Market Concentration as a Precondition for Higher Competitiveness of the Czech Food Industry

Ivana Blažková, Gabriela Chmelíková

Abstract: The paper deals with the market concentration in the context of the development of market structure within the agribusiness commodity verticals. The aim of the paper is to evaluate the concentration on the Czech food processing market and to find the disparities among particular sectors of the food industry. Market concentration is calculated in the Czech food industry as a whole and within the particular food sectors. The general market concentration in the food industry in the period 2007-2012 grew. However, the number of companies, size structure of enterprises and the process of concentration are different in the particular food sectors in the Czech food industry. The concentration increased significantly in the sector of manufacture of vegetable and animal oils and fats and in the sector of manufacture of prepared animal feeds. The relatively high level of concentration is also in the sector of processing and preserving of fruit and vegetables, in the sector of manufacture of other food products and in the sector of manufacture of dairy products. Less concentrated sectors are manufacture of grain mill products and manufacture of bakery products, where there is a large number of very small enterprises of local significance. Increasing concentration in most sectors of the food industry can be considered as a prerequisite for higher competitiveness of the Czech food processors in relation to highly concentrated retail.

Key words: Market Concentration · Food Industry · Market Structure · Competitiveness

JEL Classification: D47 · L11 · L66

1 Introduction

Changing market structures, increasing concentration of companies and increasing impact of large transnational chains on the character of markets can be considered as the most significant features of contemporary development also on the agro-food markets.

At present, the major players in the food market are multinational corporations. As reported by Daniels (2008), through contracts with food producers these corporations are also crucial in determining the nature and quality of the food supply. It is clear that the quality of food produced is determined by supermarkets and other transnational actors, often organized into large corporations, which currently can more simply succeed in the large competition, pricing policies and legislation regarding food quality and safety than small local producers.

With the entry of retail chains into the Czech market the structure of agribusiness has radically changed. Czech food processing enterprises, with regard to their weaker bargaining position with retail chains, were often forced to accept their disadvantage delivery terms and conditions including various fees for introduction of goods into the store, participation in the advertising or they had to suffer long maturity invoices. At the same time the food processors were under the strains on supply wholesale price and quality. On the other side the end consumer benefited from this situation with regard to lower price and variety of food.

Given the need to strengthen competitiveness the concentration is gradually increasing also in the Czech food industry. High concentration is reached in the sugar industry, in other fields of the Czech food industry the process is gradually under way (e.g. markedly in the dairy and bakery industry). Generally, the low concentration of the food producers makes the food industry to be less competitive. In contrast, the retail concentration is very dynamic. While CR5 indicator in the Czech food industry in 2011 reached the value of 11.25%, concentration in the retail sector was more than four times higher – in 2011 CR5 value was 45.5% (calculated on the basis of data published by Bismode in the database Albertina). The lower level of concentration in the food industry means smaller volume of investment and consequently deepening disproportions in profits of manufacturer and trader and in overall market position (Blažková, 2014).
2 Methods

Unambiguous assessment of the concentration is a complex task as explained by Curry and George (1983). According to Shughart II (in Henderson, 2007), industrial concentration refers to a structural characteristic of the business sector, that is the degree to which production in an industry (or in the economy as a whole) is dominated by a few large firms. Once assumed to be a symptom of “market failure”, concentration is, for the most part, seen nowadays as an indicator of superior economic performance. Industrial concentration remains a matter of public policy concern even so.

Assessment of market concentration is contradictory from a business perspective and the perspective of the national economy. On the one hand, there are arguments that support the positive effects of higher concentration due to the distribution of fixed costs across a larger number of products, thanks to the repetition of certain activities and also due to a concentration of research, marketing and financial transactions and the use of managerial capacity. On the other hand, high market concentration usually means monopoly or dominant firm in the industry, which can be associated with market power. Large companies (e.g. transnational companies) have considerable bargaining power and ability to influence economic policy and the government's decision through corruption or social threat of unemployment, influencing public opinion, etc. (Adams & Brock, 1986; Dicken, 2011).

Brandow (1969) considers market power as one of the most elusive terms in economics. In his article he defines market power as “a firm's ability to affect directly other participants in the market or such market variables as prices and promotion practices”. It is known that market power has many levels – from no market forces when the firm operates in a perfectly competitive market, to a large market power in the case of the monopoly firm with inelastic demand (or monopsony with inelastic supply). Moreover, the company may have little or no market power in one market, while in another market has significant market power – e.g. a firm processing fruits and vegetables may have significant market power when buying from farmers in certain areas, but very little market power in the sale of processed products customers, i.e. trade.

In this paper the problem of market concentration is discussed in the context of the development of market structure within the agribusiness commodity verticals, which has a significant influence on the development of relations and the price formation at different levels of the commodity verticals, as stated in Blažková (2008). The aim of the paper is to evaluate the concentration on the Czech food processing market, to find disparities among particular sectors of the food industry and to discuss the causes and consequences of the results obtained.

The analysis is based on the data published by the Czech Statistical Office, by the Ministry of Agriculture of the Czech Republic and the corporate database Albertina published by Bisnode. The analysed period is from 2007 to 2012. Common statistical methods (analysis, synthesis, comparison) were employed in the data processing. Markets are defined based on the 2- and 3-digit level of the Classification of Economic Activities (CZ-NACE). First, the share of the largest food processors in total production of the food industry is calculated (see Table 2), where as an indicator of output (production) the sales of own products and services are used. Within the 3-digit division the number of enterprises in particular sectors of the food industry is monitored and the size structure of enterprises in these sectors is analysed. Structure development is evaluated in terms of company’s size, which is defined according to the number of persons employed. Companies are classified in four size groups – with 1-19, 20-49, 50-249 and 250 or more persons employed.

Market concentration is expressed by the most common measure of concentration – the concentration ratio (the share of one largest firm and the four largest firms on the total sector production). The concentration ratio ($CR_m$) is calculated as the percentage of market share held by the $m$ largest firms in an industry (Viscusi et al., 2005):

\[
CR_m = \sum_{i=1}^{m} S_i
\]

where:
- $S_i$ denotes the percentage of the $i$-th firm calculated as the production of the company divided by the sum of production of all firms in the market,
- $m$ denotes number of the largest firms for which the concentration ratio is calculated.

Market share is the percentage of a market accounted for by a specific entity (in this case it is calculated in terms of revenue, i.e. sales of own products and services). Calculations of the degree of concentration on the basis of individual company data may contribute to the explanation of the development of market concentration in the different sectors of the food industry, to the identification of differences in concentration across the commodity verticals and to the prediction of future changes in the markets' structure.
3 Research results

Until 1989, the Czech Republic belonged to command economies – market structures on both the supply and the demand side were distorted, the prices were regulated, the currency was not convertible and foreign trade worked under a state monopoly. During economic reform after 1989 food processing companies were privatized, resp. restituted, which created opportunities for the development of small and medium-sized enterprises. Due to division of enterprises and emerging businesses, the number of food enterprises increased (according to the data published by the Czech Statistical Office, 217 state industrial enterprises operated in 1990 in the Czech food industry). The number of enterprises in the particular sectors of the Czech food industry in the recent years is shown is shown in Table 1.

Table 1 Number of enterprises in particular sectors of the Czech food industry

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<thead>
<tr>
<th>CZ-NACE</th>
<th>2007</th>
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<td>1198</td>
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<td>1861</td>
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<td>262</td>
<td>309</td>
<td>393</td>
<td>410</td>
<td>513</td>
</tr>
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</table>

Source: Panorama potravinářského průmyslu 2012 (Ministry of Agriculture of the Czech Republic), corporate database Albertina (Bisnode)

The general concentration in the food industry expressed by share of the four largest firms on the total food production in the period 2007-2012 grew, even with an increasing number of firms in the industry. The growth of concentration is confirmed also in the case of the share of the ten, resp. fifty or hundred, largest firms on the total food production. From the number of 7149 enterprises in the Czech food industry in 2012 one hundred largest companies contribute to the total food industry production more than 50% (56.9% in 2012), as seen in Table 2 showing the share of the largest enterprises on the total food production in the Czech Republic in 2007-2012.

Table 2 Share of the largest enterprises on the total production in the Czech food industry in %

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<th>2007</th>
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<th>2012</th>
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<tr>
<td>Share of the 4 largest</td>
<td>8.4</td>
<td>8.6</td>
<td>10.0</td>
<td>10.3</td>
<td>10.4</td>
<td>11.5</td>
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<tr>
<td>Share of the 10 largest</td>
<td>14.5</td>
<td>15.9</td>
<td>18.1</td>
<td>20.1</td>
<td>20.4</td>
<td>21.4</td>
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<tr>
<td>Share of the 50 largest</td>
<td>25.1</td>
<td>28.6</td>
<td>33.1</td>
<td>40.3</td>
<td>43.5</td>
<td>45.9</td>
</tr>
<tr>
<td>Share of the 100 largest</td>
<td>33.2</td>
<td>37.6</td>
<td>42.5</td>
<td>50.0</td>
<td>54.0</td>
<td>56.9</td>
</tr>
</tbody>
</table>

Source: Own processing on the basis of the data published by the Ministry of Agriculture of the Czech Republic (Panorama potravinářského průmyslu 2012) and by Bisnode (corporate database Albertina)

The number of companies and size structure of enterprises in various sectors of the food industry is considerably different. The highest number of enterprises is in traditional food sectors such as meat processing, bakery production and in the production of other food products, which includes disparate subsectors such as the production of sugar, cocoa, chocolate, various spices, ready meals and other products. These sectors (10.1 and 10.7) have a large number of small private enterprises, which are targeting the local or regional market and for them there are crucial quality, product specialisation and difference. In contrast, the lowest number of enterprises is in the fish processing sector (10.2), which follows logically from the geographical position of Czech Republic. Size structure of food processing enterprises according to the number of employees in 2012 in the Czech Republic is shown in Figure 1.
Based on the analysis, we can conclude that the concentration process is different depending on the sector – the concentration ratios are presented in Table 3 and Table 4. The share of the largest enterprise on the total sector production increased significantly especially in the sector of 10.4, i.e. manufacture of vegetable and animal oils and fats (from 1.7% in 2007 to 66.8% in 2012) and 10.9, i.e. manufacture of prepared animal feeds (from 3.3% in 2007 to 23.3% in 2012), as shown in Table 3. Sector 10.4 is based on the production of crude and refined oils and fats (vegetable and animal except smelting and refining of lard and other animal fats), and is highly concentrated (the indicator CR4 was 90.2% in 2012) – on the Czech market there are only a few large enterprises, as the largest companies there can be mentioned Preol, a.s. (a significant processor of oilseeds mainly for the production of rapeseed methyl ester), ADM Prague, s.r.o. (the largest supplier of edible vegetable oils in the Czech Republic) and since 2011 Usti Oils, s.r.o. (a manufacturer of edible vegetable oils). Feed production sector (10.9) includes manufacturing subsectors of livestock feed and fodder production for pets. In recent years, the proportion of compound feed for livestock decreased (which is a consequence of the development of the livestock), while the production of pet food increased significantly (in 2012 the share of the subsector of feed for pet animals on total sales of the sector was 43%, while, e.g. in 2007 it was only 14.1%). The largest company in the industry in terms of sales has been Hill’s Pet Nutrition Manufacturing, s.r.o. (the largest supplier of edible vegetable oils in the Czech Republic) and since 2011 Usti Oils, s.r.o. (a manufacturer of edible vegetable oils). The level of concentration in the sector is high – the indicator CR4 was 42.6% in 2012.

**Table 3** Share of the largest producer on the total production in the sectors of the Czech food industry – CR1 in %

<table>
<thead>
<tr>
<th>CZ-NACE</th>
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Source: Own processing on the basis of the data published by the Ministry of Agriculture of the Czech Republic (Panorama po-travinářského průmyslu 2012) and by Bisnode (corporate database Albertina)
The relatively high level of concentration is in the sector 10.3, i.e. processing and preserving of fruit and vegetables, which is one of the less important sectors in terms of sales and employment – the share of sector revenues on the total revenues of the whole food industry in 2012 was only 2.5%. Number of enterprises processing fruits and vegetables dramatically decreased (from 216 in 2007 to 146 in 2012 as seen in Table 1). Weakening of this sector is mainly related to the inflow of imports from countries with better environmental conditions. In addition the weakening position is caused also by increase in consumer demand for fresh fruit and vegetables, which are currently available on the market throughout the whole year. Improving the position of the sector may lie in the wider use of fruit and vegetables in the final food processing (such as delicatessen), in usage in gastronomy and substantial factor is also innovation of processed products. The largest manufacturer in terms of sales is the company Intersnack, a.s. (a producer of salty snacks such as chips, tortillas, crackers, etc.) which share on total sales of the sector 10.3 (CR4) was 20.3% in 2012. The major fruit, resp. vegetables, processors are Beskyd Fryčovice, a.s., Hamé, s.r.o. and Fruta Podivín, a.s.

Table 4 Share of the four largest producers on the total production in the sectors of the Czech food industry – CR4 in %

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Source: Own processing on the basis of the data published by the Ministry of Agriculture of the Czech Republic (Panorama po-travinářského průmyslu 2012) and by Bisnode (corporate database Albertina)

In the sector of dairy production (10.5), which is one of the key sectors of the Czech food industry, the process of concentration is under way. The indicator CR4 is in the analysed period over 30%. The competitive environment is for milk processors in the Czech Republic highly challenging. A high proportion of dairy products is imported, although dairies in the Czech Republic are able to produce products of an adequate quality, i.e. the import does not mean just the enrichment the market with foreign specialties. In this case, the negative role is played by multinational retail chains which often prefer foreign suppliers – these retail chains seek production of low price levels and are little interested in production quality issues. It can be assumed that the concentration in this sector will grow, because highly concentrated enterprises are able to compete on a national and European market, while smaller dairies will be forced to focus on the regional markets or “niche markets” and to offer specific or regional dairy products, which can be sold e.g. on the farmers’ markets or specialized stores. The largest producer of dairy products in terms of sales is the company Madeta, a.s., which share on total sales of the sector 10.5 (CR4) was 12.1% in 2012. Other major companies are Olma, a.s., Mlékárna Pragolaktos, a.s., Danone, a.s. and Mlékárna Hlinsko, a.s.

The sector of meat processing (10.1) has been a sector with the largest share on the sales of the entire food industry for long time. The sector is not too concentrated – the CR4 was 26.6% in 2012 and all large enterprises (with more than 250 employees) accounted for 43.7% of total industry sales in 2012. The structure of the sector is characterized by a large number of very small processors, which is documented in Figure 1. In relation to agriculture, the situation is worst in the pork processing, because processors do not require domestic raw material, but relatively inexpensive foreign raw material, where meat products are intended primarily to domestic market. The largest producers of meat products in terms of sales are Kostelecké uzeniny, a.s. and Vodňanská drůbež, a.s. (parts of the group Agrofert), Masokombinát Plzeň, s.r.o. and MP Krásmo, a.s.

The high concentration of the sector 10.8, which includes a variety of manufacturing sub-sectors, is caused mainly by the situation on the sugar market – the total sugar production in the Czech Republic in 2012 was provided only by five sugar companies. The largest share on the sector sales has the company Tereos TTD, a.s. (manufacturer of sugar) – in 2012 the value of CR1 was 15.6%. The share of the four major enterprises (Tereos TTD, a.s., Nestlé Česko, a.s., Moravskoslezské cukrovary, a.s. and Vitana, a.s.) on total sales of the sector was 37% in 2012. The trend of concentration in this sector is obvious – in 2007 the indicator CR4 was 26.3%.

Sectors 10.6 and 10.7, i.e. manufacture of grain mill products, starches and starch products and manufacture of bakery and farinaceous products, belong traditionally among less concentrated sectors. Especially on the bakery market
there is a large number of very small enterprises of local significance. Large enterprises with strong market position often include both bakery and mill production due to higher competitiveness of vertically integrated production. Companies with the largest market share are Penam, a.s. (bakery and mill production), Europasta SE (pasta production) and GoodMills Česko, a.s. (the largest milling group).

The sector 10.2 is the least significant food sector in the Czech Republic – the share of sector revenues on the revenues of the whole Czech food industry was only 0.6% in 2012. The data of this sector are mostly unavailable, because only small firms operate on this market and they are not legally obliged to publish their financial data. Another problem with the determination of concentration ratios is the fact that data available from the Ministry of Industry and Trade differ significantly from the corporate database Albertina.

4 Conclusions

Analysis has shown increasing concentration in most sectors of the food industry, which is a prerequisite for higher competitiveness of the food enterprises. Nevertheless, the concentration in the Czech food industry is still low in comparison with the subsequent vertical stage, i.e. trade (CR5 was 11.25% in the Czech food industry in comparison with 45.5% in the Czech retail sector). In addition to the horizontal integration of enterprises, which results in higher concentration, the lack of competitiveness could be improved also by innovations and widening of product range according to the consumer demand, by greater vertical integration of actors within the particular verticals or by creating new distributional channels (short supply chains).

There is no doubt that the development of the structure of the food market affects also relations and the formation of price levels within commodity chains. The growing importance of the finalizing stages of the food commodity chain is also obvious from the declining share of agricultural prices on the final food prices (see Blažková, 2008). Therefore, this paper is considered to be a starting point for the further research – the causal link between the level of concentration in various sectors of the Czech food industry and the development of price margins and financial performance of processors in these sectors.

Acknowledgement

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