MARKETING ANALYSIS OF THE REVENUE IMPACT ON THE SLOVAK HOUSEHOLDS DEMAND FOR MEAT AND MEAT PRODUCTS

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Abstract. The paper deals with development in nominal incomes and household expenditures for food and their share in total expenditures from the perspective of various social groups of households in Slovakia. There are analyzed the changing patterns in the structure of demand for meat prices and the impact on total expenditure on meat and meat products in the households of employees, households of self-employed persons and households of pensioners. During examining the sensitivity of demand to changes in consumer meat prices in different social groups of households own-price elasticity of demand was estimated, as well as cross-price elasticity.

Key words: income and expenses for food, own-price, income and cross-price elasticity of demand, households of employees, self-employed person and pensioners

INTRODUCTION

The consumer market is created by final consumers, individuals and households as specific social groups, that buy products for their personal use. Everyday consumer purchase decisions are made influenced by marketing stimuli.

Marketers and commercial production companies have to be interested in buying behavior and consumer decision-making and thus analyze the consumer demand. Examination of consumer behavior is important precisely because the factors on which this behavior depends are constantly changing and it is important to know about current consumer needs and wishes. The consumer is a unique person with his or her own opinion and this should be considered by each company or production unit wanting to attract and retain the customers by respecting their needs and adapting to its.

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Customer response depends on many factors, which include age, education, interests, attitudes, lifestyle, family etc. In addition to marketing stimuli consumer is influenced by many other incentives, based on surrounding environment. These are factors such as economics, culture, technology and politics. Food consumption refers to each inhabitant and reflects the overall standard of living [Kubicova 2008a, 2008b].

Changing social and economic conditions induce differentiation in the behavior of individual households on the consumer market, which is influenced by household income and by changes in the price development of goods and services. Downward trend is in the average size of households and growing pluralism of the various forms of coexistence. The share of single person households and proportion of retired citizens households are rising. Increasing is also the share of households of single-parent families.

MATERIAL AND METHODS

The aim of the paper is an analysis of the on the meat and meat products consumption and identification of differences in demand and household expenditures in Slovakia. Commodity meat has its substitutes, which allow the consumer to respond and exploit price changes of individual kinds of meat to meet their nutritional needs. In terms of economic status of head of household and his employment and consequent income, we focused on the demand for beef, pork and poultry meat and poultry products in the households of employees, households of self-employed persons and households of old-age pensioners. The grounds for such an analysis were drawn from the officially published results of family accounts by Statistical Office representing so-called panel data, which includes time and cross-sectional component. This means that several objects are observed in time t ($t = 1$, 2, 3, ..., T) and cross-sectional component (household) is observed within the household ($k = 1, 2, 3, ..., N$). In 2011, surveyed incomes of private households at random for a total of 4705 households of which 2285 were the households of employees, 545 households of self-employed persons, 1447 households of pensioners and 428 other households (unemployed, students etc.). The analysis focuses on the income and expenditure referred to social groups and household consumption of beef, pork and poultry production and consumer prices of these products.

In examining the development of inter-annual changes in the values of monitored indicators extensive (q_i) and intensive variables (p_i) were used relative characteristics and time series analysis.

Chain index $\quad k_i = \dfrac{q_i}{q_{i-1}} \quad$ or $\quad k_i = \dfrac{p_i}{p_{i-1}} \quad$ in years $\quad i = 2, 3, ..., T$ $\hfill (1)$

The average coefficient of the growth $k' = \sqrt{k_1 \cdot k_2 \cdot ... k_i ... \cdot k_T}$ $\hfill (2)$

In order to determine what is the part in a change in annual expenditure on meat and meat products accounted for changes in prices of meat (p_i) per kg and their contribution in changes in quantity of consumed meat (q_i), we have used decomposition of extensive values index q_1

$$I = \frac{\sum q_1 p_1}{\sum q_0 p_0} = \frac{\sum q_1 p_1}{\sum q_0 p_1} \cdot \frac{\sum q_0 p_1}{\sum q_0 p_0} \qquad (3)$$

where: q_1 – meat consumption in the current period, in kg per person per year;
$\quad\quad\quad q_0$ – meat consumption in the base period, in kg per person per year;
$\quad\quad\quad p_1$ – meat prices in the current period, in EUR per kg;
$\quad\quad\quad p_0$ – meat prices in the base period, in EUR per kg.

For the empirical analysis of the relationship and dependency of demand and consumption of individual kinds of meat and meat products on the net cash income and consumer price of meat and elasticity response of the household social group to these changes the linear model of demand function has been used:

$$q_i = f(p_1, p_2, p_3, CPP) + u_i \qquad (4)$$

where: q_i – consumption of individual meats, in kg per person per year;
$\quad\quad\quad p_i$ – price of the *i*-th kind of meat, in EUR per kg;
$\quad\quad\quad p_1$ – price of beef, in EUR per kg;
$\quad\quad\quad p_2$ – price of pork, in EUR per kg;
$\quad\quad\quad p_3$ – price of poultry and poultry products, in EUR per kg;
$\quad\quad\quad CPP$ – net cash income, per person per year;
$\quad\quad\quad u_i$ – random – residual component.

In marketing decisions, it is useful to know the degree of sensitivity – elasticity of consumer demand to changes in product prices and other relevant factors and substitution relations. Based on the linear regression model of the demand function, we have determined from the relation:

Own-price elasticity of demand for meat (q)

$$Eq_i, p_i = \frac{\partial q}{\partial p_i} \cdot \frac{p_i}{q_i} = b_i \left(\frac{p_i}{q_i} \right) \qquad (5)$$

Cross-price elasticity of demand for meat (q_i)

$$Eq_i, p_j = \frac{\partial q}{\partial p_j} \cdot \frac{p_j}{q_i} = b_j \left(\frac{p_j}{q_i} \right) \qquad (6)$$

Income elasticity of demand for meat

$$Eq_i = \frac{\partial q_i}{\partial I} = \frac{I}{q_i} = b_i \left(\frac{I}{q_i} \right) \qquad (7)$$

where: q_i – *i*-th consumption of meat, in kg per person per year;
$\quad\quad\quad p_j$ – *i*-th price of meat, in EUR per kg;
$\quad\quad\quad p_j$ – price of substitute q_j, in EUR per kg;
$\quad\quad\quad I$ – net cash income of households in social groups, in EUR per person per year.

RESULTS

Incomes and Expenditures

According to macroeconomic theory, consumption depends on disposable income. When disposable income grows, the households are willing to increase their consumption. Consumer decisions connected with demand for food is greatly influenced by the purchasing power of the population, which is determined by development of net cash income. Household income sources and their structure are determined by their social position particularly in the labor market. Breakdown of households in social groups is shown and evaluated by the official statistics on the basis of economic status of the head of household in employment. According this could be distinguished households of employees, self-employed (owner), households of pensioners and others (unemployed, students etc.) [Simo and Rovny 2010].

It can be noted that the highest income group in the net income zone per household member is found (except the year 2009) in the households of self-employed. With lower average annual income is presented a group of households of employees, which is closely followed by a group of households of old-age pensioners. Hidden remains the income from economic activities of pensioners as a result, some of these households in terms of income ranks over society-wide average.

Development of households cash income shows an upward trend (Table 1), which for the spotted period increased by 6.2%. From the perspective of different social groups, the highest average annual revenue growth (6.6%) was recorded in old-age pensioners households. Lower (4.4%) average annual growth was recorded in the income in the households of self-employed. Development of cash expenditure in the average Slovak

Table 1. Net cash incomes, cash expenses and expenses for food and soft drinks per household member in 2005, 2007, 2009–2011
Tabela 1. Przychody gotówkowe netto, wydatki gotówkowe oraz wydatki na żywność i napoje bezalkoholowe w przeliczeniu na członka gospodarstwa domowego w latach 2005, 2007, 2009–2011

Households	Indicator	Year					
		2005	2007	2009	2010	2011	k'
Employees	Net cash incomes (EUR)	3099.2	3913.1	4295.6	4338.1	4456.1	1.062
	Net cash expenses (EUR)	2984.5	3754.3	3730.9	3818.9	3936.5	1.047
	Expenses for food and soft drinks (%)	22.80	20.70	20.20	20.20	20.45	×
Self-employed	Net cash incomes (EUR)	3429.9	4158.3	4142.2	4419.3	4451.5	1.044
	Net cash expenses (EUR)	3211.0	3793.9	3682.8	3782.8	3910.8	1.033
	Expenses for food and soft drinks (%)	21.10	20.10	20.00	21.10	19.74	×
Pensioners	Net cash incomes (EUR)	3080.0	3743.8	4357.5	4467.6	4526.8	1.066
	Net cash expenses (EUR)	3097.6	3550.9	3674.1	3933.5	3984.9	1.043
	Expenses for food and soft drinks (%)	29.40	27.30	26.70	26.70	26.20	×

Source: Own calculations based on Statistical Office of the Slovak Republic [2010].
Źródło: Obliczenia własne na podstawie danych Urzędu Statystycznego Republiki Słowackiej [2010].

households also shows an upward trend and total household expenditure in total increased by 4.1% and the highest growth by 4.3% was in the households of pensioners, while the average annual expenditure growth in the households of self-employed was 3.3%.

Development of expenditures on food items indicates the change in the structure of expenditures and has a declining trend. The highest share of food expenditures in the structure of consumption expenditures was recorded in the households of pensioners, which declined from 30.6% (year 2004) to 26.2% in 2011 [Recky and Dobak 2011]. Expenditures on food in the households of pensioners are by 6.5% higher than those paid by households of employees and households of self-employed persons. Similar developments can be observed in the Czech Republic. As stated by Sekavova [2010] households of pensioners in 2008 in the Czech Republic spent on food and non-alcoholic beverages 26.1%, while the families of employees and self-employed only 18.6%, respectively 18.7%.

MARKETING ANALYSIS OF DEMAND FOR MEAT AND MEAT PRODUCTS

Meat and meat products are most often discussed and analyzed food home as well as abroad [Gulbicka and Kwasek 2006, Thiele 2008]. Production costs and consumer prices of meat are relatively high and the meat consumption is used as a criterion for measuring standard of living. In human nutrition meat is a source of many essential nutrients (full-fledged proteins, vitamins and minerals), although the high consumption of meat is criticized by the health professionals for its high fat content, the predominant-saturated fatty acids, cholesterol and purine substances. The production process of meat is relatively long (especially beef carcass) and requires a thoughtful response to changes in producer and market requirements. Knowing the price of not only producers and processors, but most consumer prices is important information for market participants with meat and meat products [Kleinova and Kretter 2010].

Meat consumption in Slovakia is from 1989 and 1990, when it was probably the highest (84 kg per capita per year), gradually decreasing. Since 1995, annual average consumption fell by 0.7% to 53.7 kilograms per capita in 2011. The largest drop in consumption is reflected in beef and veal by 6.7%, while consumption of poultry and poultry meat has increased annually by 2.8% to 18.6 kg per capita (2011) and substituted the decrease in consumption of beef and veal in the lower extent also the decline in consumption of pork. In the structure of Slovak household consumption dominated consumption of pork (57.2%), poultry and poultry meat (34.2%).

In comparison, in Austria, there was the total consumption of 98.4 kilograms meat per capita, the share of poultry was 19.6% (19.3 kg), the share of pork meat was 57.3% (56.4 kg) and the proportion of beef 18.7% (18.4 kg), the substitution in consumption of beef meat by poultry meat was lower.

Poultry significantly enriched the menu of consumers and offers a broad view of the track (chickens, hens, turkey, guinea fowl, geese, ducks). Appreciable is also a short manufacturing process of poultry used for the slaughter and consumption [Nagyova et al. 2011]. In terms of demand for meat and meat products in various social groups of households and their disposable income, the highest proportion in the structure of food expenditure, excluding expenditure on bread (17.56 to 20.9%) in 2011 was spent on pork

by pensioners 7.59% and 6.72% by employees. Second in order of consumption the expenditures on poultry meat were 7.06% in the households of pensioners and 7.01% in the households of employees (Table 2).

Table 2. Structure of expenditures on selected food of the total food expenditures per person per year (%) in 2004 and 2011
Tabela 2. Udział wydatków na wybrane produkty żywnościowe w wydatkach na żywność ogółem na osobę rocznie (%) w latach 2004 i 2011

| | Structure of expenditures in total food expenditures per person (%) per year | | | | | |
| | Employees | | Self-employed | | Pensioners | |
Food	2004	2011	2004	2011	2004	2011
Bread and cereals	19.13	20.55	17.54	20.98	17.64	19.22
Beef including veal	1.99	1.37	2.37	2.08	2.03	1.69
Pork	7.19	6.72	7.82	5.79	8.21	7.59
Poultry and poultry products	7.49	7.06	7.49	7.12	7.91	7.01

Source: Own calculations based on Statistical Office of the Slovak Republic database [2010].
Źródło: Obliczenia własne na podstawie danych Urzędu Statystycznego Republiki Słowackiej [2010].

Other food expenditures like the expenditures on milk and milk products, vegetables, fruits, beverages occupy the structure of expenditure on food in less than 6% share. On the basis of decomposition of binary index of compounded extensive values (3) and spending time series analysis is shown that the average annual amount of cash outflows in a subset of the commodity beef and veal were affected the most by prices (p_i), which in all social groups of households increased annually (except in 2009 for pensioners) by around 3%. The rise in prices of beef, at a given income, reflected the fall in demand and consumption of meat (q_i). The decrease in consumption, expressed by an average annual growth coefficient (k'), was the most significant 4.8% in the households of self-employed ($k' = 0.952$) and 6.3% in the households of employees ($k' = 0.921$). Market forces and developments in food prices, goods and services were reflected in consumer preferences. Households of pensioners, who have more free time to watch the price offers of goods and services, were reflected in a higher overall average consumption of meat and meat products (Table 3) at a lower price level. Families of pensioners increase using of discount sales, discounts and different tools of communication mix.

Table 3. Average consumption (kg per capita) and average consumer prices (EUR) of selected food for 2004–2011
Tabela 3. Przeciętna konsumpcja (kg per capita) i przeciętne ceny konsumenta (euro) wybranych produktów żywnościowych w latach 2004–2011

| | Employees | | Self-employed | | Pensioners | |
Food	Consumption (kg per capita)	Price (EUR)	Consumption (kg per capita)	Price (EUR)	Consumption (kg per capita)	Price (EUR)
Beef including veal	2.222	4.84	2.695	4.99	3.681	4.59
Pork	12.673	3.79	12.502	3.81	19.376	3,64
Poultry and poultry products	17.885	2.76	17.458	2.83	26.433	2.52

Source: Own calculations based on Statistical Office of the Slovak Republic database [2010].
Źródło: Obliczenia własne na podstawie danych Urzędu Statystycznego Republiki Słowackiej [2010].

Results of decomposition of binary index of aggregated extensive value of demand for beef (Table 4) shown that spending had increased in two of the six experimental years, when the summary index in households of employees and in the households of self-employed in 2007, 2008 and 2010 was higher than one. The increase in expenditure was due to the change in beef consumption q_i, as well as due to the annual growth in unit prices of meat p_i.

Table 4. Aggregated expenditure index of changes for beef due to the consumed amount (q_i/q_{i-1}) and the influence of changes in prices (p_i/p_{i-1}) in the households of particular social groups in 2004–2011

Tabela 4. Zagregowany indeks zmian wydatków na mięso wołowe ze względu na ilość skonsumowaną (q_i/q_{i-1}) oraz wpływ zmian cen (p_i/p_{i-1}) w gospodarstwach domowych poszczególnych grup społecznych w latach 2004–2011

	Employees			Self-employed			Pensioners		
Year	Influence		Expenditure Index	Influence		Expenditure Index	Influence		Expenditure Index
	Amount	Price		Amount	Price		Amount	Price	
2004	×	×	×	×	×	×	×	×	×
2005	0.8241	1.0491	0.8645	0.6649	1.1121	0.7395	1.0234	1.0356	1.0598
2006	0.9231	1.0668	0.9848	1.0403	0.9897	0.9514	0.8101	1.0668	0.8642
2007	1.0463	1.0084	1.0550	1.0543	1.0229	1.0784	1.0028	1.0403	1.0432
2008	0.9735	1.0331	1.0057	1.0110	1.0366	1.0480	0.7111	1.0495	0.7463
2009	0.8773	1.0020	0.8791	0.7382	1.0039	0.7411	0.9935	0.9754	0.9691
2010	1.0674	0.9901	1.0567	1.2956	1.0371	1.3436	0.9995	1.0105	1.0099
2011	0.8932	1.0879	0.9717	1.0038	1.0321	1.0359	0.9292	1.0231	0.9504

Source: Own calculations.
Źródło: Obliczenia własne.

Favorable development of expenditures can be seen in the demand for pork and poultry (Table 5 and Table 6).

Table 5. Aggregated expenditure index of changes for pork due to the consumed amount (q_i/q_{i-1}) and the influence of changes in prices (p_i/p_{i-1}) in the households of particular social groups in 2004–2011

Tabela 5. Zagregowany indeks zmian wydatków na mięso wieprzowe ze względu na ilość skonsumowaną (q_i/q_{i-1}) oraz wpływ zmian cen (p_i/p_{i-1}) w gospodarstwach domowych poszczególnych grup społecznych w latach 2004–2011

	Employees			Self-employed			Pensioners		
Year	Influence		Expenditure Index	Influence		Expenditure Index	Influence		Expenditure Index
	Amount	Price		Amount	Price		Amount	Price	
2004	×	×	×	×	×	×	×	×	×
2005	0.9921	1.0266	1.0185	0.7917	1.0469	0.8288	1.0400	0.9843	1.0237
2006	0.9864	1.0414	1.0273	0.9495	1.0429	0.9897	0.9723	0.9947	0.9671
2007	1.0679	0.9353	0.9988	1.1945	0.8974	1.0719	1.0952	0.9653	1.0572
2008	0.9485	1.0558	1.0015	1.1390	1.0372	1.8140	0.9770	1.0497	1.0256
2009	0.9967	0.9345	0.9314	0.9520	0.9179	0.8738	0.9872	0.9368	0.9248
2010	1.0494	0.9622	1.0097	1.0593	0.9637	1.0209	0.9991	0.9522	0.9513
2011	1.0353	1.0314	1.0678	0.7876	1.0768	0.8481	1.0597	1.0103	1.0706

Source: Own calculations.
Źródło: Opracowanie własne.

Table 6. Aggregated expenditure index of changes for poultry due to the consumed amount (q_i/q_{i-1}) and the influence of changes in prices (p_i/p_{i-1}) in the households of particular social groups in 2004–2011

Tabela 6. Zagregowany indeks zmian wydatków na mięso drobiowe ze względu na ilość skonsumowaną (q_i/q_{i-1}) oraz wpływ zmian cen (p_i/p_{i-1}) w gospodarstwach domowych poszczególnych grup społecznych w latach 2004–2011

Year	Employees			Self-employed			Pensioners		
	Influence		Expenditure Index	Influence		Expenditure Index	Influence		Expenditure Index
	Amount	Price		Amount	Price		Amount	Price	
2004	×	×	×	×	×	×	×	×	×
2005	1.0152	1.0038	1.0191	0.9754	1.0072	0.9825	1.0461	0.9759	1.0209
2006	0.9920	0.9401	0.9326	0.9540	0.9065	0.8648	0.9626	0.9547	0.9190
2007	0.9581	1.0956	1.0497	0.9633	1.1267	1.0856	0.9451	1.0733	1.0144
2008	0.9882	1.0909	1.0780	1.0614	1.0775	1.1436	0.9818	1.0803	1.0606
2009	0.9563	0.9367	0.8957	0.9551	0.9183	0.8771	1.0335	0.9554	0.9874
2010	1.0487	0.9644	1.0114	1.0388	0.9893	1.0277	0.0229	0.9689	0.9811
2011	1.0334	1.0911	1.0948	0.9055	1.1129	1.0078	0.9160	1.0911	0.9991

Source: Own calculations.
Źródło: Opracowanie własne.

Decomposition of binary index of aggregated extensive value (Tables 4, 5 and 6) indicates that although year on year rising expenditures on these commodities in two respectively three years was maintained the constant level of consumption and expenditures for pork and poultry. Average consumption growth rates are just below 1 ($k' = 0.98$ to 0.99) and almost identical was the evolution of changes in unit prices of the meat (p_i) ($k' = 0.881$ and 1.016). These changes in expenditures suggest relatively consistent behavior of particular social groups of households, in terms of spending money on pork and poultry, as well as the poultry products. From the questionnaire survey (Hes et al. 2009) is proven the Slovak consumer feedback on the overall level of prices of meat and poultry products is proved that 59.12% of respondents considered the price reasonable for the Slovak market and 21.9% of respondents assessed the prices as really high. Most respondents (79.56%) indicated that the increasing price of poultry meat would not change their purchasing behavior, 20.43% of respondents would change its demand for poultry meat when the price had grown and 19.34% would reduce the volume of purchased quantity of these products.

Income and Price Elasticity of Demand for Different Types of Meat by Different Social Groups of Households

For the empirical assessment of addiction and response of consumer demand for different types of meat analyzed by disposable income and price trends for individual types of meat a linear model of demand function was used.

The results of the analysis of demand for individual kinds of meat observed in the particular social groups of households showed that the meat is the standard good, and in 2011 took up the largest share of 26.1% in the structure of consumption expenditure. In old-age pensioners' households was share the highest one (26.8%) amounted to €254.47

per person. In 2011 in the households of employees and households of self-employed was the average expenditure amounted to €186.3, respectively €174.7, that represented 25.7 to 26.76% of total food expenditures. This led also to the response of demand in particular households to convert their own prices for individual kinds of meat, depending on income.

As can be seen in Table 7, the households react on demand for different types of meat on its own conversion price of meat differently. Meat consumption has a negative slope, decreases when the price grows and vice versa. Households responded to consumption, especially beef price elastic and the households of self-employment reacted by this way also on the consumption of poultry and poultry products. When increasing its own price for beef and veal, 1% of the households of self-employed responded by reducing demand by 5.11% (while the average consumption was 2.69 per kg and the price was €4.96 per kg).

Table 7. Estimated parameters of demand functions of price and income elasticities of demand for different types of meat in households

Tabela 7. Oszacowane parametry popytowych funkcji cenowej i dochodowej elastyczności popytu dla różnych rodzajów mięsa w gospodarstwach domowych

Meat	Households	Parameter of function			Elasticities		Correlation Index R^2
		b_0	b_1	b_2	Eq_i, p_i	Eq_i, l	
Beef including veal	Employees	9.819	−1.957	0.00047	−3.90	0.759	0.924
	Self-employed	13.917	−3.008	0.00089	−5.11	1.26	0.920
	Pensioners	9.246	−1.239	0.000028	−1.48	−0.027	0.830
Pork	Employees	15.039	−0.563	−0.00008	−0.17	0.023	0.640
	Self-employed	25.276	−3.813	0.00056	−1.17	0.168	0.681
	Pensioners	20.673	−1.225	0.001	−0.239	0.152	0.784
Poultry	Employees	22.849	−0.336	−0.0010	−0.051	−0.217	0.781
	Self-employed	14.888	−3.879	−0.0021	−0.614	−0.456	0.878
	Pensioners	28.021	−3.930	−0.00098	−0.368	−0.131	0.686

Source: Own calculations based on Statistical Office of the Slovak Republic database [2010].
Źródło: Opracowanie własne na podstawie danych Urzędu Statystycznego Republiki Słowackiej [2010].

In the households of employees with the average consumption of 2.22 kg and the average price of meat €4.83 per kg, demand was reduced by 3.9%. Households of pensioner that purchased beef at lower prices (Table 3) and hence lower quality meat responded to transformation of their own price also elastic and at 1% price increase (at a price of €4.59 per kg) the demand decreased on average by 1.48% per annum.

The income elastic demand for beef responded only in the households of self-employed which reported the highest income group in the society of the surveyed groups (Table 1) and 1% increase in income has increased demand on average by 1.26% per annum. Demand for pork and poultry meat was reflected as a cost as well as income inelastic and on the basis of the income elasticity of demand, we classify them affirmative with basic goods [Fendekova and Strieska 2007]. Demand for pork is price elastic only in the households of self-employed and 1% increase in poultry prices caused decrease of

demand by 1.17%. Income slightly elastic and contrary to theoretical assumptions was reflected demand for poultry meat in the households of self-employed, employees and pensioners. Increased income by 1% also decreased demand for poultry meat by 0.131% in the households of pensioners, even bolder in the households of self-employed (E_{qi}, I = –0.456). Higher income level of the households of self-employed allowed the higher consumption of beef and veal, and partly of pork. Through the linear demand function, we analyzed multiple dependence of beef demand (q_1) in relation to consumer prices of beef (p_1), the price of pork (p_2), poultry prices (p_3) and income (p_4).

Based on the linear demand function (Table 8) can be stated that the demand for beef is in households of employees and households of self-employed can be substituted mainly by demand for pork. Growth in pork prices by 1% caused the increase in demand for beef in the households of employees by 0.856% ($E_{qi}, p_2 = 0.856$) and in the households of self--employed by 0.706%, and are mutually complementary. Demand for poultry and poultry products in these households implemented interchangeable function. In the households of pensioners compared with the other groups in society, replacement function of demand for beef was fulfilled by the increased demand for poultry meat. Households of pensioners responded on 1% increase in prices of poultry meat by increased demand for beef by 0.625% ($E_{qi}, p_3 = 0.625$). With the increase in the price of one product increases the demand for other product and vice versa. With income growth would increase demand for beef only in the group of pensioners.

Table 8. Estimated parameters of demand functions and substitution of demand for beef and pork in particular social groups of households
Tabela 8. Oszacowane parametry funkcji popytu oraz substytucja popytu na mięso wołowe i wie-przowe w poszczególnych grupach społecznych gospodarstw domowych

Meat	Households	Parameter of function				Elasticities			Correlation Index R^2
		b_1	b_2	b_3	b_4	E_{qi}, p_1	E_{qi}, p_2	E_{qi}, p_3	
Beef including veal	Employees	–0.843	–0.502	1.213	–0.0003	–1.834	–0.856	1.504	0.689
	Self-employed	–1.260	–0.500	1.273	–0.0002	–2.336	–0.706	1.337	0.782
	Pensioners	–1.691	–0.039	0.910	0.0002	–2.108	–0.039	0.625	0.952

Source: Own calculations.
Źródło: Obliczenia własne.

Pensioners in terms of demographic development and thanks to rising standards of living, economic climate and the level of health care, represent one of the fastest growing segments of the population [Hambalkova et al. 2011]. However, they do not form a homogenous group, nor as to the level of pensions, as well as to the structure of consumption expenditures and expenditures on food. They can be divided into at least three groups. To the group of active retirees (go-gos) dedicated to the business, then to the group of pensioners with certain health problems (go-slows) and to the group of pensioners needing constant care and medical care (no-gos) [Kotler 1995]. In the structure of consumption expenditure report (Table 1) the pensioners reached the highest share in expenditures on food and the lowest share of expenditures on catering services in hotels, cafes and restaurants.

CONCLUSIONS

In recent years the Slovakia residents have recorded not only increase of income but also increase of food expenditures. Income growth has been more noticeable in the households of the old-age pensioners, where since 2004 the net cash receipts have increased on average by 8.5% and in the year 2011 reached the level of €4526.8 per person. Lower increase of incomes (6.6%) was in the households of employees and 4.4% increase of incomes was in the households of self-employed. In the households were annually also increasing the expenses on food and soft drinks. The share of expenditure on food and soft drinks in the Slovak households is gradually decreasing. In 2011 the food expenditures in households of pensioners still occupied 26.2%, while in households of employees and self employed persons ranged on the level of 20.2%. In recent years the decline in food spending slows. In the structure of food expenditures in all groups of households the highest part was taken by the expenditures for bread and meat and meat products. Expenditures for this food had decreasing trend except for expenses for bread, which increased in the pattern of spending from 10.8% (year 2004) to 20% in 2011. On the basis of the aggregated index of expenditure changes could be concluded that the increase in annual expenditure on meat and meat products occurred mainly due to rising prices. The price effect was seen in all social groups of households mostly in the growth of expenditures on beef and veal.

Based on the dramatic decrease of this year's crop we have to be ready for the incresing the food prices, as the prices of key food commodities such as the wheat or the corn have already started to grow. Increasing of food prices will cause also increasing in spending on basic foods such as bread, meat, and milk products, however it should not mean a dramatic deterioration in the population standard of living. In the future increasing of the food cost could threaten food quality, because the price factors have an intensive impact on the purchase decisions, which affects more than half of the Slovaks [Horska, Urgeova and Prokeinova 2011].

When mentioning the meat consumption based on the parameters of multiple linear demand function can be reported that in households of employees and self employed persons, the falling demand for more expensive beef and veal is substituted by demand for pork, while demand for poultry and poultry products performs a complementary function [Bielik and Hupkova 2010].

In the observed period the meat consumption decreased. Also the structure of consumption of different kinds of meat was unfavorable and the level of meat consumption in Slovakia significantly lags behind the EU. Based on increase in food prices and stagnating incomes of the population, improvement of this situation can not be expected.

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ANALIZA MARKETINGOWA WPŁYWU PRZYCHODÓW NA POPYT NA MIĘSO I PRODUKTY MIĘSNE W SŁOWACKICH GOSPODARSTWACH DOMOWYCH

Streszczenie. Artykuł podejmuje zagadnienie zależności dochodów nominalnych i wydatków gospodarstw domowych na żywność oraz ich udziału w wydatkach ogółem z perspektywy gospodarstw domowych różnych grup społecznych Słowacji. Autorzy analizują zmienne wzorce w strukturze popytu na mięso, ceny i wpływ na ogół wydatków na mięso i produkty mięsne w gospodarstwach domowych pracowników, osób samozatrudnionych oraz emerytów. Przeprowadzono oceny wrażliwości popytu na zmiany cen konsumpcyjnych mięsa w różnych grupach gospodarstw domowych. Autorzy oszacowali elastyczność cenową popytu oraz elastyczność krzyżową popytu.

Słowa kluczowe: przychody i wydatki na żywność, cena, dochodowa i krzyżowa elastyczność popytu, gospodarstwa domowe pracowników, osób samozatrudnionych i emerytów