Elasticity of consumer demand on pork meat in the Slovak Republic

Elasticita spotrebiteľského dopytu po bravčovom mäse v Slovenskej republike

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Abstract: Consumers are the starting point of the final product market vertical line. Their demand is a crucial factor in the decisions about production – what to produce, how much, and what way. The aim of this paper is to provide the analysis of the elasticity of the consumer demand on pork, based on the influence of the change of the determinants influencing the demand on the consumer level of the vertical product line, and subsequent evaluation of the character and intensiveness of the consumer demand elasticities. The evaluation is founded on the determined coefficients for the individual elasticities of consumer demand on the selected commodity. The analysis of the elasticity of the consumer demand on pork is based on a five-factor model of the consumer demand on pork. It was estimated and qualified by the microeconomic theory for estimation and interpretation of individual elasticity coefficients and regression analysis. Furthermore, our attention is focused on determination and interpretation of the coefficients of direct price elasticity of demand, cross-price elasticity of demand, and income elasticity of demand. The value of the price elasticity of demand on pork is 0.770937. As an increase in the buyers' income evokes an increase in demand, it can be stated that pork meat is a superior good for the Slovak inhabitants. Cross-price elasticity of demand between pork and poultry is 0.617363, and between pork and beef it is 0.343435. As the value is positive, pork, poultry, and beef are substitute goods for the consumers. During the studied period, the demand on pork was quarterly decreasing by 0.05162% in average. On the basis of the results received from the analysis of the elasticities of the demand on the consumer level of the studied product vertical line, it can be stated that Slovak consumers of pork meat react more responsively to the change of income than to the change of the price of this good.

Key words: pork meat demand, regression analysis, elasticity of demand, consumer

Abstrakt: Východiskový bod vertikály konečných trhových produktov tvorí konzument – spotrebiteľ. Dopyt spotrebiteľa sa stáva rozhodujúcim z hľadiska rozhodovania sa podnikov o výrobe – čo, koľko, kedy a ako vyrábať. Cieľom príspevku je analyzovať elasticitu spotrebiteľského dopytu po bravčovom mäse na základe vplyvu zmeny identifikovaných determinantov ovplyvňujúcich dopyt na spotrebiteľskom stupni výrobkovej vertikály bravčové mäso a následné zhodnotenie charakteru a intenzity elasticít spotrebiteľského dopytu po bravčovom mäse prostredníctvom zistených koeficientov jednotlivých druhov elasticít spotrebiteľského dopytu po vybranej komodite. Východiskom pre analýzu elasticity spotrebiteľského dopytu po bravčovom mäse je päťfaktorový mocninový regresný model spotrebiteľského dopytu po bravčovom mäse, ktorý bol odhadnutý a kvantifikovaný metódou regresnej analýzy, a mikroekonomická teória zaoberajúca sa výpočtom a interpretovaním jednotlivých koeficientov elasticít. Pri spotrebiteľskom dopyte je pozornosť venovaná zisteniu a interpretovaniu koeficientov priamej (vlastnej) cenovej elasticity dopytu, nepriamej (krížovej) cenovej elasticity dopytu a príjmovej elasticity dopytu. Hodnota príjmovej elasticity dopytu po bravčovom mäse je 0,770937. Nakoľko rast príjmu spôsobuje rast dopytovaného množstva bravčového mäsa, môžeme konštatovať, že bravčové mäso je pre slovenských spotrebiteľov prednostný tovar. Krížová cenová elasticita dopytu po bravčovom mäse vzhľadom k cene hydinového mäsa je 0,617363 a vzhľadom k cene hovädzieho mäsa je 0,343435. Bravčové a hydinové mäso ako aj hovädzie mäso sú pre spotrebiteľov teda substitučnými tovarmi, nakoľko je zistená hodnota kladná. Dopyt po bravčovom mäse sa počas sledovaného obdobia kvartálne znižoval priemerne o 0,05162 %. Na základe zistení z analýzy elasticít dopytu na spotrebiteľskom stupni skúmanej výrobkovej vertikály môžeme konštatovať, že slovenský spotrebiteľ bravčového mäsa reaguje o niečo citlivejšie na zmenu príjmu ako na zmenu ceny uvedeného statku.

Kľúčové slová: dopyt po bravčovom mäse, regresná analýza, elasticita dopytu, spotrebiteľ

Demand, the influence of which on the whole system of production, processing, and distribution of agri-products is constantly increasing, is a decisive factor determining the amount and quality of agricultural production, as well as the market price conditions and costs. The finalizing chain links, which further their interests in the pre-production phases and input sectors of the food production system, achieve the decisive position.

Consumer demand can be consider the primary one. The demand of consumers crucially influences the amount and structure of production and supply, both in time and space. In order to achieve success in the domestic and foreign market, producers and distributors should be aware of the consumer behaviour, and have a good command of efficient methods of influencing it to gain the benefit. Consumers make daily many decisions about their purchase. Nagyová et al. (2007) state that majority of big traders pay their careful attention to receiving the information about their consumers' behaviour – where, when, how, how much, and why they do their shopping. The identification of the key factors influencing the demand on the consumers' level of the product vertical line is a *conditio sine qua non* of the demand analysis. It is based on the theory of maximizing consumer's utility, whose demand gains the dominant position. According to Horská and Orémus (2008), it is necessary to identify different characteristics of consumers and the great economic differences between the original and the new member states of the EU. As stated by Stávková et al. (2008), consumer decisions are made only on the basis of a few criteria. Instead of comparing more characteristics, a consumer decides according to price criteria (he/she issues from the presumption that a higher price means also a higher quality).

The aim of this paper is to analyze the elasticity of consumer demand on pork. This analysis is based on the factors identified as influencing the consumer demand on this commodity. Increasing living standards and prosperity, decreasing unemployment and rapid economic growth are the typical characteristics of the current development in the Slovak Republic, wrote Matejková et al. (2008). In order to deal with the lack of money, households from the lower income levels reduce their expenditures for foodstuffs more often than those from the higher income levels (Melicharová 2006).

Responsiveness to the reactions in income-demand relations is usually evaluated by the coefficients of elasticities. These coefficients evaluate the relationships between the changes of the amount of the studied demand and the changes in the consumers' income. Their value is interpreted in percentage (Syrovátka 2007). Besides the income elasticity of demand, this paper will also deal with the intrinsic price and cross elasticities of demand.. As stated by Akbay and Jones (2006), price elasticities of demand play an important role in the support of the selected products; however, income elasticities are not less important. These authors used in their research a linearized AIDS model to estimate the demand elasticities. According to Bielik (2006), mutual interactions between the factors cause the following characteristics of the demand on agri-products:

– The demand on the agri-products reacts with low elasticity to the change of income, particularly its increase. The elasticity of income should vary from +0.1 to +0.2.
– The elasticity of income in the demand of the individual agri-products markedly differs. It is partially positive, rarely in some products higher than +0.3, and partially negative.
– The elasticity of price in demand of agri-products is generally low, though different in the particular products. Elastic prices higher than –0.3 are subject to a high substitutability.

Econometric model is defined as the system of economic structures. According to Tvrdoň (2006), there are usually used non-linear models for the models of demand, as well as for the models of production function. Linear function does not concisely express the dependence of consumption on demand, and for food products, its result is usually in discrepancy with reality. For this reason, power function is frequently used instead of linear function.

MATERIAL AND METHODS

Internal data of the Research Institute of Agricultural and Food Economics in Bratislava, as well as the data provided by the Statistical Office of the Slovak Republic will be used in this paper. To reach the aim of the research, all the available data on the relationships of demand in the individual stages of the linear vertical line – producer/farmer, processor, wholesale/retail, and consumer will be collected.

The period 1993–2006 is studied, and there are used the quarterly data of the individual years. The data that are not collected in the year quarters are, after the consultations with experts and on the base of the theoretical knowledge, converted to meet the condition of compatibility.

The construction, quantification, verification, and application of a one-equation econometric model of the consumer demand on pork meat can be consid-

ered an auxiliary target of this research. Quarterly net income per inhabitant, consumer price of pork, poultry, and beef per kilogram and year quarter serve as the background data for the quantitative analysis and model estimation, which is based on the identification of key factors influencing demand relationships on the individual markets of the commodity vertical line.

The used power multifactorial regression analysis model is a non-linear regression model. The most frequent way of linearization of the non-linear econometric model (which is non-linear in its parameters) is logarithmic transformation (Green 2003, p. 148; Gujarati 2004, p. 191; Hušek 1999). The general equation form of the multifactorial power model can be written as follows:

$$y = \beta_0 \times x_1^{\beta_1} \times x_2^{\beta_2} \times ..... \times x_k^{\beta_k} \times u_i$$

The written power function with constant coefficients (coefficients of elasticity $\beta_1 - \beta_k$) is non-linear in its parameters. Logarithmic transformation is based on linearization of the functional form of an econometric model using logarithms. The equation which will be linear in its parameters can be received by natural logarithms:

$$\ln y = \ln\beta_0 + \beta_1 \ln x_1 + \beta_2 \ln x_2 + ... + \beta_k \ln x_k + \ln u_i$$

The parameters of this bi-logarithmic model (log-log) can be estimated by regression analysis based on the least square method, since the non-linearity of the variables in the transformed model is not problematic in the estimation. Parameters "β" have the interpretation of the elasticity of dependent variable to the respective independent variable coefficients (Hušek 1999).

The statistical software SAS is used to quantify the power regression model. Following the regression analysis, statistical tests of the estimated parameters are performed. The coefficient of multiple determination (R^2) is most frequently used as the degree of consistency of the estimated model with empirical data. The adjusted version $\bar{R}^2$ can be used as stricter index. It was received by correction of the coefficient of determination by degrees of freedom. It is *correction coefficient of multiple determination* ($\bar{R}^2$). Testing of statistical significance of the regression model parameters is performed by *t-statistics.* Stochastic significance of the model as a whole, measured by the coefficient of multiple determination R^2, is tested by *F/statistic.*·

It is advised to verify the estimated econometric model by the appropriate testing techniques and diagnostic procedures, in order to check whether the classical conditions are fulfilled. In case of failure in fulfilling these conditions, the model may exhibit the following errors:

– heteroscedascity and autocorrelation: as a result of failed condition of random components;
– multicollinearity: as a result of failed condition of explanatory variables matrix.

The *coefficients of elasticities* are a crucial and inherent part of the demand analysis. The quantified power regression model of the consumer demand, as well as the microeconomic theory on calculation and interpretation of the individual elasticity coefficients, are the basis for their analysis. Our attention will be focused on the study and interpretation of the coefficients of *direct price elasticity of demand, cross-price elasticity of demand, and income elasticity of demand.*

RESULTS AND DISCUSSION

Estimation of consumer demand on pork meat

Identification of the essential determinants influencing the consumer demand on pork meat is based on the identification of the key factors determining the demand on the consumers' level of the product vertical line. Estimation of the demand on pork is based on the theory of consumer utility maximization, and the theory of demand.

To estimate the functions of the consumer demand, there were used the following presumptions:

(1) consumer demand on pork meat is a function of pork meat price, consumer's income, price of poultry, price of beef, and trend factor

$$Q_D^{PM} = f(P^{PM}, I, P^{POULTRY}, P^{BEEF}, t)$$

where:

Q_D^{PM} – demand, or the demanded amount of pork meat in kg/person/year
P^{PM} – real price of pork meat in Sk/kg (recalculated from current price of pork by relevant price indices)
I – real income in Sk/person/year (recalculated from the current income by the relevant price indices)
$P^{POULTRY}$ – real price of poultry in Sk/kg (recalculated from the current price of poultry by the rel evant price indices)
P^{BEEF} – real price of beef meat in Sk/kg (recalculated from the current price of beef by the relevant price indices)
t – trend factor

(2) multifactorial power regression model will be the appropriate regression model, and the chosen model will sufficiently meet the flow of empirical data.

After testing the linear and non-linear forms of models, it was found that to estimate the consumer demand on pork expressed by the functional dependency

$$Q_D^{PM} = f(P^{PM}, I, P^{POULTRY}, P^{BEEF}, t)$$

the five-factorial power regression model is the most suitable indeed. The general form of this model is as follows:

$$Q_D^{PM} = \beta_0 \times P^{PM\,\beta_1} \times I^{\beta_2} \times P^{POULTRY\,\beta_3} \times \times P^{BEEF\,\beta_4} \times t^{\beta_5} \times u_i$$

y – dependent variable
$x_{1,2,3,4,5}$ – independent variables
$\beta_{0,1,2,3,4,5}$ – estimated parameters
u_i – stochastic factor

The analytic form of the five-factorial power regression model of the estimation of the demand on pork can be generally formulated as follows:

$$Q_D^{PM} = \beta_0 \times P^{PM\,\beta_1} \times I^{\beta_2} \times P^{POULTRY\,\beta_3} \times \times P^{BEEF\,\beta_4} * t^{\beta_5} * u_i$$

Since the power model is non-linear, to serve the purposes of regression analysis, it should be converted into a model which is linear as far as its parameters are concerned, thus the function is logarithmic.

$$\ln Q_D^{PM} = \ln(\beta_0 \times P^{PM\,\beta_1} \times I^{\beta_2} \times P^{POULTRY\,\beta_3} \times \times P^{BEEF\,\beta_4} \times t^{\beta_5} \times u_i)$$

$$\ln Q_D^{PM} = \ln\beta_0 + \beta_1 \times \ln P^{PM} + \beta_2 \times \ln I + \beta_3 \times \ln P^{POULTRY} + + \beta_4 \times \ln P^{BEEF} + \beta_5 \times \ln t + \ln u_i$$

The coefficients β_1–β_5, standing by the individual variables – determinants of demand in estimated consumer demand on pork – are the coefficients of the individual kinds of elasticities, which have undergone our interpretation and evaluation.

The chosen outputs of the regression analysis performed by the ordinary least square method in the statistical program SAS are stated in the Table1.

In order to be suitable for the evaluation of the studied dependency, the regression model must meet the following three conditions:

(1) R^2 adj is high enough, *F*-test is significant, most *t*-tests are significant.

After the evaluation of the tests, it can be claimed that the model is suitable for evaluation. The significance of the model parameters on α = 0.05 level was verified by testing statistics (*t*-statistics). It can be stated that all the parameters included in the model of consumer demand on pork meat are statistically significant; hence the indicators explain the changes of the dependent variable – the consumer demand

Table 1. Outputs of the regression analysis

R^2		0.669519			
R^2adj (Adj *R* – *Sq*)		0.636471			
F Value		20.258922			
Significance *F*		5.42776E-11			
Variable *x*	Coefficient	Estimated parameters	*t*-value	*P*-value	Significance
	β_0	–6.74424	–5.35791	2.1363E–06	**
P^{PM}	β_1	–0.43549	–3.23752	0.00214326	**
I	β_2	0.770937	5.533635	1.1502E–06	**
$P^{POULTRY}$	β_3	0.343435	2.903655	0.00547683	**
P^{BEEF}	β_4	0.617363	5.399833	1.8436E–06	**
t	β_5	–0.05162	–2.49025	0.01613313	*

* 5% significance, ** 1% significance
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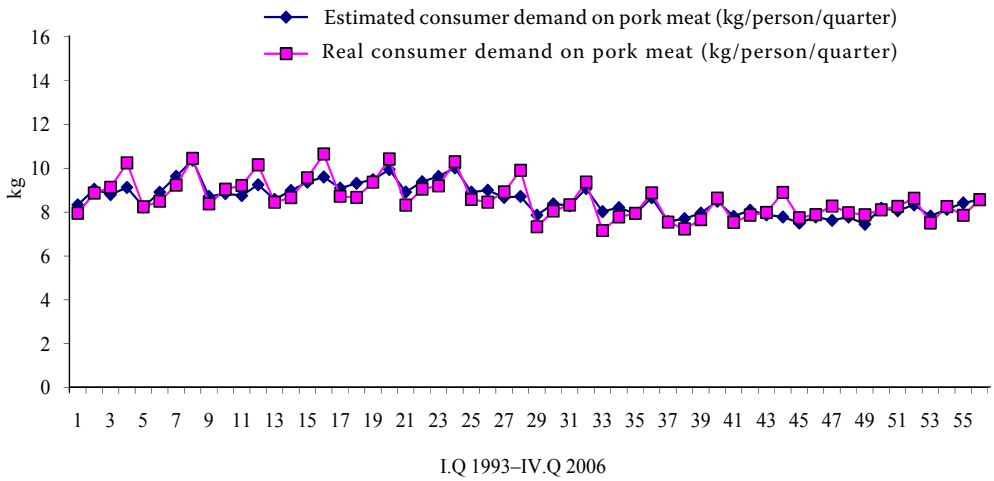

Figure 1. Real versus estimated consumer demand on pork meat in kg per person in the individual quarters of the studied period 1993–2006 in the Slovak Republic

Resources and graph: Authors

on pork. Consequently, all independent – explaining variables significantly influence the demand on pork.

The function of the resulting analytical model of the consumer demand on pork meat can be formulated as follows:

$$\ln Q_D^{PM} = -6.74424 - 0.43549 \times \ln P^{PM} + 0.770937 \times \times \ln I + 0.343435 \times \ln P^{POULTRY} + 0.617363 \times \times \ln P^{BEEF} - 0.05162 \times \ln t + \ln u_i$$

After delogarithming the coefficient β_0, which was the condition for the recurrent formulation of the original non-logarithmed power model, the estimated five-factorial power model of the consumer demand on pork can be formulated as follows:

$$Q_D^{PM} = 0.001178 \times P^{PM^{-0.43549}} \times I^{0.770937} \times \cdot \times P^{POULTRY^{0.343435}} \times P^{BEEF^{0.617363}} \times t^{-0.05162} * u_i$$

The difference between the estimated and real consumer demand on pork meat fluctuates within the interval ⟨–0.9; +0.64⟩ per kilogram/person/quarter, or ⟨– 8.9%; +7.4%⟩, excluding the extreme values, which were recorded in:

– IV.Q 1993, our estimation was lower by 1.1 kg per person/quarter (–10.9%);

– IV.Q 1996, our estimation was lower by 1.0 kg per person/quarter (–9.8%);

– IV.Q 1999, our estimation was lower by 1.2 kg per person/quarter (–12.0%);

– I.Q 2001, our estimation was higher by 0.8 kg per person/quarter (12.0%);

– IV.Q 2003, our estimation was higher by 1.1 kg per person/ quarter (–12.6%).

Autocorrelation testing

The *Durbin-Watson d statistics* was used for the autocorrelation testing, its value was *1.711321*. On the base of the procedure described in the methodology, we analyzed the positive, negative, or non-existing autocorrelation of this value. It was found that the reached value falls into the so-called *first grey zone*, which is the zone where the existence of autocor-

Table 2. Autocorrelation testing

DW	1.711321	Interval	Autocorrelation
n (number of observations)	56	0–1.38	positive autocorrelation
k (number of variables)	5	*1.38 –1.77*	*1st grey zone*
dl	1.38	1.77–2.23	non-existing autocorrelation
du	1.77	2.23–2.63	2nd grey zone
4-dl	2.62	2.63 <	negative autocorrelation
4-du	2.23		

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relation cannot be proven. These results are given in the Table 2.

Generally it holds that the probability of the autocorrelation is higher in shorter time intervals of the individual observations (monthly, quarterly). The majority of the economic data in time series shows certain persistence, the observations in several sequencing periods are not independent in the correlated time series. Most frequently, it is a positive autocorrelation, which shows for example cyclic changes of a trend. This fact was found in our model, too.

Heteroskedascicity testing

Two tests were used in testing for the occurrence of another negative phenomenon, which is heteroskedascicity – Breusch-*Pagan test* and *White test*. The hypothesis of heteroskedascicity was rejected in both tests (the calculated *chi* was lower than the *chi* found in the Table 3), therefore, in this model *homoskedascicity* can be confirmed (the requirement of finite and constant variance of random errors, and thus also residuals, was satisfied).

Multicollinearity testing

To detect another undesirable phenomenon of multicollinearity in the model, the *Farrara-Glauber* test was used. The calculated value of chi test was higher than its table value, therefore it can be stated that some of the variables cause a significant collinearity in the regression model. This fact is reported in the Table 4A. According to the evaluation of the pair correlation coefficients of the explanatory variables, the value of which should not be higher than 0.8, or more precisely 0.9 (Table 4B), it can be stated that a strong collinearity is confirmed in case of the variable 'poultry price', which reaches the value *0.912*.

Table 3. Heterokedascicity testing

Breusch – Pagan test		White test	
Chi calc	2.890667	Chi calc	4.742667
Chi tab	11.07048	Chi tab	18.30703
Chi calc < chi tab = *homoskedasticity*		Chi calc < chi tab = *homoskedasticity*	

Resources: Authors

Table 4. Multicollinearity testing (1)

A		**B**					
Farrar-Glauber			ln *PM*	**ln POUL.**	ln BEEF	ln *I*	ln *t*
Chi calc	245.3461777	ln PM	1	***0.912***	0.712	0.262	–0.641
Chi tab	11.07048257	**ln POUL.**	***0.912***	1	0.531	–0.411	–0.816
Chi calc < chi tab = *multicollinearity*		ln BEEF	0.712	0.531	1	0.159	–0.171
		ln *I*	–0.262	–0.411	–0.159	1	0.564
		ln *t*	–0.641	–0.816	–0.171	0.564	1

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Table 5. Multicollinearity testing (2)

Variable *x*	*R* multi	*F*	*VIF*	*TOL*
P^{BM}	0.956562024	137.2692	11.76622	0.084989
I	0.64531961	9.098556	1.713612	0.583563
P ^{POUL}	***0.960921881***	***153.6358***	***13.04987***	***0.076629***
P^{BEEF}	0.830417421	28.32512	3.221578	0.310407
t	0.902584309	56.04191	5.395444	0.185342

Resources: Authors

Multicollinearity in the model can be detected also by the '*variance inflation factor' (VIF),* which signals a severe multicollinearity if its value is higher than 10; and also by the "*tolerance value"(TOL),* which signals a strong multicollinearity if its value is lower than 0.1. The following table shows the results, where the strong multicollinearity can be detected in the second independent variable 'poultry price'. The values R multi and F were the highest, the value VIF was higher than 10, and the value TOL was lower than 0.1 (Table 5.)

If we had aimed at the elimination of the multicollinearity from the model, we would have excluded the variable P^{POUL}, and would have made the subsequent recalculation of the model. However, as our aim was to research the demand elasticities, further recalculations were not conducted.

Elasticity analysis of the consumer demand on pork meat

Elasticity analysis of the consumer demand on pork meat is the next step after the quantification model of the consumer demand on this commodity. The individual kinds of elasticities of the consumer demand on pork were investigated and analyzed. The estimated power regression model of the consumer demand on pork was used in order to find out the coefficients of elasticities, since it is most appropriate for the description of the analyzed dependence, and moreover, the coefficients β_1–β_5, which were estimated by regression analysis, are at the same time the coefficients of elasticity.

Our attention was focused on the reaction of the demand on pork to the changes in various determinants. The research was based on the estimated and quantified power regression model of the consumer demand on pork, the general model of which is as follows:

$$Q_D^{BM} = \beta_0 \times P^{BM\,\beta_1} \times I^{\beta_2} \times P^{HYD\,\beta_3} \times \times P^{HOV\,\beta_4} \times t^{\beta_5} \times u_i$$

The coefficients β_1–β_5 of the individual variables – determinants of demand in the estimated consumer demand on pork are the coefficients of elasticities. Their interpretation and evaluation will be carried out.

Coefficient β_1 of the variable "pork price" is the coefficient of the *own price elasticity of the demand on pork.*

Coefficient β_2 of the variable "net income" is the coefficient of the *income elasticity of the demand on pork.*

Coefficient β_3 of the variable "poultry price" is the coefficient of the *cross price elasticity of demand on pork.*

Coefficient β_4 of the variable "beef price" is the coefficient of the *cross price elasticity of demand on pork,* too.

Coefficient β_5 of the variable "trend factor" indicates the change of the demand on pork during the studied period in percentage.

Estimated power regression model of the consumer demand on pork with quantified coefficients β can be formulated as follows:

$$Q_D^{PM} = 0.001178 \times P^{PM^{-0.43549}} \times I^{0.770937} \times \times P^{POULTRY^{0.343435}} \times P^{BEEF^{0.617363}} \times t^{-0.05162} \times u_i$$

– *Price elasticity of demand* reaches the value $E_{PD}^{BP} = -0.43549$. It means that as the price of the pork increases, the demand on it decreases. Thus when the price of pork increases by 1 per cent, the demand on it decreases by 0.43549 per cent. The calculated value corresponds with the theory of demand, which declares that the relationship between the demanded amount and price is inverse, and the own price elasticity should be negative. It can be also stated that the demand on pork is price-inelastic (Tomek, Robinson 1991; Bielik 2006; Zentková 2002; Janda 1994)
– *Income elasticity of demand* was another one of the analyzed elasticities. Its value was $E_{PD}^{BP} = 0.770937$. It means that when the income increases by 1 per cent, the demand on pork increases by 0.770937 per cent. Forasmuch as the increase of income evokes the increase of the demand on pork, it can be stated that pork meat is a superior good for the Slovak inhabitants. Nevertheless, this demand can be defined as income-inelastic, as the increase of income is faster than the increase of demand, thus pork can be considered a normal good.
– The value of the *cross-price elasticity of demand* on pork to the price of poultry is $E_{PD}^{BP} = 0.617363$. This value means that if the price of poultry increases by 1 per cent, the demand on pork increases by 0.617363 per cent. As the calculated value was positive, it can be stated that pork and poultry are substitutes. This finding is quite understandable considering the responsive reactions of some groups of consumers on the changes in prices of the substitute and complementary goods. The above mentioned statement about the pork being a normal good is of highly testimonial value under these circumstances.

– The value of the *cross-price elasticity of demand* on pork to the price of beef is $E_{PD}^{BP} = 0.343435$. This value means that if the price of beef increases by 1 per cent, the demand on pork increases by 0.343435 per cent. Thus it can be stated that pork and beef are not substitutes, as the increase in beef price evokes the demand on pork. The consumers' reactions on the increase of this type of meat are highly responsive, which fact is reflected by the decrease of its consumption in favour of poultry or beef.
– In conclusion, it can be stated that the demand on pork was quarterly decreasing in average by 0.05162% during the analyzed period

The results of the analysis of the demand elasticities on the consumer level of the analyzed product vertical line show that Slovak consumers of pork react more responsively on the change in income than on the change of price of the analyzed good.

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Arrived on 9th December 2008

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