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DEVELOPMENT IN CONSUMER FOOD PRICES ON THE CZECH MARKET IN THE CONTEXT OF FOOD PRICES ON THE EU AND WORLD MARKETS

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Abstract

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This paper discusses the development of consumer prices in the Czech Republic within the context of food prices in the European Union and the global market. The article is identifying the development of the foodstuff consumer prices in the market in the Czech Republic in relation to World and European consumer prices.
Subsequently, the development of food consumer prices in the Czech market is analyzed in relation to selected commodities and products marketed in the Czech retail chains. Lastly, the status of individual retail chains in the Czech market is defined and the consumer prices and price differences existing amongst the selected major chains operating on the Czech market are analyzed. In relation to the objectives of this article it is then possible to state the following: prices on the Czech market correlate very strongly, especially in relation to the EU countries markets, but are very weak in relation to the world market. The sensitivity of the Czech consumer prices is very high – it is very flexible towards changes within the framework of the prices levels on the market of the EU but, by contrast, it is completely inflexible in respect to the changes in the prices levels on the world market. The Czech Republic follows the general development price trends existing in the EU countries markets.
The growth in food prices on the Czech market is very close to the average growth rate of the food prices index in the EU market. Regarding the prices development on the Czech Republic market, it can be noted that, in relation to particular segments of the commodity food prices, the most dynamic growth was recorded in the case of fruit and vegetables, oils and fats, dairy products, fish and seafood, poultry, beef and cereals and bakery products.
It is also important to mention that in the Czech Republic there are no uniform price levels between individual regions. In respect to the nature of the Czech retail market, a comment should be made that on the one hand it is very concentrated – a relatively small number of players control the character of the market – nevertheless, but in comparison with the European average, it can be said that the market is highly competitive, since none of the market subjects clearly dominates. Individual retail chains in their pricing policies more or less follow the general price trends and tendencies, reflecting the development of the domestic market and in, particular, the EU market

food price, consumer price, retail market, Czech Republic, European Union, world, relationship, development

In recent years the Czech food market has been going through a number of major changes that affect its appearance and character (Valder *et al.*, 2011). During the period following the accession of the Czech Republic to the EU there has been very significant strengthening of the Czech economy, which led to considerable growth in the purchasing power of the Czech consumer (Svatoš *et al.*, 2009). According to the Czech Statistical Office (CSO) the value of the country's GDP in the years of 2004–

2012 grew by more than 31%, the GDP per capita increased by 27.4% (in purchasing power parity the increase was about 19.7%), and the average gross wage went up by as much as 48.8%. From the above it follows that during the monitored period the population's consumption potential increased considerably – this has partly been reflected in the transformation of the Czech food market (Hes *et al*., 2010).

Over the years there has been a transformation in demand from lower to better quality food (Incoma, 2013), then there have also been significant changes concerning the consumption habits of the population, arising from the stimulus of the increasing purchasing power of consumers, as well as from the impulse of eating trends coming to the Czech Republic from the neighbouring countries (Šálková, Hes, 2010). After the Czech Republic joined the European Union in 2004, the Czech food market fully opened up to imports of food from all EU Member States (Bašek, Kraus, 2009).

(Of course, in this respect, there was also the opening of the European market for the Czech exports of food and agricultural products. Nevertheless, it is clear that the value of import growth significantly exceeded the growth rates of exports and thus the Czech food market has been penetrated by a number products from neighbouring countries (Burianová, 2010) – as a result of this development, the Czech Republic has decreased its self-sufficiency in the domestic market (Voloshin *et al*., 2011) and then there was also a significant pricing transfer in relation to European developments in the market in the Czech Republic (Svatos, Sadness, 2011)).

After the accession of the Czech Republic to the EU its domestic market opened up not only in relation to the then EU15 countries, but also to the other newly joined countries (Burianová, 2010) – Poland, Hungary, Slovakia, Lithuania, Latvia, Estonia, Slovenia, Malta, Cyprus and later (2007 or 2013) as well as Bulgaria, Romania and Croatia.

The market opened up to imports from certain countries which, although not members of the EU, are integrated into its single market (Switzerland, Norway, Iceland and Liechtenstein). Despite the higher growth rate of the Czech agricultural export value compared with the development of the imports value in relation to both the EU15 and the EU as a whole, and in relation to third countries during the monitored period, there was a significant increase in the value of imports, exceeding the value of increased exports – which logically resulted in the rise of an already significant negative trade balance of the Czech agrarian trade (Burianová, Belová, 2012).

As a result of the above, and other factors (Horská, 2010) – the Czech food market has reached a new stage. Its development had been determined not only by the situation within the framework of internal conditions and by the conditions in the world market but, in particular, the market had also become more dependent on the conditions and development of the food market in the European Union (Svatoš, 2008).

After the accession of the Czech Republic into EU, the consumer food prices on the Czech market, rather than being linked to the world market prices development, they became more strongly linked to the movements of prices on the markets of the European Union (Bielik, 2010), which is a key economic and, especially, trading partner of the Czech Republic.

In recent years, the Czech food market had concentrated very significantly, but it should be noted that the degree of market concentration has not yet reached the level which is typical in most EU countries (Cimler, 2011). The Czech food market is currently dominated by the following retail chains: Ahold Czech Republic (Albert and Albert hypermarket), Kaufland CR, Tesco Stores, Penny Market, Coop, Lidl CR, Bill, Globus and Spar CR. The share of these retail chains in the quick-turnover goods, which can also include foodstuffs, represented about 66% in 2011. In the food market the share of the above retail markets is even more important.

The Czech food market is becoming increasingly affected by the competitive struggle that takes place between different groups of the retail chains represented on the Czech market (Incoma, 2011). In respect to the large multinational retail chains, the small independent stores and local retail chain stores get the short end of the stick in the food market (Rosochatecká, Smutka, 2010). Small independent retailers are not able to counter the expansion of the large retail chains which, in 2012 alone, possessed a very large sales capacity in the shape of 282 hypermarkets, 645 supermarkets and 630 discount stores (Incoma, 2012). It should be noted that this number is far from being definite as in 2013 more construction of the sales capacities is expected across the entire market of the Czech Republic.

In recent years the actual development in the food market in the Czech Republic has been, in addition to the situation described above, very influenced by several other important factors. These factors include the economic crisis, which significantly affects not only the consumer behaviour of the buyers (preferences, purchasing power, consumer behaviour, etc.), but also affects the position of the selling subjects (economics of production and sales, expansion, innovation, production capacity, etc.). This, of course, concerns not only the Czech Republic but also, in the wider context, a great number of other countries (Bielik, 2010).

Another factor influencing the market situation in the Czech Republic is the development in the area of foreign trade in agricultural and food production, where the share of goods imported from abroad to the Czech market is continuously growing and slowly squeezing out goods of domestic origin (Benes *et al*., 2004). Very important

in the development of the market is the change in the consumer behaviour who, at an increasing rate, prefers quality over price in relation to the selection of goods. However, according to research data it is still valid that price remains an important factor when deciding on the composition and volume of food carried by households (Hes *et al*., 2010).

An important role in the market is also played by the general rise in prices of food and agricultural products, the rate of which has very markedly increased mainly over the past 10 years (OECD-FAO, 2010). Food prices are rising very strongly not only on the world market, but also on the markets of the countries of the European Union – which, however, are insulated from the "full" effect of the world market by the existing policies (Common Agricultural and Common Trade policies of the EU), which significantly protect the internal market of the EU countries from the transfer of the world market effects (Pokrivčák, Drabik, 2008).

In terms of food prices development on the internal market of the EU, the influence of internal pricing mechanisms, especially in comparison with the transfer of world prices to the prices on the EU market ς the influence of world prices on the evolution of prices on the internal markets of the individual EU countries is minimal – it is usually true that the prices on the internal market of the EU are significantly higher compared to prices on the world market (Drabik, Bártová, 2008, FAO 2013).

In this respect, it must be mentioned that not only the EU countries are insulated from the full effect of the global market by specific protective trade policies (Kjeldsen-Kragh, 2004). The market for agricultural and food production in the world in general is one of the few sectors where the liberalization process continues at a slow pace and the market for the agricultural and food products is one of the most distorted markets in the global economy (FAO, 2011).

From the above it follows that the development of the food products retail market is affected by many factors. The scope of their detailed analysis would take up an entire monograph. This article focuses only on one specific issue that affects the evolution of the foodstuffs market, not only in relation to the Czech Republic, but also in relation to the EU and world markets – this specific problem is consumer prices. The article analyzes the development of consumer food prices on the Czech market in order to identify the most important trends, in terms of food price developments occurring after the accession to the EU.

The aim of this article is to identify the development of consumer prices on the Czech Republic's market in relation to the development of consumer prices on the world and EU markets. In this respect, the aim is to identify the degree of correlation existing between the Czech, global and EU consumer food prices and then determine the level of consumer prices sensitivity on the Czech market to price changes on the world and EU markets. Differences existing between the development of the market in the Czech Republic and other countries of the European Union are also identified.

Subsequently, the development of consumer prices in relation to individual selected commodities and products marketed in the Czech retail chains is analyzed. The issue of price differentials existing between the various regions in the Czech Republic is also taken into account. Lastly, the status of retail chains on the Czech market is defined and consumer prices and price differences existing between the selected major chains operating on the Czech market are analyzed.

It should be also mentioned that conducted paper is a part of long-term research which was focused on Czech agrarian and foodstuff market development – for details see acknowledgment at the and of the paper.

MATERIALS AND METHODS

The article analyzes the data from the accession to the EU to present – i.e. 2004 to May/June 2013. The development of consumer prices in the Czech crown (CZK) current prices for the monitored period is analyzed. The tools used to analyze consumer prices are base and chain indices (for the analyses of price changes and tendencies), then also geometric means (for the purpose of general development trend identification) and correlation (for the purpose of expression of mutual relationship between World, European and Czech consumer food price development) and regression analyses (for the purpose of expression of mutual relationship between World, European and Czech consumer food price development and for the purpose of price elasticity calculation) (Hindls *et al*., 2007).

The dependency ratio existing between the prices on the Czech market and prices on the EU and the world markets was identified by means of a correlation coefficient (Gujarati, 1988). The rate of sensitivity (Lind *et al*., 2005) of consumer prices in the market in the Czech Republic to changes in consumer prices in the world and the EU markets was then analyzed – the sensitivity was calculated on the basis of the calculated logarithmic regression (Dougherty, 2002), whose advantage is the ease of a subsequent estimate of sensitivity / elasticity of prices on the Czech market in relation to changes in the consumer price on the world market and EU market.

The basic source of data for processing of the analysis are the databases FAO – FAOSTAT, EU – Eurostat and the Czech Statistical Office. Prices are as stated above, analyzed at current prices – but the basic trends are analyzed by means of indices, which usually means (unless otherwise stated) that 2005 = 100.

The analysis of the market prices sensitivity in the Czech Republic has also been carried out in

relation to the partner countries EU27 (the partners are as follows: Belgium, Bulgaria, Denmark, Estonia, Finland, France, Ireland, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Germany, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom).

The analysis of the development of the changes in prices in the Czech Republic has a regional dimension – the analysis carried out at regional level (13 regions) in the Czech Republic – South Moravia Region, Karlovy Vary Region, Hradec Kralove Region, Liberec Region, Moravian-Silesian Region, Olomouc Region, Pardubice Region, Plzen Region, Central Bohemia Region, Usti Region, The Vysočina (Highlands) Region, Zlín Region and the City of Prague.

A special section of the article presents an analysis of consumer prices in the Czech market from the viewpoints of selected retail chains operating in the Czech Republic. In this case, the actual analysis was carried out by their own data collection (Field survey – in this case a team of researchers collected data related to Czech retail market development for more than three years. The field survey was focused on food price development and commodity structure development in selected retail companies (Albert, Billa, InterSpar, Kaufland, Lidl, Penny Market, Tesco). Data were collected in selected regions in the Czech Republic.), which were later supplemented by some information and findings published in VSH (Cimler, 2011) and then Incoma. Private collection of the data relating to the issue of price developments took place in 2011 (March) – 2013 (June). The team of the CULS Prague has collected data during this period in quarterly periods (March, June, September and December) in the following retails chains operating on the Czech market – Albert, Billa, Kaufland, Lidl, Penny Market, Interspar and Tesco.

Prices in the individual stores (hypermarkets, supermarkets and discounters) were collected in Prague, Brno, Ostrava, Třebíč, Znojmo, Olomouc, Frýdek Místek, Karlovy Vary, České Budějovice, Melnik and Hradec Králové.

The data collection team of authors focused on a pre-defined basket of consumer products – they represent a common shopping cart: butter (250 g – 82% fat), plain yogurt (500 g – 3.5% fat), bread (Sumava 1 200 g), milk (1 l-durable 1.5%), apples (1 kg – Gold Delicious) carrot (1 kg), onion (1 kg), potatoes (1 kg – late harvest), eggs (10 eggs – M) bananas (1 kg), oranges (1 kg), edam cheese (1 kg – 30% and 45% fat), sunflower oil (1 l), flour (1 kg), coffee (250 g Jihlavanka – or its equivalent), smooth flour (1 kg), rice (1 kg – Long grain), chilled chicken (1 kg – whole), pork chop with bone and without (1 kg).

Prices are analyzed in order to identify the differences between individual retail chains operating on the Czech market. Based on the analysis the relation of the prices of retail chains and the prices on the Czech market in general are identified and then the sequence of retail chains according to the price of the basket of selected products is also identified. Next, the price sensitivity of individual chains to the changes in the price levels on the Czech market is analyzed.

RESULTS AND DISCUSSION

Basic trends and tendencies in the consumer food prices on the Czech market, global market and the EU market

In recent years, food prices in the world recorded a significant increase – the volatility of the world prices also increased considerably (Onour, Sergi, 2011). Food prices have started to rise in the years 2002–2004, and currently their value both in nominal and real terms is significantly above the average for 1990–2004 (FAO, 2013). Rising food prices have hit all the basic segments of the food industry – a significant increase in the price levels for food is obvious not only from the index of food prices as a whole but also from the development of individual segments representing food production - meat, dairy products, cereals, oils and fats and sugar (FAO, 2013).

The global rise in food prices was subsequently reflected in the growth of food prices on the market of the EU (EUROSTAT, 2013) and in the Czech market (CSO, 2013). The following data show that prices on the Czech market grew a great deal more dynamically, compared with the prices on the EU27 market (The higher price dynamics during the monitored period is given by the fact that in the period before accession to the EU the price levels of the food market in the Czech Republic were significantly lower compared with the price levels in the EU15 market (Lukas, Poschl, 2004).

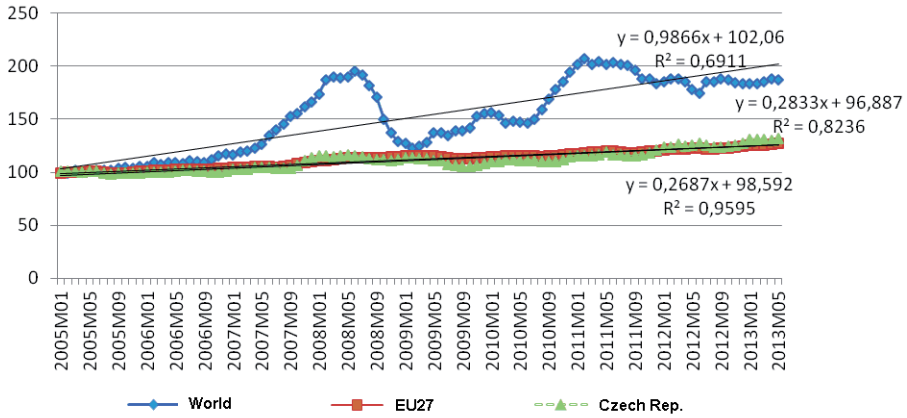
During recent years, due to the fact that the Czech Republic after its accession had become a part of the single EU market, a process of a gradual prices convergence started up – where the Czech prices are progressively approaching the level of the EU countries' average prices, which are, nevertheless, higher compared to the average food prices on the Czech market (EUROSTAT, 2013). It, therefore, follows that the actual process of convergence – that is the process of adjustment of prices is not yet finished. This implies an assumption that even in the forthcoming years the rate of prices growth on the Czech market will be slightly higher in comparison with the growth of prices on the EU market – especially so in the EU15 countries).

However, a comment should be made that both the consumer prices in the EU market and those on the market in the Czech Republic have not yet reached the growth rate of consumer prices in the world market (Vološin *et al.*, 2011). Although the global market average food prices are still lower when compared to the average prices of food in the EU market, the dynamics of their growth rate is significantly higher in comparison with EU countries or the Czech Republic (FAOSTAT, 2013).

I: *Development of foodstuff consumer prices in relation to World, European and Czech market in 2005–2013*

2005 = 100	2005M01	2006M01	2007M01	2008M01	2009M01	2010M01	2011M01	2012M01	2012M12	2013M01	2013M05
Svět	99.5	105.5	116.7	174.0	127.4	156.7	201.4	185.3	183.7	183.3	187.4
EU27	99.5	101.2	104.2	111.1	115.1	114.4	117.5	120.8	124.6	125.3	127.0
ČR	100.7	100.4	102.8	115.9	113.3	110.0	115.3	123.3	127.4	131.2	131.5

Source: FAO, EUROSTAT, ČSU, 2013



1: *The general trend of food price development in World, European and Czech market in period 2005–2013*
Source: FAO, EUROSTAT, ČSU, 2013

In this respect, it is surprising how effectively the protective mechanisms of the EU countries markets operate, since they prevent a full transfer of the growth trends of the world market to the prices developments on the EU market.

As mentioned above, world food prices in recent years have experienced an unprecedented growth and this has affected the entire agricultural and food sectors in the world – nevertheless, due to the applied common policies the EU remains partly ʒ but not completely – spared of the impact of this development (Horská, 2010).

However, there is a very strong correlation between the development of consumer prices in the world market and the EU market. In relation to the development of prices on the Czech market, it should be noted that for shaping consumer food prices has increased the importance of the EU market, which is part of the Czech Republic (Mezera, 2010). Strength of correlation in the case relating to the Czech market price and the price on the EU market significantly higher than in relation to the development of global consumer food prices.

An even greater difference exists between the relationship of the market price in the Czech Republic vs. the market price in Europe or the world if the relationship by means of elasticities is analysed – or the sensitivity of food prices on the Czech market in relation to the percentage change in food prices in the EU market or the world market is analyzed.

It is clear that in relation to the EU market the Czech consumer prices react much more sensitively (very elastic) compared with the change of prices on the world market (reaction in this case is completely inelastic).

II: *Food consumer price development – mutual correlation and elasticity between EU27 and World, Czech Republic and World and EU27 and Czech Republic*

	CR – EU27	CR – World	EU27 – World
Correlation	0.947059	0.828734	0.850814
Elasticity	1.065418	0.288375	0.264179

Source: own calculations, 2013

In relation to the development of prices in the EU market as well as to the sensitivity to the change in the value of consumer food prices in the EU market the Czech Republic can be ranked among countries with increased sensitivity to prices changes on the EU market. Generally, with the exception of Ireland, all EU countries have a high degree of correlation in the area of the development of consumer food prices in relation to the EU average.

Furthermore, in recent years all countries have experienced a very significant increase in food prices – in this respect the Czech Republic belongs to the EU's above average group – but the rate of increase in consumer prices during 2005–2013 by 30.6% places the Czech Republic near the EU average (27.6%).

It should also be noted that a higher growth in the consumer prices value and a greater elasticity than those in the Czech Republic have been recorded in Hungary, Lithuania, Latvia, Bulgaria, Romania, Malta, United Kingdom, Slovenia, Cyprus, Croatia, Poland, Belgium and Finland. Thus it mostly concerns the new member states of the European Union (In this respect, this confirms the fact that

III: *Correlation and elasticity of food consumer prices in individual EU27 countries in relation to general food price development in EU market*

	2005M01	2006M01	2007M01	2008M01	2009M01	2010M01	2011M01	2012M01	2013M05	Growth rate – GEOMEAN	Correlation	Elasticity
Austria	100.61	100.82	103.71	112.11	114.94	113.14	116.55	120.05	126.58	1.258	0.994	0.972
Belgium	98.29	100.47	105.51	111.53	116.02	116.12	118.82	121.86	129.43	1.317	0.997	1.041
Bulgaria	99.38	106.30	113.77	137.68	144.52	138.07	144.28	149.97	159.84	1.608	0.969	2.095
Croatia	97.56	102.72	103.63	115.14	120.86	117.41	120.18	122.66	134.42	1.378	0.984	1.156
Cyprus	99.87	103.83	111.27	115.68	128.39	126.10	127.15	136.20	137.71	1.379	0.974	1.456
Czech Rep.	100.7	100.4	102.8	115.9	113.3	110.0	115.3	123.3	131.5	1.306	0.949	1.065
Denmark	98.8	99.8	105.2	112.5	116.5	113.5	116.0	121.5	124.3	1.258	0.991	0.996
Finland	100.91	100.51	103.51	109.74	117.93	110.54	114.18	119.89	132.04	1.308	0.958	1.031
France	99.40	100.63	102.32	106.93	109.37	108.97	109.05	112.48	116.93	1.176	0.992	0.640
Germany	99.9	100.8	103.4	110.1	111.3	109.8	112.8	116.0	123.5	1.236	0.986	0.789
Greece	100.07	101.98	105.08	110.73	115.04	112.56	115.21	118.47	121.29	1.212	0.981	0.823
Hungary	97.91	101.71	117.13	134.19	138.67	140.54	152.15	159.79	173.21	1.769	0.988	2.323
Ireland	100.5	99.9	101.9	109.0	112.2	103.1	103.0	103.4	105.3	1.048	0.399	0.189
Italy	99.6	100.6	103.6	108.5	112.6	112.6	114.7	117.3	121.9	1.224	0.997	0.843
Latvia	95.32	104.73	115.26	139.86	154.78	141.42	153.42	157.91	164.03	1.721	0.971	2.258
Lithuania	98.83	103.04	111.86	130.23	144.24	136.59	144.38	151.94	159.51	1.614	0.986	2.118
Luxembourg	98.61	101.05	104.45	110.27	113.57	113.37	116.09	117.81	124.63	1.264	0.995	0.905
Malta	100.36	100.95	103.58	112.71	123.10	123.50	131.82	138.33	146.78	1.463	0.981	1.707
Netherlands	99.77	100.96	102.20	106.28	110.74	108.56	109.43	111.28	117.68	1.180	0.990	0.675
Poland	100.7	99.7	102.4	110.8	114.3	117.9	124.1	129.3	135.5	1.346	0.979	1.377
Portugal	99.60	101.47	105.80	107.87	109.41	104.07	106.40	109.53	113.18	1.136	0.849	0.399
Romania	98.23	103.97	104.81	115.77	122.93	122.68	131.99	131.89	145.22	1.478	0.989	1.579
Slovakia	100.73	100.40	104.80	112.54	113.30	108.92	116.20	119.11	128.08	1.272	0.956	0.954
Slovenia	100.36	101.36	105.28	120.07	124.15	120.95	126.15	130.32	141.97	1.415	0.993	1.444
Spain	98.89	103.42	105.85	113.47	115.40	113.11	113.25	115.58	120.04	1.214	0.956	0.706
Sweden	100.11	99.56	101.86	107.65	113.67	114.89	115.47	116.03	121.25	1.211	0.977	0.869
UK	99.2	100.3	104.3	111.2	123.6	125.3	132.4	136.9	144.4	1.456	0.986	1.693
EU27	99.52	101.17	104.19	111.07	115.13	114.36	117.46	120.80	127.00	1.276	1.000	1.000

Source: Eurostat, own processing, 2013

the convergence processes of harmonizing prices between the levels of old and new EU member states demonstrably work.).

Despite the rapid rise in food prices in the new member states, which contributes to the gradual levelling of the price differences between EU member states, it is clear that amongst individual countries there are extreme differences in food prices. According to Eurostat, in 2012 the price level of a selected basket of products containing food products and soft drinks in the most expensive country in the EU has reached more than double the value compared with the cheapest country.

Absolutely the highest price level in the EU27 in 2012 was recorded in Denmark (143%) followed by Sweden (124%), Austria (120%), Finland (119%), Ireland (118%) and Luxembourg (116%). By contrast, the lowest price levels in relation to the average food prices in the market of the EU countries were present in Poland (61%), Romania (67%), Bulgaria (68%) and Lithuania (77%). In the Czech Republic, the prices of food and non-alcoholic beverages were at the level of 84% of the EU average.

Among the member countries there are generally extreme price differences in the case of food available in retail chains. For example, for bread and cereal products, the prices range in the EU is from 57% of the EU average in Bulgaria to 159% of the EU average in Denmark. As for meat, the price levels oscillate between 55% of the EU average in Poland and 132% of the EU average in Denmark and Austria.

For milk, cheese and eggs, the prices between the cheapest and the most expensive state of the EU range from 63% (Poland) to 141% (Cyprus). From the above it follows that despite the fact that the EU acts externally as one market (single market), prices across individual EU countries are still not at the same level. In the Czech Republic it can be clearly seen that the price level of food products is still below the EU27 average and far below the average of especially the old EU countries (the EU15).

When the focus is aimed at only the Czech Republic and its commodity structure of the food products, it can be stated that the high level of correlation of the Czech food market in relation to the prices in the EU market is confirmed not only

IV: *Price differences existing among individual EU27 countries in relation to general EU27 price level in the case of selected groups of foodstuff products and agricultural commodities in 2012 (EU27 = 100 %)*

EU27 = 100	Foodstuff and beverages	Bread and cereals	Meat	Milk, cheese and eggs	Alcoholic drinks
Austria	120	134	132	101	96
Belgium	110	108	118	111	97
Bulgaria	68	57	59	92	67
Cyprus	109	121	89	141	110
Czech Republic	84	74	73	91	96
Denmark	143	159	132	117	140
Estonia	87	84	79	88	102
Finland	119	130	119	114	175
France	109	106	123	100	88
Germany	106	104	128	92	82
Greece	104	115	91	132	131
Hungary	98	94	80	113	109
Ireland	118	110	110	119	162
Italy	111	114	115	126	98
Latvia	87	80	75	96	111
Lithuania	77	75	63	90	94
Luxemburg	116	117	129	119	90
Malta	81	74	72	88	79
Poland	61	58	55	63	93
Portugal	90	98	75	105	89
Rumania	67	63	57	93	75
Slovakia	87	82	71	97	91
Slovenia	97	101	93	101	101
Spain	93	111	83	95	87
Sweden	124	135	126	112	161
The Netherlands	96	90	117	93	96
United Kingdom	104	89	100	107	143

Source: Eurostat, own processing, 2013

V: *Elasticity of consumer prices of selected foodstuff products in Czech market in relation to food price index development characterizing the level of consumer prices in EU27 market and Czech market*

CP_FOOD	2005M01	2007M01	2009M01	2011M01	2013M05	Correlation in relation to EU27	Elasticity in relation to EU27	Correlation in relation to CR	Elasticity in relation to CR
EU – Food	99.52	104.19	115.13	117.46	127.00				
CR – Food	100.7	102.8	113.3	115.3	131.5	0.947	1.065		
Bread and cereals	100.6	110.7	134.8	126.9	145.3	0.909	1.613	0.927	1.456
Meat	100.5	97.6	104.2	101.9	116.3	0.839	0.560	0.895	0.536
Beef	98.0	104.9	113.2	123.6	140.9	0.959	1.377	0.939	1.197
Pork	104.7	97.0	98.2	106.7	121.7	0.769	0.776	0.800	0.738
Poultry	99.0	91.2	107.9	117.2	133.6	0.932	1.360	0.938	1.229
Fish and seafood	100.0	103.0	110.3	112.2	133.4	0.929	1.041	0.937	0.929
Milk, cheese and eggs	100.4	99.9	113.1	113.9	127.8	0.900	1.165	0.973	1.117
Milk	100.5	98.3	116.8	110.0	125.4	0.677	0.879	0.813	0.915
Cheese	100.3	100.7	114.3	115.6	131.9	0.891	1.100	0.966	1.057
Eggs	106.0	98.9	110.7	112.0	127.8	0.794	1.006	0.903	1.005
Oils and fats	101.3	97.0	114.8	126.4	137.1	0.931	1.476	0.937	1.322
Fruit	103.2	98.2	102.3	115.5	115.6	0.469	0.533	0.641	0.673
Apples	98.5	102.5	110.5	126.9	144.7	0.610	1.284	0.692	1.215
Vegetables	99.7	123.9	116.5	131.3	159.0	0.553	0.940	0.590	0.906
Potatoes	89.2	220.6	125.8	132.7	151.4	–0.043	0.263	0.094	0.273
Sugar, jam, honey, chocolate and confectionery	101.0	97.3	108.5	109.9	122.5	0.934	0.997	0.928	0.884

Source: Eurostat, own processing, 2013

by the level of food prices as a whole, but also at the level of individual commodity segments – especially in relation to baking products and cereals, beef, chicken, meat, fish and seafood products, dairy products, eggs, oils and fats, and selected fruits.

Low level of correlation and elasticity then exists particularly in the case of fruits and vegetables as a whole. In relation to the general consumer prices development on the Czech market, there is a very high degree of prices correlation for all commodity segments with the exception of fruits and vegetables.

If we focus our attention on each of the selected specific items representing trade in food products at the retail level, it can be said that the consumer food prices in 2004–2012 gradually increased.

The rise in prices was influenced by many factors and the prices of individual items ranged from –2% to +13% annually. However, over time most of the selected items increased their unit prices which were implemented in retail. Generally, the prices, especially of stimulants, vegetable fats and oils and flour and bakery products grew more dynamically over time compared to the prices of sugar, tropical fruits, meat products, dairy products and alcohol.

A relatively interesting feature which characterizes the evolution of the food prices is the fact that development in 2013 in no way accelerated the growth of food prices, although in the beginning there was an increase in the VAT rate and, consequently, many producers raised consumer prices for certain products, for which a strong competition fight had raged in previous years, – such as for bread, pastry, etc.

A very interesting finding was the fluctuation of prices of individual products. During the monitored period (2004–2012) prices of some food products fluctuated considerably, their average growth rate of values was significantly higher in comparison with other items, and the average deviation from the average prices of some products varied considerably – especially in relation to long-term average prices.

The items with the highest price swings can include roasted coffee beans, the price of which grew continuously during the monitored period. Other important items in this regard, are potatoes (due to seasonal fluctuations in the price), rice, onion, wheat flour, dried and pasteurized milk, bread, fats and oils, butter, selected fruits and vegetables, eggs and sugar. By contrast, the items with relatively stable prices and minimum deviations relative to the average unit prices can include, for example: sausages, pork and beef, salt, citrus fruits, alcoholic drinks and confectionery.

A specific feature of the development of consumer prices in the Czech market is the differentiation in relation to individual regions. In the Czech Republic the highest longterm consumer food prices can be found mainly in Central Bohemia, South Bohemia, Karlovy Vary Region, Hradec Kralove Region, South Moravian Region and the Vysočina (Highlands) Region.

By contrast, below average food prices in relation to the nation-wide average can be found in the Usti Region, Olomouc Region, Zlín Region and the Morava-Silesia Region. There is no unambiguous explanation for the price differences existing between the various regions. The differences are due to the local conditions and situation in the market, they are also given by the degree of the market concentration and competition in a given area (Hambálková, 2008).

The level of income in a given locality then generally does not represent a decisive factor in determining pricing policies of the retail chains, because in the regions with the highest prices we can find both the regions that are economically strong and those that are economically weak. On the other hand, the regions with below-average levels of consumer food prices include Prague, which is in terms of economy the strongest region in the Czech Republic.

In terms of food prices growth in individual regions it is true that in the regions, in the period of 2006–2013, there was an increase in the price level in the range of 21.5 to 34.8%. The highest increase in prices in recent years was recorded in Pardubice Region, Plzen Region, South Moravian Region, Usti Region, Central Bohemia Region and the Vysočina (Highlands) Region.

In comparison, the least dynamically growing were the consumer prices in the Karlovy Vary region, Zlín Region, Liberec Region, Hradec Kralove Region and the Moravian-Silesian Region. In terms of consumer prices growth the capital Prague held close to the national average. An interesting feature of the Czech retail is the fact that, especially in 2013, there was no significant increase in food prices compared with other years, despite an increase in indirect taxes, rising energy prices, etc. The price growth for the first half of 2013, has not yet deviated in any way from the long-term average – which stands at about 3% increase in food prices per annum.

Retail food market in the Czech Republic – positions of individual retail chains

Large retail chains control the Czech market with quick turnover goods. Generally in terms of competition, the Czech market is one of the most dynamic markets (Incoma, 2012). In the Czech Republic there is a number of large multinational retail chains operating almost three hundred hypermarkets, more than six hundred supermarkets and six hundred discount stores. Furthermore, then there are several thousand small shops. The majority of households prefers mainly the large stores for their food purchases, about 45% of household does their purchases mainly in supermarkets, about 25% prefer discount stores, eighteen percent of consumers prefer supermarkets and only thirteen percent of consumers prefer in their purchases small shops (Incoma, 2013).

VI: *The selected foodstuff products in Czech market – characteristics of price development in 2004–2012*

		2004	2006	2008	2010	2012	Basic index	Chain index	Standard deviation	The share of standard deviation in average price	Average price – Arithmetical mean
Coffee (Standard)	100 g	6.49	7.61	9.26	10.7	16.79	2.59	1.13	3.05	32.85%	9.28
Potatoes	kg	6.61	15.6	9.29	15.58	10.67	1.61	1.06	2.44	26.35%	9.26
Rice	kg	20.18	23.01	38.1	32.33	34.23	1.70	1.07	6.15	23.32%	26.39
Onion	kg	7.05	13.36	10.42	15.14	13.34	1.89	1.08	2.14	21.21%	10.07
Flour	kg	8.68	7.25	12.03	10.38	13.23	1.52	1.05	1.79	19.75%	9.05
Powder milk	400g	82.27	91.88	120.39	123.79	138.8	1.69	1.07	18.16	18.12%	100.25
Bread	kg	15.25	17	22.67	19.85	23.19	1.52	1.05	2.89	16.25%	17.80
Sunflower oil	l	34.06	32.99	47.89	43.69	48.67	1.43	1.05	5.73	15.25%	37.59
Butter	kg	115.48	103.57	104.79	134.38	142.75	1.24	1.03	16.24	14.61%	111.19
Fillet	kg	111.75	103.62	118.75	135.81	160.39	1.44	1.05	16.45	14.54%	113.11
Apples	kg	20.57	23.27	24.83	27.76	30.94	1.50	1.05	3.14	13.93%	22.51
Plant fat	kg	55.44	50.12	65.94	68.2	73	1.32	1.03	7.85	13.83%	56.75
Cucumbers, fresh	kg	29.49	41.39	40.91	37.68	46.41	1.57	1.06	4.29	12.95%	33.13
Eggs	piece	2.47	2.37	2.6	2.14	3.33	1.35	1.04	0.29	12.11%	2.36
Sugar	kg	25.4	22.07	20.16	17.75	24.2	0.95	0.99	2.05	10.46%	19.64
Fresh milk	l	14.35	14.4	17.28	16.17	18.32	1.28	1.03	1.50	10.22%	14.66
Bananas	kg	33.84	28.61	26.9	26.27	31.82	0.94	0.99	2.66	10.08%	26.37
Chicken	kg	51.8	44.3	58.99	58.63	65.52	1.26	1.03	4.77	9.40%	50.70
Beef meat, shoulder	kg	74.43	78.16	82.46	85.66	104.09	1.40	1.04	6.47	8.54%	75.73
Tuzemak, dark rum	l	176.65	185.62	198.25	213.25	221.81	1.26	1.03	14.87	8.24%	180.45
Edam cheese	kg	114.06	109.77	121.55	122.63	130.57	1.14	1.02	9.02	8.17%	110.38
Sausages	kg	86.72	91.97	98.74	96.05	120.91	1.39	1.04	7.11	8.09%	87.97
Chocolate, white	100 g	19.65	17.78	20.58	22.17	22.22	1.13	1.02	1.50	8.01%	18.71
Beer, light	0.5l	8.48	8.32	9.13	10.05	10.44	1.23	1.03	0.62	7.51%	8.25
Pork meat	kg	68.56	63.49	66.31	64.89	83.17	1.21	1.02	4.24	6.95%	61.04
Beef meat, without bone	kg	153.73	167.41	176.17	175.27	205.25	1.34	1.04	10.64	6.77%	157.30
White wine, table quality	l	62.31	55.83	54.85	60.26	64.93	1.04	1.01	3.28	6.14%	53.36
Spaghetti	kg	27.01	27.36	30.43	29.32	31.92	1.18	1.02	1.58	6.07%	25.99
Salt	kg	5.61	5.57	5.13	4.89	5.59	1.00	1.00	0.23	4.75%	4.78
Oranges	kg	28.49	25.94	25.67	27.77	25.05	0.88	0.98	1.09	4.55%	24.00
Pork meat, without bones	kg	113.31	105.82	108.23	97.14	115.19	1.02	1.00	4.02	4.21%	95.59
Ham	kg	154.2	153.66	157.14	153.42	171.66	1.11	1.01	4.23	3.00%	141.02
Hammy salami	kg	117.53	115.26	120.94	114.97	123.7	1.05	1.01	2.71	2.56%	105.82

Source: CZSO, own processing, 2013

VII: *Price differences existing among individual regions in the Czech Republic in the case of food retail market*

2005 = 100; 100 = Czech Republic – Arithmetical mean	Prague	Středočeský	Jihočeský	Plzeňský	Karlovarský	Ústecký	Liberecký	Královéhradecký	Pardubický	Vysočina	Jihomoravský	Olomoucký	Zlínský	Moravskoslezský
2006	100.3	101.1	100.5	97.3	104.0	96.5	102.4	102.7	95.8	100.9	99.0	100.3	102.6	96.7
2007	99.7	102.9	101.3	98.1	105.0	98.3	100.0	101.4	97.4	99.6	100.3	99.5	99.5	96.9
2008	100.2	102.0	101.5	100.8	106.2	96.4	98.8	100.3	98.2	99.2	100.7	99.3	99.7	96.7
2009	99.3	101.4	100.2	99.7	103.7	96.5	101.3	100.7	100.3	99.0	101.9	99.0	99.7	97.3
2010	100.4	102.5	100.2	101.0	100.7	97.4	98.6	99.7	101.6	100.3	101.8	99.1	99.7	97.0
2011	99.5	101.9	99.3	100.7	101.0	97.9	100.0	101.7	102.9	100.1	101.3	98.5	97.9	97.3
2012	98.4	101.3	100.2	98.8	99.7	100.3	100.2	100.1	100.9	101.7	100.6	100.5	100.2	96.9
2013 May	99.5	103.0	99.5	100.7	99.4	98.3	99.9	100.8	101.6	101.8	102.1	99.1	99.2	95.2

Source: CZSO, own processing, 2013

VIII: *Growth rate development of consumer foodstuff prices at the level of individual regions in the Czech Republic*

Chain index	2007	2008	2009	2010	2011	2012	2013 May		Chain index 2006–2013	Basic index 2013/2006
Pardubický	1.166	0.961	0.973	1.078	1.038	1.037	1.032	Pardubický	1.038	1.348
Plzeňský	1.157	0.979	0.943	1.078	1.021	1.037	1.034	Plzeňský	1.035	1.316
Jihomoravský	1.161	0.958	0.965	1.063	1.019	1.050	1.044	Jihomoravský	1.034	1.311
Ústecký	1.168	0.935	0.955	1.074	1.029	1.084	1.027	Ústecký	1.033	1.295
Středočeský	1.167	0.945	0.948	1.076	1.017	1.052	1.049	Středočeský	1.033	1.294
Vysočina	1.132	0.949	0.952	1.077	1.022	1.074	1.053	Vysočina	1.032	1.282
Czech Republic	1.146	0.953	0.953	1.064	1.024	1.057	1.035	Czech Republic	1.030	1.271
Prague	1.140	0.958	0.944	1.076	1.015	1.046	1.038	Prague	1.029	1.260
Jihočeský	1.156	0.956	0.940	1.065	1.015	1.066	1.030	Jihočeský	1.029	1.259
Olomoucký	1.137	0.952	0.950	1.065	1.018	1.079	1.030	Olomoucký	1.029	1.256
Moravskoslezský	1.149	0.951	0.958	1.061	1.028	1.053	1.013	Moravskoslezský	1.028	1.251
Královéhradecký	1.132	0.943	0.957	1.053	1.045	1.040	1.044	Královéhradecký	1.028	1.248
Liberecký	1.119	0.942	0.977	1.036	1.039	1.059	1.045	Liberecký	1.027	1.240
Zlínský	1.112	0.955	0.953	1.064	1.006	1.082	1.035	Zlínský	1.026	1.229
Karlovarský	1.158	0.964	0.931	1.033	1.028	1.044	1.022	Karlovarský	1.025	1.215

Source: CZSO, own processing, 2013

In respect of retail chains, most consumers prefer the Kaufland stores network. In general, the Czech retail food market compared with Western Europe is less concentrated and the five most important traders operating in the domestic market do not control even half of it (Cimler, 2011). They control about 46–50% of the domestic food market, which is significantly less compared to most countries of the European Union (Share of the five largest players in Sweden – 88%, Denmark – 84.7%, Finland – 83.6%, Belgium – 75.3%, Luxembourg – 72.5%, Austria 66.9%, France – 63% Germany – 62.9%, Portugal 61.5%, Spain – 60.5%, Ireland 56.9%, the Netherlands – 54.1%, Slovak ę53.4%, UK – 51.7% – Source Cimler, 2011).

In the Czech retail market none of the major players controls more than 10% of its value – this is unique from the perspective of most European countries, where the largest retail chain usually controls about 20–30% of the market. While in most countries the three largest chains control more than half of the market in the Czech Republic it is only less than thirty percent.

The high degree of competition prevailing amongst the retail chains on the Czech Republic market has already been mentioned. The majority of Czech consumers live in locations at which there are least seven retail chains operating – and, in many cases, the distance between the stores of competitors does not exceed a few hundred metres. The Number One on the Czech market is Ahold (which operates two network outlets – Albert supermarket and Albert hypermarket), followed by Kaufland, Tesco, Penny Market, Makro, Coop, Lidl, Billa, Globus and Spar.

In their relation to customers, individual retail chains are building a very strong position, each of the chains is trying to attract customers by a different strategy (Horská, 2007). At present the best strategy is an optimum mix of price and quality (Kubicová, 2008). The best in this respect is Kaufland, whose stores was visited by the highest number of customers in the Czech market in 2012. It was followed by Tesco, then Albert, Penny Market, etc.

Czech consumers increasingly prefer to carry out their purchases especially in hypermarkets, mainly at the expense of discount shops. The consumer behaviour is also experiencing certain changes – an increasing percentage of buyers prefer to purchase goods of domestic origin. According to Incoma research about 53% of buyers said that the origin of the goods is important to them

Another change in the behaviour of the Czech consumers is the fact that the price is not the only and main criterion in their selection of goods and there is a growing proportion of the goods quality in the consumer decision-making process on the implementation of a purchase (Incoma, 2012). Another important finding which characterizes the consumer-retailer relationship is the fact that about 70% of households carried out their purchases in only five retail chains: Kaufland, Tesco, Albert (the share of the top 3 in relation to the number of buyers is 50%), Penny Market and COOP.

The sales data for the largest retail chains operating on the Czech market show that in recent years these chains realized sales with a total value exceeding CZK 300 billion per year. The strongest players in the market are particularly the groups Schwartz, Rewe and Tesco Stores. Generally, from the sales data it can be detected the above mentioned trend

IX: *The share of individual detail chains in the Czech market in 2011*

Company	Retail chain	Market share
Ahold ČR	Albert, Albert hypermarket	9.70%
Kaufland ČR	Kaufland	9.30%
Tesco Stores	Tesco	8.10%
Penny Market	Penny Market	7.70%
Makro Cash and Carry ČR	Makro	6.60%
Coop	Coop	6.50%
Lidl ČR	Lidl	5.80%
Billa	Billa, Big Billa	5.80%
Globus ČR	Globus	4.20%
Spar ČR	Interspar, Spar, CitySpar	2.80%

Source: Incoma, 2012

X: *The share of individual detail chains in Czech detail market*

Revenues in billion CZK		
Group	**2010**	**2011**
Schwartz ČR	**63.2**	**65.5**
Kaufland	40.0	42.0
Lidl ČR	23.2	23.5
Rewe	**51.1**	**53.6**
Billa	22.2	22.6
Penny Market	28.9	31.0
Tesco Stores ČR	**47.5**	**51.0**
Tesco hypermarket		
Tesco supermarket		
Tesco Expres		
Ahold ČR	**42.3**	**44.0**
Albert hypermarket		
Alber supermarket		
Makro Cash and Carry CR	**33.1**	**32.5**
Globus ČR	**26.1**	**27.0**
COOP	**26.0**	**25.9**
Spar ČR	**13.0**	**14.1**
Interspar	12.3	13.4
Spar supermarket		
Spar Šumava	0.7	0.7

Source: Incoma, 2012

of weakening of the position of supermarkets and discount stores in favour of large hypermarkets.

In times of crisis, it is increasingly the case that households focus on quality with their purchases. Consumers in this respect still more prefer discounted brand goods in hypermarkets before cheap goods in discount stores (Incoma, 2013). The Czechs are increasingly more focused on mark-downs and these are becoming a growing important tool in the fight for the customer. In this regard, the hypermarkets, due to their size and the number of goods offered, can assert themselves in the market much more efficiently in comparison with a limited range offered by discount stores.

Another important feature of the Czech retail market are the constantly rising food prices. As mentioned above, the prices are rising both as a result of the global prices increases, and as a result of the prices growth in the EU market and, especially, as a result of the price convergence operating in the EU market. Food prices on the EU market in recent years have increased by about 25%, while prices on the Czech market grew by about 30%. The rise in prices is influenced not only by inflation, but also by increasing taxes and by the structure of the consumed goods, on which in recent years the customers have been putting an increasingly greater emphasis on their quality – nevertheless, the growth in the area of quality is quite logically accompanied by a rise in the unit price of purchased goods.

Due to the fact that the prices transformation of the domestic market has still not been completed and because the consumer behaviour is also constantly changing (Stávková, 2007), not to mention the development of the European and global markets (effect of the population growth, growth in the purchasing power of the population, the growth in business importance, depletion of farmland, growing non-agricultural use of agricultural products etc. – Jeníček, 2010), it can be said that in the coming years, food prices will continue to rise. On the other hand, however, it can be expected that the purchasing power of the Czech consumers will also increase (Kubicová *et al*., 2012), which will be shown particularly in the increasing demands concerning the purchases of goods. An important role in the area of pricing will also be presented by the tax policy of the state, particularly in the setting of rates of indirect taxes – VAT and excise duty.

In order to study the prices development in the retail market, consumer prices of seven selected retail chains operating on the Czech market were analyzed (Table XI). They were selected as the authors of this article preparing for the field data collection focused on areas which would have at least six retail chains close together (see list of retail chains in Methodology).

It can be said that in the monitored baskets of food products (information on the composition of the basket in Objectives and Methodology) in most of the retail chains the development of prices is closely correlated with the development of the index of food prices on the Czech market – with the exception of only Interspar and Albert (supermarkets).

Generally, individual retail chains in their pricing very flexibly/elastically respond to changes in the value of the average price index of food market in the Czech Republic. The most flexible in this respect are Tesco, Penny Market, Billa and Kaufland. The least flexible is Albert. During the survey period, all the retail chains gradually raised prices of the monitored goods. On average the price growth rates ranged from1 to 3% per year, while the prices rose the fastest in Penny Market, Billa and Tesco. The slowest growth in prices was recorded in Albert, Interspar and Kaufland.

During the survey period, Penny Market had increased the average price of a shopping basket by 32.2 index points, Billa by 28.4 index points, Tesco 27.4 by index points, Lidl by 22.7 index points, Kaufland by 22.1 index points, Interspar by +7.4 index point and Albert actually decreased the value of the average shopping basket during the period (However, in the case of Albert, in June 2013 the result was marked by a very significant above-the-average number of discounts that to a large extent copied the composition of the selected consumer basket. If we take into account the prices without discounts, the Albert price increase for the period was about 10 index-based points).

If we line up individual retail chains by the prices of the selected consumer basket, we find that in the long-term the cheapest retail chain in the monitored stores is Kaufland, then follow Penny Market and Albert. The most expensive player in the market is then, undoubtedly, Billa. An important factor in the assessment of individual chains is the price stability of goods offered. Based on the calculation of the average deviation the stable prices (Table XI) can be found in Albert, Lidl, Kaufland and Interspar.

By contrast, quite considerable price fluctuations exist in Tesco, Penny Market and Billa. In addition to the overall stability of the price baskets of individual retail chains it is interesting to look at the price stability of their different components (Table XII). The above data show that, on average, in all the retail chains the most stable prices can be found in the case of rice, butter, plain yogurt, cheese, sugar and meat.

On the other hand, items with the highest rate of price fluctuations are potatoes, eggs, onions, apples, oranges, bananas, carrots, flour and coffee – it thus mostly concerns goods, which are affected by seasonality (Table XII). Overall, it is valid that on average the prices in individual retail chains more or less follow the same general trend within the framework of the Czech market. However, it is also valid that within individual retail chains there are some differences in the degree of price fluctuations observed in individual monitored food products (Table XIII).

Individual chains tend to copy their competitors – in this respect, a significant degree of correlation exists especially in the pricing policies of Penny

XI: *Development of consumer foodstuff prices in selected detail chain in the Czech Republic – field survey*

	2011 March	2011 June	2011 September	2011 December	2012 March	2012 June	2012 September	2012 December	2013 March	2013 June	Chain index	Corre-lation in relation to general price level in the Czech Republic	Elasticity	Standard deviation
Penny Market	815.8	824.3	831.3	905.1	955.4	955.4	1021.9	1047.2	887.2	1078.2	1.03	0.79	3.81	79.44
Albert	931.5	955.7	945.2	932.3	1010.9	1010.9	1041.4	1015.2	957.3	893.7	1.01	0.20	0.44	40.16
Lidl	885.3	956.9	930.2	941.1	1059.6	1023.2	994.6	1048.0	1018.0	1086.7	1.02	0.90	2.75	52.78
Billa	962.9	1015.0	976.2	1027.9	1075.9	1140.8	1133.5	1299.3	1075.5	1236.2	1.03	0.77	3.62	86.51
Kaufland	859.6	866.3	842.2	868.8	962.5	966.4	967.8	928.1	969.0	1049.7	1.02	0.95	3.18	55.05
Tesco	881.9	894.3	877.9	951.8	1002.9	1006.9	1006.9	1135.2	1114.2	1123.4	1.03	0.92	4.29	78.45
Interspar	966.7	904.3	884.3	996.2	1031.2	1035.1	899.2	1059.2	943.3	1038.2	1.01	0.46	1.45	56.21
Penny Market	100.0	101.0	101.9	110.9	117.1	117.1	125.3	128.4	108.8	132.2				
Albert	100.0	102.6	101.5	100.1	108.5	108.5	111.8	109.0	102.8	95.9				
Lidl	100.0	108.1	105.1	106.3	119.7	115.6	112.3	118.4	115.0	122.7				
Billa	100.0	105.4	101.4	106.7	111.7	118.5	117.7	134.9	111.7	128.4				
Kaufland	100.0	100.8	98.0	101.1	112.0	112.4	112.6	108.0	112.7	122.1				
Tesco	100.0	101.4	99.5	107.9	113.7	114.2	114.2	128.7	126.3	127.4				
Interspar	100.0	93.5	91.5	103.1	106.7	107.1	93.0	109.6	97.6	107.4				
Penny Market	1	1	1	2	1	1	5	4	1	4	21		Kaufland	20
Albert	5	5	6	3	4	4	6	2	3	1	39		Penny Market	21
Lidl	4	6	5	4	6	5	3	5	5	5	48		Albert	39
Billa	6	7	7	7	7	7	7	7	6	7	68		Interspar	41
Kaufland	2	2	2	1	2	2	2	1	4	2	20		Tesco	43
Tesco	3	3	3	5	3	3	4	6	7	6	43		Lidl	48
Interspar	7	4	4	6	5	6	1	3	2	3	41		Billa	68

Source: own processing, field survey, 2013

XII: *The value of food price standard deviation in relation to average price of selected foodstuff products sold in selected retail chains in the Czech Republic in CZK (field survey)*

	Penny Market		Albert		Lidl		Billa		Kaufland		Tesco		Interspar	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Carrot	2.48	15.11%	1.68	10.43%	5.11	27.34%	2.68	14.03%	3.07	20.03%	2.71	17.25%	2.80	18.77%
Onion	2.20	18.09%	2.83	22.46%	8.05	41.60%	2.60	14.53%	2.04	17.05%	1.80	15.09%	2.76	21.48%
Bananas	3.69	13.52%	3.83	13.45%	4.24	16.92%	4.26	12.53%	5.38	21.28%	5.17	22.77%	8.60	33.38%
Oranges	6.53	27.58%	5.00	18.25%	7.82	26.20%	4.96	14.55%	4.22	14.78%	4.68	17.76%	5.25	18.85%
Apples – gold del.	3.78	11.72%	5.00	19.69%	2.99	9.07%	7.24	19.51%	6.88	30.50%	7.78	27.00%	7.77	27.25%
Edam 45% box	21.26	17.07%	6.80	4.46%	11.44	8.27%	38.50	22.02%	13.47	10.89%	34.96	18.05%	13.16	8.03%
Edam 30% box	10.34	8.20%	10.96	8.90%	10.27	8.28%	13.60	9.58%	3.83	2.55%	7.07	5.45%	18.15	16.36%
Bread Šumava	2.85	11.82%	2.77	11.60%	2.60	11.06%	2.40	9.82%	3.00	13.21%	2.83	11.85%	6.26	27.54%
1 l Sunflower oil	1.94	5.67%	2.28	6.97%	1.80	5.31%	3.98	11.64%	4.19	13.64%	9.76	26.69%	3.92	10.13%
Coffee standard 250 g	8.88	15.58%	10.68	19.07%	6.24	9.71%	9.40	18.99%	7.45	19.47%	7.50	15.70%	8.75	17.39%
1 kg flour	2.31	26.20%	1.67	16.48%	1.79	18.02%	1.34	11.63%	1.52	15.83%	1.58	16.32%	1.62	15.86%
1 kg sugar	1.96	9.12%	1.52	7.00%	1.60	7.34%	2.80	12.23%	1.54	7.11%	1.90	8.75%	1.66	7.57%
1 kg rice	0.96	4.78%	0.36	1.83%	1.42	6.84%	1.44	6.61%	1.20	6.18%	0.56	2.82%	0.34	1.69%
Chicken – chilled – 1 kg	8.83	14.39%	9.00	12.52%	11.70	18.40%	8.00	11.44%	8.77	12.82%	14.35	25.75%	9.06	13.31%
Pork meat (with bone) 1 kg	9.91	8.38%	6.43	5.84%	8.28	6.73%	23.60	18.10%	9.10	8.69%	7.86	6.77%	8.55	7.49%
Pork meat (without bones – 1 kg	25.70	19.38%	17.29	11.63%	9.34	5.74%	13.00	7.43%	7.83	4.97%	14.51	9.71%	11.49	7.37%
Pasteurized milk – 1 l	0.88	6.07%	0.96	6.58%	1.75	11.66%	2.00	14.39%	2.51	17.91%	2.52	18.61%	2.16	15.06%
Yogurt white – Hollandia 500 g	0.84	4.62%	0.77	4.21%	1.22	9.45%	1.12	6.05%	2.48	14.94%	1.69	9.84%	1.58	8.48%
Butter – 250 g	2.14	7.64%	1.64	5.84%	1.96	7.05%	3.00	9.71%	2.39	8.88%	2.91	10.18%	1.32	4.87%
10 eggs M	10.00	32.36%	7.20	23.30%	7.00	23.41%	6.52	20.06%	10.06	36.43%	8.62	25.03%	6.31	20.26%
Potatoes	8.68	37.13%	4.85	28.28%	6.29	27.85%	11.17	39.78%	5.96	37.94%	9.05	35.21%	5.35	34.07%

Note:
1 – Standard deviation within the monitored time period,
2 – The share of standard deviation average value in relation to average price in analyzed time period
Source: own processing, field survey, 2013

XIII: *The share of standard deviation average value in the value of average price of individual analyzed foodstuff products in selected retail chains in analyzed time period*

Item	Share
Potatoes	34.62%
10 eggs M	25.63%
Onion	22.57%
Apples – gold del.	19.96%
Oranges	19.44%
Bananas	18.65%
Carrot	17.66%
1 kg flour	16.92%
Coffee standard 250 g	16.22%
Chicken, chilled – 1 kg	15.19%
Bread Šumava ks 1 200 g	13.74%
Edam 45 % box	13.03%
Milk 1 l	12.79%
1 l Sunflower oil	11.56%
Pork meat (without bone) 1 kg	9.17%
Pork meat (with bone) 1 kg	9.03%
1 kg Sugar	8.47%
Edam 30 % box	8.19%
Yogurt white, Hollandia – 500 g	8.06%
Butter – 250 g	7.78%
1 kg rice	4.43%

Source: own processing, field survey, 2013

Market, Lidl, Tesco and Billa. A limited degree of correlation in relation to the prices of major competitors exists in Interspar. And finally, from the collected data it appears that Albert is a fully independent player in terms of pricing policy in relation to its partners (Table XV).

CONCLUSIONS

The Czech food products market has undergone a whole range of changes in recent years. They have significantly affected its appearance and character. Especially in the field of retail prices of consumed products, there was a very significant shift – which was marked by a continuous growth in the price levels of food products.

The following can be stated about the objectives of this article: Regarding the first objective, which was to identify consumer prices in the market in the Czech Republic in relation to the development of consumer prices in the world and EU markets, it can be noted that the prices on the Czech market very strongly correlate particularly in relation to the EU market, but very weakly in relation to the world market. The Czech consumer prices sensitivity is very strong – very flexible towards the changes in the price level on the market of the EU and *vice versa* but completely inflexible in respect to changes in the price levels on the world market.

Regarding the second objective, which was to identify the differences between the development of the market in the Czech Republic and in other countries of the European Union, it can be said that the Czech Republic follows the general development of price trends existing in the EU countries market. The growth in food prices on the Czech market is very close to the average growth rate of the food prices index in the EU market.

The domestic higher growth rate, in comparison with the growth rate of food prices in the EU27 is related to the fact that the Czech Republic, just like the other new member states, gradually adjust their food prices levels especially in relation to the EU15 (old EU member states). In addition to the classic inflation and the general trend of rising food prices around the world, convergence and transformation processes are also having an impact on the growth of food prices in the Czech Republic and other new member states. With regard to price fluctuations on the Czech market, it can be noted that, in relation to particular commodity segments of the food prices the fastest growth was experienced byfruit and vegetables, oils and fats, dairy products, fish and seafood, poultry, beef and cereals and bakery products.

In the Czech Republic there are no uniform price levels and there are significant price differences between regions. Regarding the nature of the Czech retail market: on the one hand it is very concentrated – a relatively small number of players control the character of the market – but, on the hand, in comparison with the European average, the market is highly competitive, since none of the market subjects dominates clearly. Individual retail chains in their pricing policies more or less follow the same general price trends and tendencies that conform to the development of the domestic market and in particular the EU market.

It can be expected that the retail market will continue to concentrate and the competition amongst the retail chains will become tougher. Some of the chains will be either forced to reduce their share in the market or, like some of the chains in the past, will have to withdraw from the market sooner or later, as has happened to Delvita, Julius Meinl and Carrefour.

A long-term dominant position in the market has been held by the groups of Schwartz, Rewe a Tesco Stores. In the future it can be expected that the consumer prices of foodstuffs on the Czech retail market will continue to grow. The prices development will conform to the changes which will occur on the world market in general and the EU market in particular.

A very important role in shaping the form of the market and pricing policies will also be played by the position of Czech economy within the framework of the EU countries' economies. The development of consumer prices in the coming years will reflect the ability or inability of the Czech economy to extricate itself from the current economic problems.

XIV: *The share of average value of standard deviation in the value of average food price in individual analyzed retail chains during the analyzed time period*

Penny Market		Albert		Lidl		Billa		Kaufland		Tesco		Interspar	
7	37.1%	**7**	28.3%	**8**	41.6%	**7**	39.8%	**7**	37.9%	**7**	35.2%	**7**	34.1%
5	32.4%	**5**	23.3%	**7**	27.9%	**10**	22.0%	**5**	36.4%	**12**	27.0%	**6**	33.4%
19	27.6%	**8**	22.5%	**17**	27.3%	**5**	20.1%	**12**	30.5%	**4**	26.7%	**11**	27.5%
3	26.2%	**12**	19.7%	**19**	26.2%	**12**	19.5%	**6**	21.3%	**15**	25.7%	**12**	27.2%
20	19.4%	**14**	19.1%	**5**	23.4%	**14**	19.0%	**17**	20.0%	**5**	25.0%	**8**	21.5%
8	18.1%	**19**	18.2%	**15**	18.4%	**21**	18.1%	**14**	19.5%	**6**	22.8%	**5**	20.3%
10	17.1%	**3**	16.5%	**3**	18.0%	**19**	14.5%	**16**	17.9%	**16**	18.6%	**19**	18.8%
14	15.6%	**6**	13.4%	**6**	16.9%	**8**	14.5%	**8**	17.0%	**10**	18.1%	**17**	18.8%
17	15.1%	**15**	12.5%	**16**	11.7%	**16**	14.4%	**3**	15.8%	**19**	17.8%	**14**	17.4%
15	14.4%	**20**	11.6%	**11**	11.1%	**17**	14.0%	**13**	14.9%	**17**	17.3%	**9**	16.4%
6	13.5%	**11**	11.6%	**14**	9.7%	**6**	12.5%	**19**	14.8%	**3**	16.3%	**3**	15.9%
11	11.8%	**17**	10.4%	**13**	9.5%	**1**	12.2%	**4**	13.6%	**14**	15.7%	**16**	15.1%
12	11.7%	**9**	8.9%	**12**	9.1%	**4**	11.6%	**11**	13.2%	**8**	15.1%	**15**	13.3%
1	9.1%	**1**	7.0%	**9**	8.3%	**3**	11.6%	**15**	12.8%	**11**	11.9%	**4**	10.1%
21	8.4%	**4**	7.0%	**10**	8.3%	**15**	11.4%	**10**	10.9%	**18**	10.2%	**13**	8.5%
9	8.2%	**16**	6.6%	**1**	7.3%	**11**	9.8%	**18**	8.9%	**13**	9.8%	**10**	8.0%
18	7.6%	**21**	5.8%	**18**	7.1%	**18**	9.7%	**21**	8.7%	**20**	9.7%	**1**	7.6%
16	6.1%	**18**	5.8%	**2**	6.8%	**9**	9.6%	**1**	7.1%	**1**	8.7%	**21**	7.5%
4	5.7%	**10**	4.5%	**21**	6.7%	**20**	7.4%	**2**	6.2%	**21**	6.8%	**20**	7.4%
2	4.8%	**13**	4.2%	**20**	5.7%	**2**	6.6%	**20**	5.0%	**9**	5.5%	**18**	4.9%
13	4.6%	**2**	1.8%	**4**	5.3%	**13**	6.1%	**9**	2.6%	**2**	2.8%	**2**	1.7%

Note: 1 – sugar, 2 – rice, 3 – flour, 4 – sunflower oil, 5 – eggs, 6 – bananas, 7 – potatoes, 8 – onion, 9 – edam 30%, 10 – edam 45%, 11 – bread Šumava, 12 – apples, 13 – yogurt white, 14 – coffee, 15 – chicken, 16 – milk, 17 – carrot, 18 – butter, 19 – oranges, 20 – pork meat (with bone), 21 – pork meat (without bone)
Source: own processing, field survey, 2013

XV: *The measure of foodstuff products price correlation in relation to mutual price formation/competition of individual retail chains – the analysis of selected segment of foodstuff products in period 2011–2013*

Korelace	Penny Market	Albert	Lidl	Billa	Kaufland	Tesco	Interspar
Penny Market	1.0000	0.3071	**0.8228**	**0.9224**	**0.8047**	**0.7976**	**0.5966**
Albert	0.3071	1.0000	0.2651	0.3045	0.1369	0.1660	0.0544
Lidl	**0.8228**	0.2651	1.0000	**0.8209**	**0.8795**	**0.8501**	**0.6143**
Billa	**0.9224**	0.3045	**0.8209**	1.0000	**0.7154**	**0.8666**	**0.6452**
Kaufland	**0.8047**	0.1369	**0.8795**	**0.7154**	1.0000	**0.8083**	0.4868
Tesco	**0.7976**	0.1660	**0.8501**	**0.8666**	**0.8083**	1.0000	**0.5843**
Interspar	**0.5966**	0.0544	**0.6143**	**0.6452**	0.4868	**0.5843**	1.0000

Source: Own processing, 2013

Furthermore, the development of input prices, inflation, fiscal policy, and of the purchasing power of the population, will ultimately have an important impact on the evolution of the preferences of consumers and their consumption habits.

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