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Transformation of the Subjective Structure of the Polish Food Industry in 2004-2016

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Abstract. In order to identify the directions of changes in the subjective structure of the Polish food industry, including development of concentration and consolidation processes, this article carries out statistical and descriptive analyses of the changes in these structures. This analysis presents shares (current status and its changes in the period of Poland's membership in the EU) of individual groups of enterprises, both in the total number of entities and the average employment, and in the value of sold production. Changes in the subjective structure in the entire food industry and in its individual branches were analysed, dividing them into groups of branches with the highest, average and the lowest level of concentration. In addition, a comparison of the subjective structure of the food industry in Poland and in the European Union was made. The analysis uses published and unpublished statistical data of the Statistics Poland and the Eurostat. The conducted research proved that the progressing processes of regional integration and economic globalisation have fundamentally changed the directions of development of the subjective structure of the food industry in Poland. The processes of concentration and specialisation of production, which consist in a decrease in the number of active companies, mainly the smallest ones, and an increase in the number and share of large companies in the production and employment, take place in this sector. During the period of Poland's membership in the EU, the subjective structure of the food industry became similar to the structure observed in the EU Member States.

Keywords: Food Industry, Subjective Structure, Concentration Processes, Poland, European Union.

1 Introduction, Objective, Method

In the current economic conditions, various types of structural changes should be an important element of the country's economic policy, responsible for the proper development and competitiveness of the national economy. As far as international competitiveness is concerned, i.e. in relation to other national economies, concentration of production plays a particularly important role. It is in the interest of many economists because it affects not only the costs and efficiency of production, but also allows determining the competitive advantages of leading producers on the market and the strength of their impact on competitors.

Concentration process taking place in the economy in which enterprises participate can be defined as a growing quantitative advantage of a specific group in the entire population of units forming a given community. If the phenomenon of concentration is referred to the industry, then it can be assumed that it is a process of increasing the size of individual enterprises (due to the increase in production scale) or the process of diversifying their size, leading to the advantage of the largest producers in a given branch [6]. The concentration of production can be equated with the index of market power. The higher the degree of concentration in the sector, the greater is the market power of individual participants [3]. The degree of concentration also informs how much the participants of the sector are dependent on each other. Porter writes that the progressive asymmetry between the participants of the sector may allow the strongest manipulation of others [5]. Therefore, it turns out that the concentration process can lead to the creation of a monopoly, if only a given producer manages to obtain exclusivity for the production of a given product. Concentration of production is a kind of a way to gain a market advantage and that is why enterprises strive to achieve it. However, in the current economic conditions, concentration of production is not always enough to achieve and maintain a competitive advantage which also depends on many other factors that determine the market success of the enterprise.

In order to identify the main directions of changes in the subjective structure of the food industry in Poland, this article analyses the concentration processes in the Polish food industry and its most important branches. This analysis presents the shares of individual size classes of enterprises both in the total number of entities and in average employment, and in the value of sold production. Changes in the subjective structure in the entire food industry and in its individual branches are shown, dividing them into groups of branches with the highest, average and the lowest level of concentration. The subject of analysis was data for 2004, 2007, 2011 and 2016. The selection of these periods illustrates the state in the first year of Poland's accession to the EU (2004), after joining the EU and at the same time before the global economic crisis (2007), during the economic slowdown (2011) and the current state (2016). In addition, a comparison of the subjective structure of the food industry in Poland and in the European Union was made, paying attention to the assimilation of these structures. The analysis uses published and unpublished statistical data of the Statistics Poland and the Eurostat.

2 General Directions of Changes in the Subjective Structure of the Food Industry

Food processing belongs to the industries which are characterised by large dispersion and low level of concentration. This results from the lower level of technical development of this industry (it belongs to the group of the so-called low technology industries) and the nature of the subject of work, determined by the variability of processed agricultural products. Important features of the food industry include its strong link with local and regional markets, large versatility of inventory and fairly short series of production, as well as relatively short "best before" dates of products. These characteristics of food production are conducive to conducting business in this sector by micro, small and medium-sized enterprises. The food industry is therefore the area of the economy particularly predestined for development of small and medium-sized enterprises (SMEs) [9].

In 2016, nearly 16 thousand business entities were operating in the food industry (Table 1), including:

- 10.1 thousand micro companies (employing up to 9 people), constituting as much as 63.5% of all food companies, whose share in employment amounted to 13.6%, and in sales only 4.4%;
- 4.4 thousand small enterprises (employing from 10 to 49 people), which accounted for 27.7% of the entire community, and their share in employment was 18.2% and in sales 13.0%;
- 1117 medium-sized enterprises (employing between 50 and 249 people), i.e. 7.0% of all food companies; whose share in employment was 26.9%, and in sales 26.3%;
- 286 large companies (employing more than 249 people), which constituted only 1.8% of the entire community, but their share in employment was 41.3%, and in sales as much as 56.3%.

Table 1. Subjective structure of the food industry in Poland in 2004-2016 by the size of enterprises (measured by the number of employees) [7].

Detailed list	2004	2007	2011	2016
The number of enterprises				
Total	19,696	16,727	15,185	15,899
including: micro (up to 9 employees)	13,039	10,469	9,035	10,100
small (10-49 employees)	5,158	4,738	4,716	4,396
medium-sized (50-249 employees)	1,227	1,232	1,156	1,117
large (more than 249 employees)	272	288	278	286
Average employment (in thou. persons)				
Total	456.1	462.7	453.3	450.8
including: micro (up to 9 employees)	70.7	66.7	61.9	61.2
small (10-49 employees)	96.1	90.7	92.6	82.0
medium-sized (50-249 employees)	133.1	134.5	125.1	121.2
large (more than 249 employees)	156.2	170.8	173.7	186.4
Sold production (in current prices, in PLN billion)				
Total	113.5	141.8	179.3	215.1
including: micro (up to 9 employees)	7.6	8.8	7.5	9.5
small (10-49 employees)	18.6	20.9	27.1	28.0
medium-sized (50-249 employees)	35.6	39.1	46.8	56.6
large (more than 249 employees)	51.7	73.0	97.9	121.0

Throughout the period of transformations adapting the food industry to function in the conditions of integration with the European Union and progressing economic globalisation, together with the change of ownership, production, production potential, trade and other structures, the subjective structures of this industry also changed. In general, in 2004-2016, three stages of these transformations can be distinguished.

The period between 2004 and 2007 were years of Poland's integration with the European Union and a significant economic recovery. In this period, processes of concentration of production began to appear in the food industry. Along with the strengthening of the position of Polish food producers on the EU market, new circumstances which affected changes in the subjective structures of the food industry appeared. These circumstances included, among others, restructuring conducted by capital groups and sector leaders, which increased their market expansion capabilities and enabled them to function on the global market. The fact that the standards required by the EU were achieved mainly by large enterprises, which had the greatest chance of foreign expansion, was also of significance. For these reasons, the concentration trend, with the simultaneous development of specialisation of the production, returned. The area of activity for micro and small industrial enterprises started to narrow, the position of medium-sized companies was reducing, and the importance of large enterprises grew considerably [8]. The consequence of such directions of changes in the subjective structure was the reduction in the number of active companies, mainly the smallest ones, and the reduction of employment in the food industry which, together with the increase in production, brought a significant increase in labour productivity in this sector.

The period between 2008 and 2011 were, in turn, years of dynamic changes in the food industry, caused mainly by fluctuations in the economic conditions on the global market. When the global economic crisis became apparent, from mid-2008 to mid-2009, development of the food industry slowed down. After this period, the recovery of the food industry returned but its scale was smaller than before the crisis. The willingness of companies to invest was still limited [8]. As a result of these phenomena, the number of active companies, mainly micro, small and medium-sized ones, was further limited which, however, did not result in very large changes in the subjective structure of the food industry. Further increase in the importance of large enterprises in the turnover of the sector, demonstrating the continuing trend towards concentration of production, was the most noticeable.

In 2012-2016, there was a relative stabilisation of macroeconomic factors. During this period, the food industry in Poland was under strong pressure of declining domestic demand which limited the growth in the production of the food industry. The main factor of development of the food industry was export which managed over half of the increase in sold production of this sector. The second factor in development of production in the food industry was the increase in food sales prices. In 2016, domestic demand also stimulated the growth of sold production of the food industry. The increase in the sector's production took place in conditions of a relatively stable level of employment and growing investments [9]. The changes in the number and structure of the food industry companies in Poland which took place in this period point to the continuation of production concentration processes because in this period the share of large enterprises in production and employment increased, with the weakening of the position of the smallest industrial companies.

The structural changes caused a significant reconstruction of the subjective structure of the food industry, measured by the share of various size classes of entities in the number of enterprises, the value of sold production and employment of the entire food industry. As a result of the above transformations, the following changes in the subjective structure occurred in 2004-2016 [7]:

- the number of micro and small enterprises decreased 19.3%, while the number of employees decreased 11.2% and sold production in constant prices increased 14.0% and labour productivity 32.8%;
- the number of medium-sized companies decreased 9.0%, their employment 8.9%, while the production sold in constant prices increased 26.8%, and labour productivity 39.2%;
- the number of large enterprises increased 5.1%, with the increase in manning of 19.3% and the increase in sold production in constant prices of as much as 86.0% and labour productivity 55.9%.

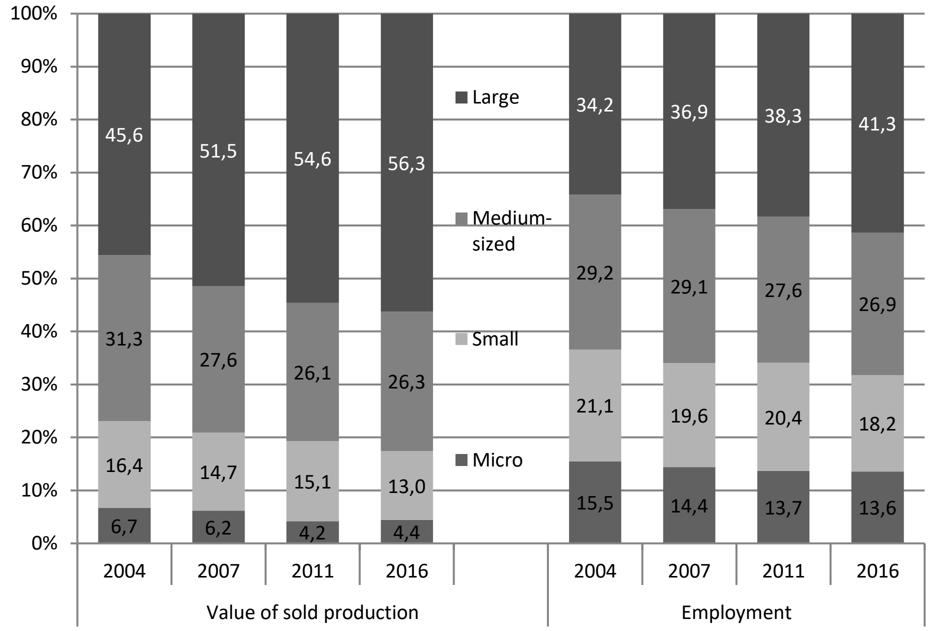

Fig. 1. Subjective structure of the food industry in Poland in 2004-2016 (in %) [9].

Changes in the subjective structure of the food industry occurring in 2004-2016 (**Fig. 1**) resulted primarily from the need to meet the requirements related to the integration of Poland with the European Union, the fulfilment of which was associated with concentration and specialisation of production. The food industry was also included in the processes of economic globalisation, mainly due to the functioning of international enterprises, at an accelerated pace. Developing transnational corporations became a source of strong impulses changing developmental conditions. Along with their popularisation in the Polish food industry, their impact on both other enterprises in this sector and the entire food market increased. Global corporations, both directly, i.e.

taking an active part in production and trade, and indirectly, i.e. influencing the behaviour of other entities (among other, the directions of restructuring of enterprises with domestic capital), changed the rules of functioning of the sector and influenced increase in its concentration [4]. Transnational corporations exist as entities taking part in the globalisation process and many authors tend to consider that they decide on the fate of the world. Their operation is the key economic force driving the globalisation processes in the economic area, which they change as well. The leading significance of the transnational corporations in the globalisation of the world economy results from their economic strength and advantages related thereto [1]. Changes related to the functioning of Poland within the EU and in the conditions of economic globalisation significantly changed and are still changing the subjective structure of the food industry.

3 The Intensity of Concentration Processes in Individual Branches of the Food Industry

The level of concentration of the food industry in Poland varies in individual branches. In this respect, the main directions of food processing can be divided into three groups, i.e.: branches with a high level of concentration, branches with an average level of concentration and highly fragmented branches.

Branches of industry with a high level of concentration are at the same time branches with high consolidation and even globalisation in which the share of large companies in the value of sold production of a given branch generally exceeds 60%, and 3-4 largest capital groups dominate the domestic market. This group includes the following branches: sugar, brewing, non-alcoholic beverages, confectionery (production of chocolate products and preserved pastry), and to a smaller extent also dairy, fish, oil and spirits branches (**Table 2**). In 2004-2016, the level of concentration of almost all of these branches increased. Among the branches with a high level of concentration, a small drop in the share of large companies occurred only in the oil and brewing branches, but these branches are still among the most consolidated ones.

The group with an average level of concentration are the basic branches of the food industry, such as meat, poultry, potato or fodder, as well as branches such as coffee and tea processing and the production of fruit and vegetable juices and drinks (**Table 2**). So far, these has been no significant consolidation of enterprises in these branches, which weakened the position of Polish food producers on foreign markets and the possibility of negotiating with large retail chains. However, in the analysed period, the level of concentration in this group of branches increased considerably. It was particularly noticeable in the processing of coffee and tea.

The third final group are quite strongly fragmented branches where the majority of production is located in small, micro and medium-sized enterprises. There are no strong leaders in these branches, and the market share of large enterprises generally does not exceed 40%. These are branches of the industry such as: cereal, pasta, baking, wine, and fruit and vegetable (**Table 2**). Low level of consolidation limits the opportunities for development of export and sales of entities in these branches in large retail chains.

In 2004-2016, changes in the concentration level of these directions of food processing were multi-directional. The share of large companies in sales decreased in the fruit and vegetable branch, and increased in other branches.

Table 2. The share of large enterprises in the value of sold production of individual food industry branches in Poland in 2004-2016 (excluding micro enterprises, in %) [11].

Detailed list	2004	2007	2011	2016
Branches with the highest level of concentration				
Sugar	59.5	75.8	100.0	100.0
Brewing	84.4	90.8	87.5	85.4
Non-alcoholic beverages	60.6	68.2	76.0	73.8
Confectionery	72.3	75.2	79.2	70.9
Dairy	58.0	63.1	64.6	71.0
Fish	36.5	64.5	64.5	63.0
Oil	59.0	54.6	52.3	63.8
Spirits	38.8	45.0	65.5	61.9
Branches with an average level of concentration				
Poultry	49.8	51.1	65.6	54.8
Fruit and vegetable juices	59.8	51.3	43.9	65.9
Meat	41.6	43.6	47.2	56.9
Tea and coffee	44.3	54.0	61.0	74.3
Potato	62.5	67.0	51.8	62.5
Fodder	36.1	52.5	53.4	46.2
Branches with the lowest level of concentration				
Fruit and vegetable	39.5	49.5	40.6	31.2
Cereal	35.3	29.9	28.8	31.2
Pasta	10.2	14.5	34.6	32.5
Baking	6.6	12.9	17.5	29.4
Wine	0.0	0.0	0.0	41.6

Concentration processes are, therefore, a widespread phenomenon which occurs in all branches of the food industry. In recent years, they have been taking place the fastest in the sugar industry. Great progress in this area has also been achieved in the dairy, fodder, spirits, fish, coffee and tea and beer industry. In several branches, the subjective structure is oligopolistic as several capital groups dominate in them; these are sugar and beer branches, and partly also oil and spirits branches. The concentration processes are the slowest in branches with a fragmented structure of producers. This applies above all to the baking industry, and to a smaller extent also cereal-milling and milling fruit and vegetable.

4 Subjective Structure of the Food Industry in Poland and in the European Union

In 2004-2016, the subjective structure of the food industry in the European Union underwent only minor changes (**Table 3**). The share of large enterprises in the value of sold production of the food industry decreased 2.1 percentage points (to 51.7%), and of micro and small entities decreased 0.7 percentage points (to 20.6%), which means an increase in the importance of medium-sized companies of 2.8 percentage points (to 27.7%). As regards the share of individual size classes of companies in the employment of this sector, the changes were minimal: the share of medium-sized companies (0.7 pp) and large enterprises (0.3 pp) increased, and the position of micro and small companies decreased (1.0 pp). Thus, large enterprises, which in 2016 in terms of quantity represented only 0.8% of all entities operating in the food industry in the EU, generated over 50% of sales in this sector and had about 40% share in its employment. It is clear that the subjective structure of the EU food industry shaped at a high level of concentration is stable and meets the needs of the developed European food market.

Table 3. Subjective structure of the food industry in Poland and in the EU in 2004-2016 (in %) [2].

	Poland				European Union			
Detailed list	2004	2007	2011	2016	2004	2007	2011	2016
By sold production value								
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
including: micro	6.1	5.7	4.7	4.1	6.2	6.2	8.7	5.8
small	11.1	9.9	12.0	9.7	15.1	13.7	15.1	14.8
medium-sized	29.4	24.7	28.2	28.4	24.9	26.0	28.7	27.7
large	53.4	59.7	55.1	57.8	53.8	54.1	47.5	51.7
By employment								
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
including: micro	10.9	8.6	6.6	6.7	11.8	11.7	12.8	11.0
small	17.6	16.2	17.0	14.7	21.7	21.4	21.7	21.5
medium-sized	32.0	31.6	31.8	30.8	26.3	26.5	27.3	27.0
large	39.5	43.6	44.6	47.8	40.2	40.4	38.2	40.5

Comparison of the subjective structure of the food industry in Poland and in the European Union in 2004-2016 (**Table 3**) clearly indicates that in this period Polish food industry was subject to a process of concentration consisting in a decrease in the number and share in the production of the sector of micro, small and medium-sized companies, with a significant increase in the position of large companies, while in the EU food industry a relative stabilisation of the subjective structure was observed. As a result of this direction of change, the subjective structure of the food industry in Poland became similar to the structure of this industry in the EU, as well as to the structure of this sector in countries which are the largest food producers in the EU (such as Germany, Spain or France). Data for 2016 indicates an even slightly higher level of concentration of the food industry in Poland, measured by the share of large companies in the value of sold production (in Poland, it was almost 58%, while in the EU – 52%).

The convergence of the subjective structures of the food industry concerns not only the structure of the value of sold production but also the employment structure. In 2016, total share of micro, small and medium-sized enterprises in the employment of the Polish and the EU food industry was 52.2% and 59.5%, respectively, whereas large enterprises represented 47.8% of employment in the food industry in Poland and 40.5% in the EU.

Slightly larger differences concern the subjective structure of the food industry analysed by the number of enterprises. There are more micro companies in the European Union than in Poland, which account for almost 80% of all companies operating in this sector (63.5% in Poland), and the share of small (15.8%), medium-sized (3.8%) and large companies (0.8%) is smaller. However, the size of an average large enterprise (measured by turnover and employment) is much larger in the EU than in Poland [8].

5 Summary and Conclusions

Nowadays, Polish economy is an important part of the global economy which is why it is subject to the rules and principles applicable in the market system. The conditions of functioning of enterprises in the global economy force entrepreneurs to take on new challenges, including increasing the size of companies and strengthening competitive advantages on the domestic, regional and international market related to this. Poland, being an element of this system, is subject to similar trends, including the phenomenon of concentration of production in the industrial processing sector. This also applies to the Polish food industry.

Development of regional integration and economic globalisation has changed the directions of development of the food industry's subjective structure in Poland. The processes of concentration and specialisation of production, which are visible in a decrease in the number of active companies, mainly the smallest ones, and an increase in the number and share of large enterprises in the value of production sold and in employment, take place in this sector. During the period of membership in the EU, the subjective structure of the Polish food industry assimilated to the structure of the food industry in the European Union.

In the conditions of strong external competition, each economy, in order to function and develop, needs a diversified subjective structure which, along with economic development, is undergoing flexible and dynamic changes. For this reason, the market in developed countries has a place for both small and medium-sized enterprises, and large and very large enterprises [10]. This also applies to the Polish food industry, in which there are no monopolistic systems and oligopolies occur only in some branches, but in which micro, small and medium-sized enterprises still play a significant role.

Concentration processes will continue in the Polish food industry, and large enterprises, including transnational corporations, will become more and more important. They will still be the initiator of structural changes and, being a serious competition for domestic producers, they will motivate them to take actions to improve their competitiveness. The position of micro and small companies and a large part of medium-sized enterprises, which due to the specificity of the food sector are an important component of the Polish food industry's subjective structure but have fewer opportunities for international expansion, will gradually decrease.

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