Selected food verticals and their impact on prices of food products

Vybrané potravinové vertikály a ich vplyv na ceny potravinárskych výrobkov

S. Krížová

Research Institute of Agricultural and Food Economics, Bratislava, Slovak Republic

Abstract: The article deals with the analysis of food market on the level of consumer prices structure, through the identification of margins in the selected food verticals and through the analysis of consumer behaviour associated with changes in prices and income of population. The article also discusses the factors which may affect the current growing trend in prices of food in the SR and worldwide and subsequently, the reduction of gap between the Slovak and the EU prices.

Key words: price, margin, dairy products, bread, food expenditures

Abstrakt: Príspevok sa zaoberá analýzou trhu potravín, riešenej na úrovni štruktúry spotrebiteľských cien prostredníctvom identifikácie výšky marží vo vybraných vertikálach potravín a analýzou spotrebiteľského správania sa v súvislosti so zmenami cien a príjmovej úrovne obyvateľstva. Práca sa dotýka tiež faktorov, ktoré môžu vplývať na súčasný celkový nárast cien potravín v SR i celkovo vo svete a následné priblíženie cenových úrovní potravín v SR krajinám Európskej únie, s ktorými sú vzájomne komparované.

Kľúčové slová: cena, marža, mliečne výrobky, chlieb, výdavky na potraviny

The current trend of globalisation affected almost every area of social and economic life, including the sector of agricultural production, the related processing industry, and trade. Globalisation affects every strategic decision taken by the business subjects. Therefore, Slovakia cannot avoid the present effects of the agflation and convergence of economy which affect the development of prices for food products. On the global scale, we can observe creation of the connections between food and energy sector, as well as the gradual adaptation of food sector to the development of prices in oil market.

The growth in food prices affected almost every country, including the economically most developed nations. Given the current development in the food market, it is necessary to consider the fact that the imbalance between supply and demand, and the resulting growth in prices, were caused by the combination of several factors. One such factor is the cyclical impact of lower crop yields in the main supplying countries on global markets. Other factors include the global population growth, economic development of many third world countries, hence the acceleration of demand for food. Also important is the growth in prices of fuel and energy and the associated growth in the demand of competitors for crops to produce biofuel.

Veselská (2006) states that one of the features describing the current situation is the fact that an agricultural enterprise as the producer of the base material for further food or non-food production has been losing its decisive impact on the food market and has been increasingly affected by the neighbouring environment. The shift of focus on the final components of production – processing and distribution – has created new conditions for farmers which are more dependent on the dominant subjects in the respective food chain. This is exemplified by the growing economic power of trade and food industry in forming the demand for food and also the declining share of agricultural base material in the pricing structure of the final food product.

The period of the Slovak Republic and other countries in the Central and Eastern Europe accession to the EU has been a complex one; because it is the first ever Community expansion on such a massive scale; and also because Europe now has to define its own role in creating conditions for high competitiveness and economic performance on the global scale; and, at the same time, to provide for social cohesion within the framework of the approved European social model. This also applies to the formation of a new role of agriculture which is becoming the part of the wide group of industries more or less associated with the food production sector.

To this end, Bečvářová (2008) states the key effects of changes in business environment caused by the globalisation processes. The traditional understanding of agriculture as a relatively closed and specific sector that provides production of food in the given territory has recently acquired new dimensions. Today's agriculture is typical in that it interacts with the research sector, the enterprises supplying inputs, processing, services, distribution and trade. The system of food production has been integrating into a number of sectors within the national and global economy. All components of the system have undergone significant changes in the overall focus of the sector, the results of research and development and their contribution to the production of agricultural inputs, production, processing of products, distribution and sales of food.

According to Bunte (2007), the changes in consumer's requirements plus the components of globalisation, sustainability and generation of added value suggest new trends in agriculture and food. The future government policy regarding food will be focused mainly on food safety, availability of food, environment, animal welfare, as well as the sound and fair business practices. The importance of agriculture as such is on the decline; the economic focus in the food vertical has moved towards the processing of food, trade and services.

Just as in other countries, the Slovak Republic also experienced a growth in the number of consumers that are interested in the high-quality and nutritionally balanced food and are willing to pay more for products with the higher value added. Stávková et al. (2007) also point out that the demand for food with the higher value added has grown in the Czech Republic.

METHODOLOGY

The data analysed in the article come from the publications of the Statistical Office of the Slovak Republic and from the APA. The comparison of the selected indicators with the EU countries mostly relied on statistical databases of the Eurostat and the OECD.

The analysis of price relations between the purchase, processing and consumer prices in the selected food products was based on the monthly evaluation of the development of marketing margin spread between the prime producer (share of the prime producer in the consumer price), processing industry (processing margin) and trade sector (trade margin) for the selected food products in 2006–2008; using consumer prices of food collected by the SO SR on the level of the average monthly values.

The subject of research was the structure of consumer prices for the selected commodities which has the following internal structure:
– Share of prime producers (PP)
– Processing margin (SM)
– Trade margin (OM)
– Rate of VAT (DPH)

$PP + SM + OM + DPH = 100\%$
$SM = OC - NC$ (Sales price – Purchase price)
$OM = SC - OC$ (Consumer price – Sales price)
$PP = NC/SC \times 100$

RESULTS AND DISCUSSION

Analysis of the structure of consumer prices

Milk and dairy products

The consumption of milk and dairy products per capita in the SR has experienced a falling trend over the past five years (with the exception of hard cheeses). With regard to the recommended food rations, this trend is negative. In terms of the structure of expenditures on net food items, the milk and dairy products are the second biggest item among food items, after meat and meat products. Their share in the total food consumption achieved about 20%.

The structure of average consumer prices during the individual months in 2006, 2007 and 2008 shows that the share of prime producers in consumer prices for the selected dairy products ranged from 10.1 to 66.3%, with the lowest share being found in the case of fruit yoghourt and the highest share was found in the case of sour cream. On the whole, the share of prime producers in the consumer price of products experienced a balanced, slightly increasing trend, with the exception of the last few months, when the share of prime producers fell for all milk commodities.

Table 1. Overview of the average shares in consumer price of the individual components of the dairy products vertical

Type of product	2006			2007			2008*		
	prime producers	processors	trade sector	prime producers	processors	trade sector	prime producers	processors	trade sector
Half-skimmed milk	48.5	19.0	16.6	49.4	19.4	15.3	48.5	19.3	16.3
Fruit yoghourt	10.3	56.9	16.9	10.8	58.1	15.1	12.0	55.1	16.9
Eidam cheese	62.3	3.4	18.4	61.3	4.6	18.2	61.2	1.2	21.6
Butter	52	10.9	21.1	51.4	9.9	22.7	53.3	4.8	25.9
Fat curd cheese	57.5	13.6	12.9	59.2	13.1	11.8	63.6	12.8	7.6
Sour cream	57.8	8.8	17.4	59.6	10.8	13.7	64.2	5.9	13.9
Average	48.1	18.8	17.2	48.6	19.3	16.1	50.5	16.5	17.0

* data for January–May (sour cream January–April)
Source: SSO SR, APA-ATIS, RIAFE calculations

The share of processors in consumer price of milk products ranged from 6.4 to 61.3%. The lowest share of processors in was found in the case of Eidam cheese and the highest values were identified in the group of fruit yoghourts. The share of processors in consumer prices for various dairy products recorded a mixed development. Milk, yoghourts and curd cheese recorded a balanced trend without major changes. In the case of Eidam cheese, the share of processors was asymmetric and sometimes even achieved negative values. In this particular case, the processing margin fell down considerably and it was also much lower than the trade margin. Over the recent months, the share of processors fell down in consumer prices of butter and sour cream, while the share of trade sector increased.

The share of trade sector in the consumer price of milk products ranged from 6.3 to 29.0% and developed in a relatively symmetrical pattern, with the exception of butter, sour cream (growth over the recent monitored months) and curd cheese (decline in recent months). The lowest share of trade sector in the consumer price was identified in the case of curd cheese and was highest in the case of Eidam cheese.

The average shares of prime producers, processor and trade sector in the consumer price of the individual dairy products shows that the average share of prime producers in the consumer price has grown

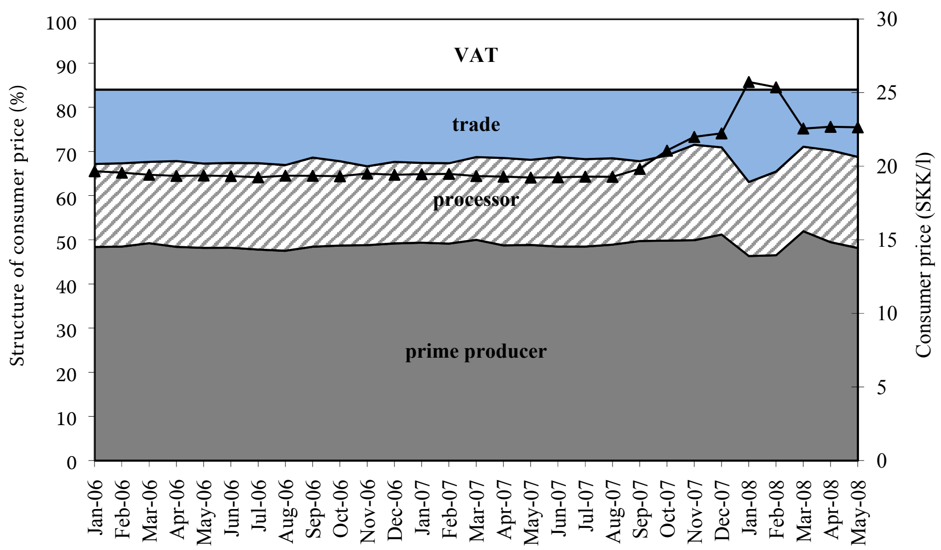

Figure 1. Milk – analysis of the consumer price structure in 2006–2008

Source: SSO, APA-ATIS, RIAFE calculations

over the monitored period (with the exception of Eidam cheese and milk). The share of processors in 2007 has grown for most of the commodities; (except butter and curd cheese), although it dropped down in the first few months of 2008. The share of trade sector in 2007 dropped down for most commodities (except butter), when compared to 2006. In 2008, the average value of the share increased (decline identified only in the case of curd cheese) – Table 1.

Average consumer prices of milk and dairy products did not change much over the monitoring period, although they started to increase since September 2007 and the increasing trend also continued in the first five months of 2008, in the case of sour cream and yoghourts (decline recorded only in May 2008). The consumer prices slightly dropped down in the last three months (March, April, and May) in the case of other monitored commodities (milk, Eidam cheese, butter, curd cheese). The prices of the selected dairy products grew in average by 13.2% over the analysed period (January 2006 through May 2008) while the highest growth was identified in the case of butter (by

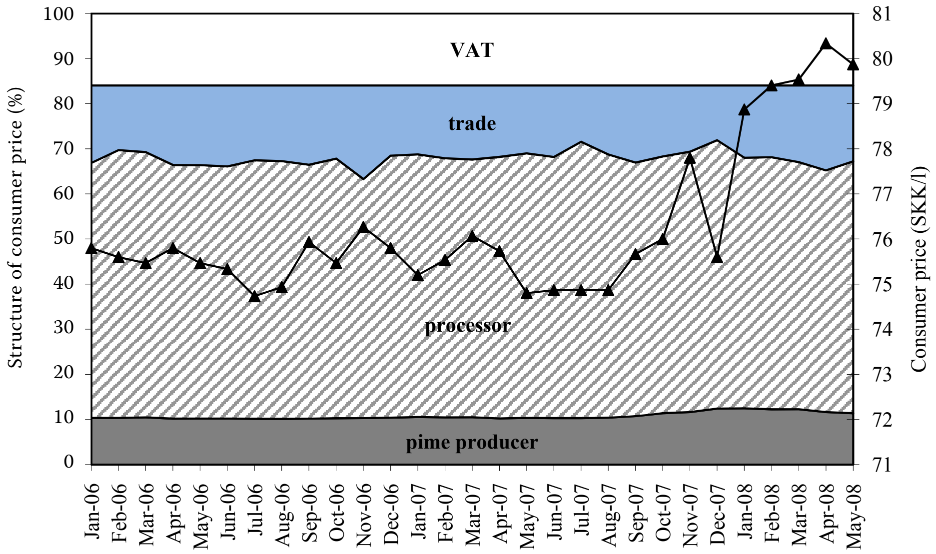

Figure 2. Fruit yoghourt – analysis of the consumer price structure in 2006–2008
Source: SSO, APA-ATIS, RIAFE calculations

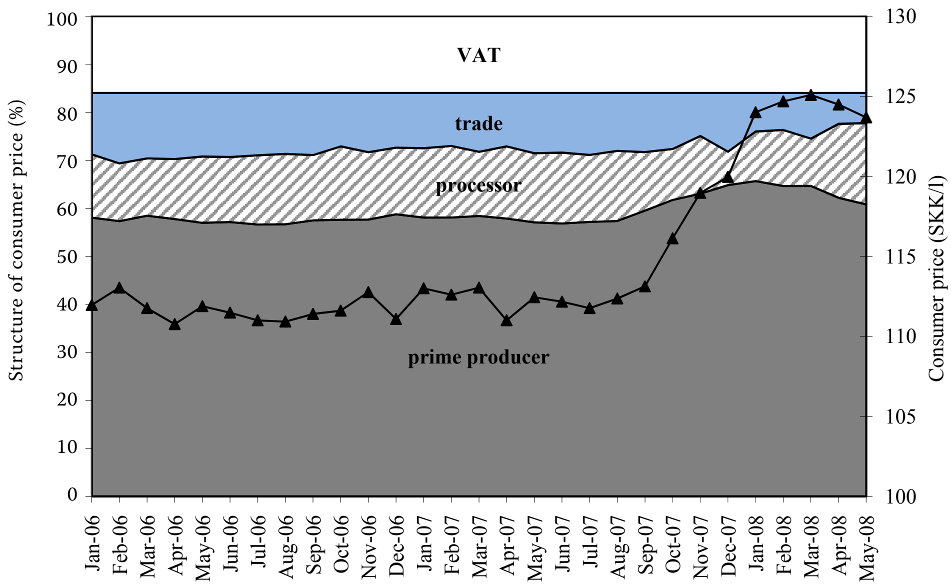

Figure 3. Fat curd cheese – analysis of the consumer price structure in 2006–2008
Source: SSO, APA-ATIS, RIAFE calculations

17.6%), and the lowest (by 7.5%) in the case of fruit yoghourt. The structure of consumer prices, as well as consumer prices of the selected analysed products are illustrated in Figures 1 through 3.

Bread

The consumption of bread per capita has recorded a falling trend and compared to 2000, it dropped down to 40.2 kg in 2006. Compared to the range of the recommended food ration for cereals in the value of flour, the consumption of cereals is slightly lower. As regards the expenditures structure of net food items, the Slovak population spends about the same amount (20% of the total food expenditures) on bread and cereals as on milk and dairy products.

The structure of the average consumer prices (according the SO SR) during the individual months in 2006, 2007, and 2008 shows that the share of prime producers in the consumer price of bread ranged from 12.3% to 25.9%, with the lowest share identified in January 2006 and the highest share recorded in March 2008. On the whole, the share of prime producers in the consumer price of products recorded a balanced, slightly increasing trend.

The share of processors in the consumer price of bread ranged from 46.1 to 62.1%. The lowest share of processors was found in April 2008 and the highest in February 2006. On the whole, the share of prime producers in the consumer price of bread recorded a balanced, slightly decreasing trend. The share of processors during most of the monitored months dropped down to the benefit of prime producers.

The share of the trade sector in the consumer price of dark bread ranged from 5.9% to 15.19% and developed in a relatively symmetrical pattern over the monitored months, with the exception of the first months of the monitoring period and October 2007 (lower share). The lowest share of the trade sector in the consumer price of bread was identified in October 2007 and the highest share was found in December 2006.

The average shares of prime producers, processor and trade sector in the consumer price of dark bread show that the average share of prime producers in the consumer price has slightly grown over the monitored

Table 2. Overview of the average shares in the consumer price of the individual components of the dark bread vertical

Type of product	2006			2007			2008*		
	prime producers	processors	trade sector	prime producers	processors	trade sector	prime producers	processors	trade sector
Dark bread	14.6	57.2	12.2	21.3	49.7	13.1	24.3	48.1	11.6

*data for January–May
Source: SSO, APA-ATIS, RIAFE calculations

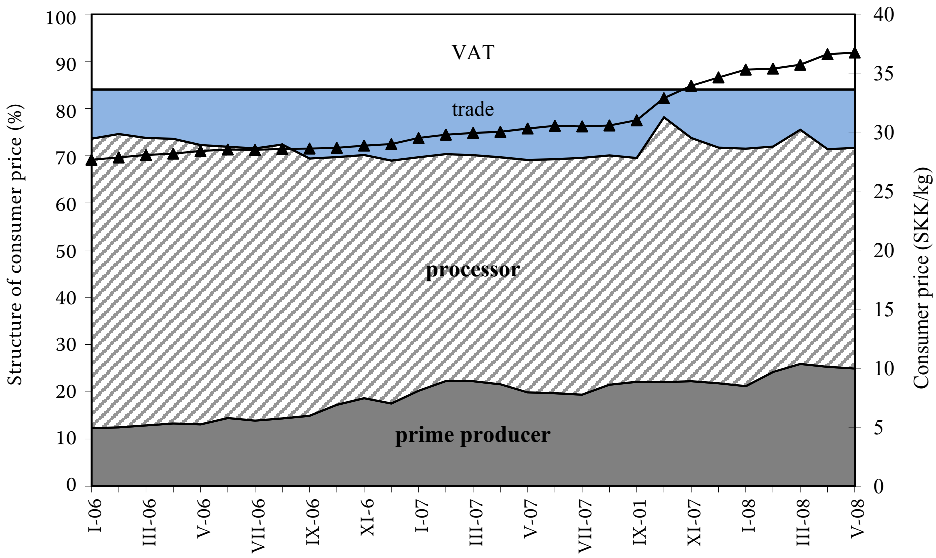

Figure 4. Dark bread – analysis of the consumer price structure in 2006–2008
Source: SSO, APA-ATIS, RIAFE calculations

period. The share of processors over the monitored period dropped down. Compared to 2006, the share of trade sector in 2007 slightly increased, although it dropped down again in the first five months of 2008 – Table 2.

The average consumer prices of bread slightly increased over the monitoring period, although they started to increase since September 2007 and the increasing trend also continued in the first five months of 2008. The prices of bread grew by 32.8% over the analysed period (January 2006–May 2008). The structure of the consumer price of bread, as well as the development of consumer prices during individual months of monitoring are shown in Figure 4.

Consumer prices and factors affecting their structure

The growth of consumer prices in Slovakia amounted to 7.5% in 2007 (CR – 11.9%, Hungary – 13.9%) and in June 2008 it rose to 9.6% against the previous year. The consumer prices of food in Slovakia increased by 2.1 pts more than the EU average (by 3.2 pts more than the Eurozone average). This was a general trend in the new member states where the process of price adaptation has taken place after the accession to the EU. On the other hand, a better exchange rate of the national currency in Slovakia helped to mitigate the growth in food prices, mainly regarding the imported items.

The price changes in the Slovak food market varied for different items. Compared to the previous year, the consumer prices of bread and bakery products increased by 20% in 2007 and by 13% in the case of milk and dairy products. The prices of meat experienced a lesser growth rate (by 11%), as did the prices of fruit and vegetables (the average year-on-year growth rate of 4%).

Even though the food prices in Slovakia are rising, the published comparative survey of the Eurostat shows that they are still one of the lowest in Europe. The Eurostat collected data on prices of more than 500 comparable goods in 37 EU countries (data for 2006). Based on the sample, the Eurostat computed the Price Level Index (PLI) for the selected food, beverages and tobacco products. This indicator is calculated as the ratio of the purchasing power parity and the exchange rate of each country and may be compared with the EU average, for example. If the value is higher than 100, the selected goods are relatively more expensive than the EU average and vice versa – Figure 5.

Overall, the price level in Slovakia amounted to 67% of the EU-27 average in 2006, in the sector of food and non-alcoholic beverages. Compared to other EU countries, the price level is low. However, these prices are high with regard to the income of the SR population. Slovak households spent in average 24.8% of the total consumer expenditures for purchase of food and non-alcoholic beverages in 2006 (24.3% in

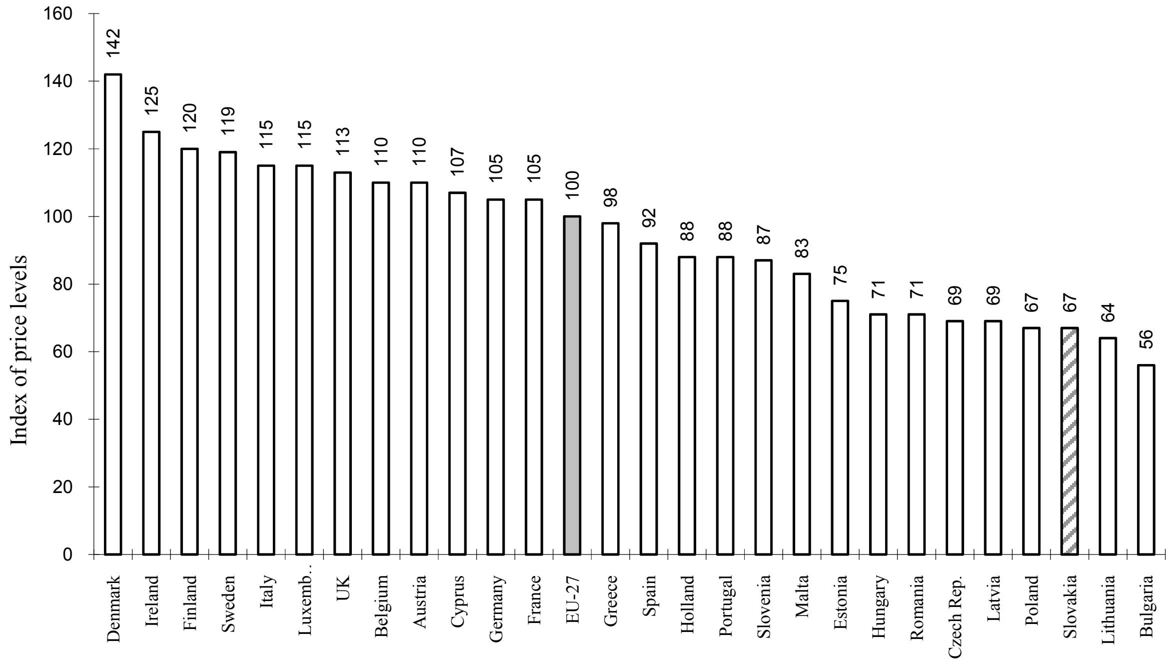

Figure 5. Price level indices for food and non-alcoholic beverages (EU 27 = 100)
Source: Eurostat

Table 3. Income and expenditures of the SR population, by the COICOP classification

Income and expenditure by COICOP classification	Index		
	2005/04	2006/05	2007/06
Net cash income	104.0	113.8	112.0
Net cash expenditure	104.2	114.7	109.0
Consumer expenditures	104.3	113.2	108.4
Food and non-alcoholic beverages	102.2	106.7	106.5
Alcoholic beverages and tobacco	96.2	109.3	109.0
Food, beverages and tobacco	101.6	107.0	106.7
Share of food, beverage and tobacco in consumer expenditures (%)	**2005**	**2006**	**2007**
Food and non-alcoholic beverages	26.3	24.8	24.3
Alcoholic beverages and tobacco	3.0	2.9	2.9
Food, beverages and tobacco	29.3	27.7	27.3

Source: SSO, RIAFE calculations

2007). The food expenditures in the EU-15 amount in average to 12% of the total consumer expenditures. In the Slovak Republic, the share varies among the individual social groups and the increasing prices of food mostly affect the low income groups of population. The development of incomes and expenditures of households in the SR, as well as the share of food, beverages and tobacco in the total consumer expenditures (%) are shown in Table 3.

There are other factors that may affect consumer prices of food and their structure. In general, the key factors of the margin increase and decrease in the share of prime producer in the consumer price include the growth of marketing costs (processing, adherence to quality control standards, development of technology, packaging, distribution, transport, etc.) and the growth in profit margin of traders, or processors; and combination of the above factors. Changes in the marketing margin may also be caused by the changes in supply of raw materials and consumer demand in the market.

The input prices, as well as the processing and distribution components are currently affected by new impulses, such as market globalisation, the rapid development of technology and the increasing interest and commitment of population to the food quality and production methods. Consumers require a higher marketing service outside the farm, they wish for the increased treatment and processing of food, a larger selection of food and goods, a higher purchase comfort, longer opening hours, etc. The willingness of consumers to pay for the product value added may also result in the higher consumer price.

An important factor which may affect input prices, as well as the prices of the completed products, is the reduced offer of food commodities in Europe, caused by the increased demand for certain food commodities in the third world countries, mainly in Asia, as well as the utilisation of some agricultural commodities in the production of biofuels.

These factors may produce a synergic effect on the overall growth of food prices in the SR and the subsequent reduction of the gap between the prices of food in Slovakia and the other countries of the European Union.

CONCLUSION

The structural analysis of the development of food consumer prices in the period 2006–2008 was based on the commodity verticals of milk, the selected dairy products and bread.

The following trends appeared in the development of the consumer price structure:

The average share in the consumer price of prime producers has grown over the monitored period, in the case of milk and dairy products. The share of processors in 2007 has grown for most of the commodities; although it dropped down in the first few months of 2008. Compared to 2006, the share of trade sector slightly decreased in 2007 for most commodities, although in 2008 the average share increased.

The share in the consumer price of prime producers has grown over the monitored period, in the case of dark bread. The share of processors over the monitored period dropped down. Compared to 2006, the share of the trade sector slightly increased, in 2007, although it dropped down again in the first five months of 2008.

Price development in Slovakia was affected by the substantial growth of the global demand for food that is becoming a strategic item which affects the economic and pricing policy. The prices are also affected by the inputs of farmers and processors the prices of which are rising, including energy, fuel, fertilizers, chemicals, seeds or wages. The prices of food producers and consumer prices depend on a number of other factors, including some unpredictable factors (mostly weather).

The food market is largely affected by those consumers whose interest or lack of interest in a certain product, price and quality affects the supply and demand. The number of consumers who request quality and are willing to pay a higher price is rising. On the other hand, an increased food price is an issue for the low income population. Therefore, it would be appropriate to monitor the social situation in these groups (families with many children, pensioners, socially handicapped persons, unemployed) and then to prepare a solution.

REFERENCES

Bečvářová V. (2008): Issues of competitiveness of today's agriculture. Agricultural Economics – Czech, *54* (9): 399–405.

Bunte F. (2007): The Food Economy: Global Issues and Challenges. In: 2nd International Conference Food Economy – Global Issues and Challenges. Haag.

Veselská E. (2006): Postavení navazujúcich článku zpracování a distribuce uvnitř komoditních vertikál (Position of interrelated components of processing and distribution within commodity verticals). In: International Science Days. FEM, Nitra.

Stávková J., Prudilová H., Toufarová Z., Nagyová L. (2007): Faktory Factors affecting consumer behaviour in food purchase. Agricultural Economics – Czech, *53* (6): 276–284.

Arrived on 27th November 2008

Contact address:

Slávka Krížová, Research Institute of Agriculture and Food Economics, Trenčianska 55, 824 80 Bratislava, Slovak Republic
e-mail: slavka.krizova@vuepp.sk