS Institute of Economics' Databank. Own calculations.

Table 4. Food consumption regression analysis for 1993

Dep. var.	Clus	Gen	Edu	Inc	Loc	Num	R1	R2	BR	AInc	Cons
Red meats	-0.302***	-0.163***	-0.032***	0.080***	0.015	0.130***	0.087***	0.039***	-0.049***	0.029***	1.317***
White meats	-0.369***	-0.160***	-0.025***	0.024	0.078***	0.078***	0.083***	0.068***	0.014	0.023***	1.360***
Egg and milk prod.	-1.028***	-0.032***	-0.006**	0.007	0.019***	0.036***	0.024***	0.000	-0.006	0.007***	3.495***
Animal fats	-0.355***	-0.223***	-0.055***	-0.048	0.125***	0.134***	0.013	0.001	0.048***	0.008***	1.337**
Vegetable fats	-0.330***	-0.031	0.010	0.120***	-0.035**	0.053***	0.017	0.004	-0.057***	-0.004	1.747***
Vegetables	-0.680***	-0.105***	-0.025***	0.003	0.008	0.030***	0.066***	0.052***	0.002	0.000	2.608***
Fruits	-0.605***	-0.083	0.013	0.116***	-0.029	0.001	0.091***	0.050*	-0.028	0.016***	2.364***
Carbohy	-0.235***	-0.087***	-0.043***	0.000	0.086***	0.206***	0.003	-0.001	0.030***	0.004***	0.887***
Alcohols	-0.416***	-0.828***	-0.056***	0.099**	0.183***	-0.085***	0.227***	0.131***	-0.008	0.011*	1.527***

Source: Hungarian Central Statistical Agency household survey, data cleaned by HAS Institute of Economics' Databank. Own calculations.

Note: *** indicates 1% , ** indicates 5% and * indicates 10% levels of significance respectively.

Table. 5. Food consumption regression analysis for 2007

Dep var.	Clus	Gen	Edu	Inc	Loc	Num	R1	R2	BR	AInc	Cult	Cons
Red meats	-0.527***	-0.133***	-0.035***	0.039***	0.056***	0.196***	0.072***	0.023	-0.038	0.067***	-0.054***	1.079***
White meats	-0.562***	0.007	-0.023***	0.018***	0.055***	0.153***	0.046***	0.008	-0.056	0.059***	-0.013	1.334***
Egg and milk prod.	-1.188***	0.009	-0.011***	0.009***	0.016***	0.092***	0.012*	0.002	-0.009	0.016***	-0.012***	2.751***
Animal fats	-0.810***	-0.272***	-0.085***	-0.002	0.054**	0.048*	0.072**	-0.032	-0.391***	0.151***	-0.093***	2.836***
Vegetable fats	-0.465***	-0.044*	-0.031***	0.033***	0.054***	0.161***	0.029**	0.047***	0.031	-0.008**	-0.014*	1.081***
Vegetables	-0.553***	-0.060*	-0.023***	0.034***	-0.037***	0.084***	0.086***	0.059***	-0.045	0.089***	-0.001	1.501***
Fruits	-0.521***	-0.035	0.002	0.054***	-0.064***	0.091***	0.056***	0.027	0.077*	0.072***	0.045***	1.192***
Carbohy	-0.336***	-0.014	-0.026***	0.001	0.100***	0.255***	0.016**	0.002	-0.132***	0.017***	-0.030***	0.875***
Alcohols	-0.386***	-0.821***	0.005	0.061***	-0.062***	-0.003	0.060**	0.018	-0.014	0.013*	0.080***	1.513***

Source: Hungarian Central Statistical Agency household survey, data cleaned by HAS Institute of Economics' Databank. Own calculations.

Note: *** indicates 1% , ** indicates 5% and * indicates 10% levels of significance respectively.

Table 6. Multinominal logit analysis for 1993 (cluster 3 base outcome)

Variables	Coef.	Signif.	Coef.	Signif.
	Cluster 1.		Cluster 2.	
Gen	-0.634	0.024	-0.660	0.000
Age	-0.008	0.205	-0.014	0.000
Edu	-0.119	0.022	-0.012	0.479
Inc	0.154	0.158	0.113	0.017
Loc	0.465	0.000	0.293	0.000
Num	0.740	0.000	0.574	0.000
R1	0.281	0.007	0.200	0.000
R2	0.018	0.868	0.102	0.011
BR	-0.160	0.067	-0.057	0.047
Book	0.000	0.029	0.000	0.712
Cult	-0.001	0.595	0.000	0.579
Mealsg	-0.008	0.377	-0.010	0.004
AInc	0.093	0.000	0.075	0.000
_cons	0.833	0.890	9.618	0.000
Pseudo R^2		0.135		

Source: Hungarian Central Statistical Agency household survey, data cleaned by HAS Institute of Economics' Databank. Own calculations.

Table 7. Logit analysis for 2007 (cluster 2 base outcome)

Variables	Coef.	Signif.
	Cluster 1.	
Gen	-0.326	0.000
Age	0.013	0.000
Edu	-0.061	0.000
Inc	0.031	0.030
Loc	0.124	0.000
Num	0.583	0.000
R1	0.172	0.000
R2	0.130	0.001
BR	-0.009	0.919
Cult	0.009	0.719
Mealsg	-0.006	0.233
AInc	0.161	0.000
Health	0.062	0.000
_cons	-4.192	0.000
Pseudo R^2	0.16	

Source: Hungarian Central Statistical Agency household survey, data cleaned by HAS Institute of Economics' Databank. Own calculations.