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**THE EVOLUTION OF THE AGRI-FOOD SECTOR
IN TERMS OF ECONOMIC TRANSFORMATION,
MEMBERSHIP IN THE EU
AND GLOBALIZATION OF THE WORLD ECONOMY**

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Abstract

The aim of the article is to contribute to the discussion and research devoted to the evolution of the agri-food sector in the period of systemic transformation, Poland's membership in the European Union, and globalization of the world economy. The evolution of the Polish agri-food sector, which started in the first years of systemic transformation, intensified in the period of preparations for accession to the European Union (EU), and then stimulated by the processes of deepening economic and trade integration with the EU Member States and the global market, proves that this sector has undergone profound transformations. After joining the EU, the Polish food economy was co-financed with EU funds, which allowed for the acceleration of structural and modernization changes in the sector. Foreign direct investments also played a significant role in the process of strengthening the position of the Polish agri-food sector. However, the key factor in the sector's development was the dynamic growth of agri-food exports, accompanied by the growing demand for food in the internal market. Due to changes in macroeconomic and market conditions, entities of the domestic agri-food sector will have to face new challenges in the future.

Keywords: agriculture, food industry, market, foreign trade, food trends.

JEL codes: L66, O1, Q13, Q17, Q18.

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Introduction

Market is a key economic category and the subject of extensive interest in economic sciences. The literature has not developed a single commonly accepted definition of the market, which in general can be defined as a set of relations and relationships between the actors involved in exchange processes (Wrzosek, 2002). The market is therefore a set of mechanisms that enable consumers to contact producers and their decisions are mutually agreed upon through prices (Rembisz and Kowalski, 2007). In other words, the market is a 'tool' for allocating scarce resources, and economic sciences show how societies use resources to produce valuable goods and distribute them among individuals (Samuelson and Nordhaus, 2004). In institutional economics, the market is understood as an institution that coordinates exchange transactions between social actors. In an industrial organization that focuses on functional markets, an industry is defined as a group of producers offering products or services to consumers that are close to each other (Tirole, 1988). This definition of industry therefore coincides with the market definition and in the literature of industry economics market and industry are often used as synonyms (Pietrzak, 2014).

Market is a broad category and can be viewed in three ways: subjective, objective, and spatial. In the subjective aspect, it refers to the exchange relations between market participants, i.e., consumers and producers. In subjective terms, the market is considered as an arrangement of the relationship between supply and demand concerning goods, services, production factors, securities, etc. Spatial analysis focuses on the extent of the market's impact at the local, national, regional, and global levels. In the era of increasing regional integration and globalization, local and national markets are becoming the elements of a global market (Pietrzak, 2014). The impact of economic changes in external markets is becoming increasingly visible in internal markets.

The key role of the market mechanism in the economy results from its four main functions: informational, revenue-generating, efficiency-related, and balancing. Based on market information, entities make economic decisions, with market research and access to information becoming an important element in building competitive advantage. The market provides its participants with an opportunity to multiply their income, but at the same time it verifies economic efficiency.

Efficient and competitive entities win the market competition and take over the economic surplus, but at the expense of less efficient competitors. Market competition forces the participants to be technically and economically efficient, i.e., to work out the best possible ratio of effects to inputs. The balancing function of the market is, in turn, its ability to automatically restore the balance of supply and demand by means of prices. Depending on the structure and spatial range of the market, many other factors stabilizing and destabilizing the whole system (e.g., intervention policy) may influence the balance (Szajner and Hryszko, 2013).

The Polish agri-food sector has undergone an evolution during the period of

systemic transformation and EU membership, which included deep structural and modernization changes to adapt to changing macroeconomic and market conditions. These changes in conditions included the transformation of the political and economic system from a planned economy to a market economy, European integration, and the progressing globalization of the world economy.

The evolutionary changes covered all stages of the marketing chain, including in particular agricultural production, industrial processing of agricultural raw materials, foreign trade, and the distribution and consumption of food. The participants in the national agri-food market have carried out adjustment processes and achieved success which is reflected in positive structural changes, international competitiveness, and strong integration of the internal market with international markets.

Consequently, the agri-food sector is of great economic, social, and environmental importance. The share of the agri-food sector in GDP is twice as large in Poland as in Western Europe, and the sector also generates a high positive balance of foreign trade. Farms, food industry enterprises as well as commercial and service companies create jobs in rural areas and contribute to multifunctional rural development. Agricultural production is an important element of the ecosystem.

The aim of the article is to contribute to the discussion and research devoted to the evolution of the agri-food sector in the period of systemic transformation, Poland's membership in the European Union, and globalization of the world economy. Firstly, subsequent stages in the evolution of this sector will be presented. Furthermore, the paper discusses the transformation of market structures in agriculture and the food industry, along with the changes in the supply and demand situation in the food market. Much attention will be paid to the integration of the domestic market with external markets, including trade and foreign investments. The article will conclude with a summary and conclusions, which will include a reference to the challenges facing the agri-food sector resulting from the COVID-19 pandemic and new EU strategies.

Stages of evolution of the agri-food sector

The agri-food sector in Poland has undergone profound ownership, restructuring, and modernization changes, which can be divided into three basic stages. The first stage covered the period of 1990-1994, when the transformation of the political and economic system began. During the period in question, the processes of adjustment to the market economy began, including primarily ownership transformations in state-owned farms and food industry enterprises (Urban, 2004). In 1990, the Agricultural Market Agency was established, which was responsible for the implementation of the state intervention policy in the agricultural products market. During this period, negotiations on the regulation of world foreign trade under the GATT Uruguay Round were completed.

The second stage of the evolution of the national agri-food sector covered the period of 1995-2003 and was characterized by an intensive process of adjustment to the integration with the EU, including in particular the implementation of

Common Agricultural Policy (CAP) instruments. Farms, food industry enterprises and government administration adapted to EU regulations and market mechanisms, implementing the required standards of food health safety. As a result of the negotiations under the GATT Uruguay Round in 1995, the World Trade Organization (WTO) was established and world trade in agri-food products was liberalized (Kawecka-Wyrzykowska, 1995). The reduction of duties, the introduction of preferential import quotas, and regulations concerning export subsidies created new market conditions for domestic agriculture, food industry, and government institutions. The intensification of globalization processes in the world economy was one of the consequences of the liberalization of world foreign trade (Szymański, 2002). An increase in foreign direct investment (FDI) by multinational food concerns was expressed in the globalization processes in the sector.

The third stage of the national agri-food sector's evolution includes the period of Poland's membership in the EU. The production and commercial activities of the participants in the food chain were strongly determined by the CAP, which was reformed many times during this period. The main direction of CAP changes consisted in the reduction of budget expenditure on direct market support (e.g., intervention buy-ins, export and consumption subsidies on the internal market) to increase support for farm income in the form of direct payments and support for rural development (Figure 1). The aim of the agricultural policy reforms was also to market it, which was reflected in the elimination of instruments interfering with market laws (e.g. production quotas for starch, milk, and sugar). During the period of EU membership, farms and food industry enterprises benefited from support (e.g., under the SAPARD, SOP, and RDP programs), which enabled large modernization investments to be made. As a result, an improvement in management efficiency was noted, which became the basis for building permanent competitive advantages (Kulawik and Józwiak, 2007). In the next budget perspective, the CAP will be more focused on environmental and circular economy aspects, which results from the "European Green Deal" economic strategy.

In the agri-food sector, the main element of agricultural policy will be the "Farm to Fork Strategy", whose main objective is to build a sustainable supply chain. The implementation of this strategy and its specific objectives will force farms and food industry enterprises to make deep adjustment processes and large investment outlays, including in particular circular economy, renewable energy, the reduction of greenhouse gas emissions, the extensification of agricultural production in connection with the reduction in the use of chemical crop-forming agents and organic food production and processing.

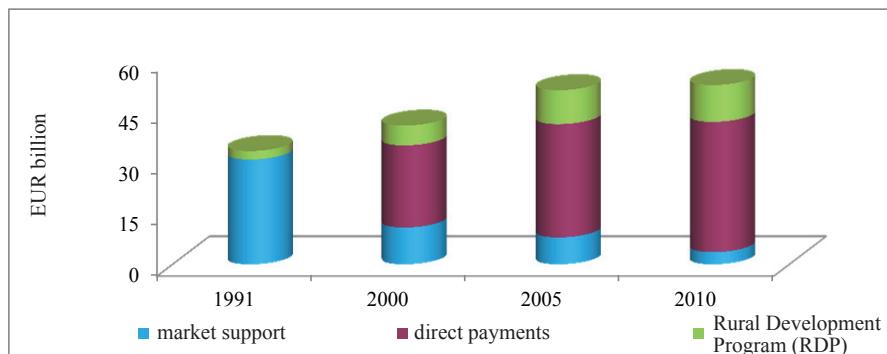


Fig. 1. Expenditure on the Common Agricultural Policy.

Source: data from the DG for Agriculture and Rural Development, Budget Management Unit.

Evolution of market structure in agriculture and food industry

Increased concentration in agriculture

During the period of economic transformation and EU membership, Polish agriculture underwent profound structural and ownership changes. In the first period, there were ownership changes in state-owned farms, which were leased or sold under the supervision of the Agricultural Property Agency of the State Treasury.

On the basis of state farm assets, numerous large-scale farms were established, which are located mainly in the northern and western regions of the country and specialize in crop production (cereals and rape, root vegetables). Structural changes in agriculture are slow, especially after Poland's accession to the EU. Between 2005 and 2016, the number of farms decreased by 22.2% to about 1.4 million. According to the IAFE-NRI estimates, only 0.3-0.4 million farms sell their products through market channels. Small farms produce for their own needs, lease agricultural land, or do not use land at all.

In the analysed period, the average area of a farm increased only from 15.4 to 16.2 ha (Table 1) and is much smaller than in Western Europe. As a result, national farms benefit from economies of scale and have less potential for development. Effective investment activity is economically justified if the economic entity has an adequate economic potential. According to the FADN estimates, the average economic size of an agricultural holding increased from EUR 16,000 to EUR 25,000 (Table 1), but this was significantly influenced by the increase in the prices of agricultural products after Poland's accession to the EU.

The results of these studies also showed that the structure of farms is still very fragmented. In 2016, out of the total number of farms, 77.9% were characterized by economic size up to EUR 15,000, and only 6.7% belonged to the largest economic classes >EUR 100,000 (GUS, 2017). An important factor that perpetuates the fragmented structure of farms is the system of direct payments, which are given

to the owners of agricultural land, which translates into farmers not selling their land. Leasing agricultural land in Poland does not have an established tradition and is in many cases informal, as it is not based on legal agreements and concerns a relatively small area of agricultural land (Sikorska, 2018).

Structural changes in agriculture have also involved regional specialization of production. Individual regions of the country have specialized in the production of specific agricultural products. Western and northern part of the country specializes in the production of cereals and rape. Agricultural holdings located in north-eastern and central Poland specialize in milk production. Fruit and vegetables production prevails in several smaller regions, which form local, yet thriving markets. Pig farming is concentrated in the Wielkopolskie and Kujawsko-Pomorskie Voivodeships. The regions' specialization in the production of certain agricultural products is beneficial in terms of production efficiency and market functioning, but due to its intensity and concentration it may have adverse environmental effects.

The process of structural transformation in the Polish agricultural sector is not complete, as the structure of farms is fragmented compared to the main competitors from Western and Central Europe. The low economic strength of farms and the tendency to form cooperation initiatives by creating cooperatives and producer groups result in a weak position for farmers in the supply chain. According to the Agency for Restructuring and Modernisation of Agriculture (ARMA) data, the number of agricultural producer groups operating under national legislation is 776, and they have only about 11.1 thousand members. There are around 270 recognised agricultural producer organizations in the fruit and vegetables market, which were established on the basis of EU market regulations. The number of these entities and their associations is small compared to the number of commercial farms. The economic potential of agricultural producer groups, except for recognized fruit and vegetable producer organizations, is rather small.

Polish farms are not integrated in capital terms into the food industry and cannot benefit from this economically. This is only the case in the milk sector, because in this sector, the dominant role is played by cooperative enterprises, whose shareholders are agricultural holdings. The lack of vertical integration of farms with the food industry also has a negative impact on the position of farmers in the marketing chain (Pietrzak, 2006).

Table 1
Structural changes in Polish agriculture

Specification	2005	2016
Utilized agricultural area (UAA) (million hectares)	13.9	14.4
Average farm area (ha)	15.4	16.2
Economic class SO (EUR thousand) ^a	16.0	25.0

^a Polish FADN

Source: data from the Central Statistical Office.

Increased concentration in the food industry

The food industry is also one of the economic sectors characterized by a relatively low level of production concentration. This is mainly due to the lower level of technical development of this sector and the volatility of the agricultural products processed. Important features of the food industry also include its strong links with local and regional markets, product range, relatively short shelf life, and short production runs for some products. These characteristics of food production are the reason for the wide range of possibilities for micro-, small- and medium-sized enterprises to operate in this sector, in addition to large entities. In 2018, 16.9 thousand entities (GUS, RSP, 2020) operated in the food industry, including (Figure 2):

- 11.4 thousand microcompanies, accounting for 67.6% of the total number of food companies, whose share in sales was only 5.3%;
- 4.1 thousand small industrial companies, accounting for 24.2% of all food companies, and their share in sales was 11.5%;
- 1.1 thousand medium-sized enterprises, i.e., 6.5% of all food companies, which accounted for 26.4% of sales;
- 295 large companies, which accounted for only 1.7% of the entire community, but their share in sales was as much as 56.8%.

For many years now, the position of large industrial companies in the Polish food industry has been growing, at the expense not only of medium-sized companies, but also of small and micro enterprises (Fig. 2). This is indicated by an increase in the share of the largest entities in the value of production sold, a decrease in the position of small and medium-sized industrial enterprises, and a decrease in the share of micro companies in food production. However, the final effect of the changes in the subcontractor structure of the food industry, which occurred during the period of integration with the EU and under the conditions of globalization of the world economy, turned out to be beneficial, because the position of the sector on the international market has been strengthened.

The data on the structure of entities which produce food and drinks¹ show great inter-sectoral differentiation. The individual sectors of the food industry can be divided into different categories: highly fragmented, where 20-40% of production is produced by small companies (bakery, milling, and pasta manufacturing industries); fragmented, where 10-20% of production is made by small industrial companies (meat, fruit and vegetables, feed); highly concentrated – sugar industry, where 100% of production is made by large companies, tobacco (98%), brewing (90%), soft drinks (78%), confectionery (76%), dairy (72%), fish (70%) and durable confectionery, oilseeds, food and spirits industries, where over 60% of sold production is made by large companies.

The changes in the structure of the food industry during Poland's membership of the European Union were mainly due to the need to meet EU requirements, the fulfilment of which was associated with an increase in production concentration

¹ Own calculations based on unpublished data from the Central Statistical Office.

and specialization. The food industry has also been rapidly integrated into the processes of economic globalization, mainly through the operation of international companies. Developing transnational corporations (TNCs) have become a source of strong impulses changing the developmental conditions. As they became more widespread in the Polish food industry, their impact on both the remaining entrepreneurs in this sector and the entire food market increased.

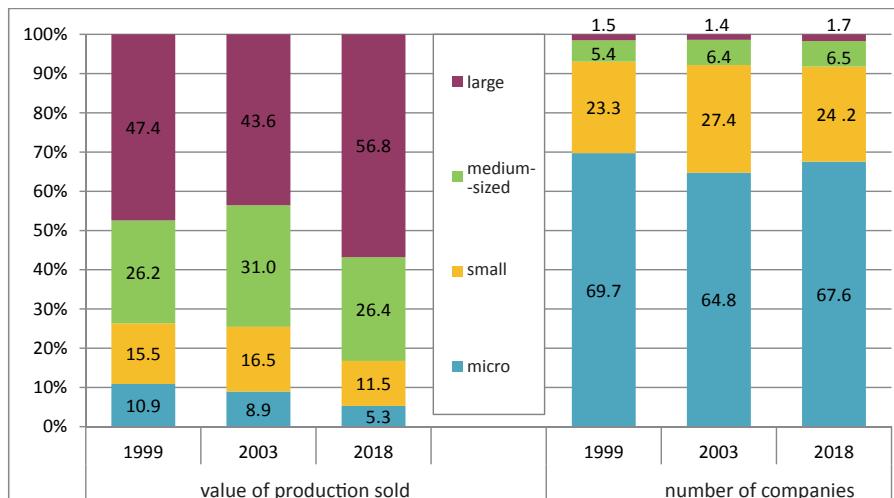


Fig. 2. Structure of the food industry in Poland in 1999, 2003, and 2018.

Source: data from the Central Statistical Office (RSP, 2001, 2005, 2020).

Changes in the production and financial situation of the food industry

After the system transformation, and in particular after Poland's accession to the European Union, the production capacity of the food industry was significantly expanded, modernized, and upgraded. This resulted in the adjustment of food industry enterprises to EU sanitary, veterinary, phytosanitary, animal welfare, and environmental protection standards. As a result, the Polish food industry is now one of the European leaders in terms of modernity, and Polish food producers can compete with producers from other EU Member States on equal terms. This is all the more important as the production potential of the Polish food industry significantly exceeds the needs of the internal market. This is indicated by the level of export orientation, i.e., the share of export value in the sector's production sold, which in 2019 was around 44% (compared to 17% in 2004)² The factor determining the development of this sector during the membership period was therefore mainly export demand and, although to a significant extent, internal demand.

² Own calculations based on unpublished data from the Central Statistical Office and WITS-Comtrade.

The food industry, with annual revenues of PLN 265 billion, which determine the share in global production at the level of over 6%, the share in the creation of GDP (measured by gross added value) exceeding 3% and the share in the sold production of the industrial creation sector reaching 20%, was and still is one of the most important sectors of the Polish economy, having great importance in production and generation of gross domestic product. The progressive growth of production sold in the food industry, with relatively stable employment, will result in a significant increase in labor productivity in this sector. During EU membership, labor productivity in the Polish food industry (in fixed prices) increased by over 77%. The value of sold production per company increased by over 145% in this period, which confirms the concentration processes observed in the sector. These changes had a positive impact on the economic and financial situation of enterprises, including an increase in the value of financial assets and return on revenue (ROR) ratios (Table 2), as well as on the competitiveness of the Polish food industry on foreign markets. Poland has also strengthened its position as a leading European Union food producer. The value of sales production of the food industry placed our country on the sixth position among the EU Member States in 2017 (Mroczek and Drożdż, 2019).

Table 2
Basic production and financial results of the food industry in Poland in 2004 and 2019

Specification	2004	2019	Change 2019/2004
Share of the food industry in global production (%)	6.6	6.2 ^a	-0.4 percentage points
Share of the food industry in GDP generation (%)	2.9	3.2 ^a	+0.3 percentage points
Share of the food industry in the production sold in the industrial processing sector (%)	20.2	20.0	-0.2 percentage points
Number of enterprises ^d	2874	2171	-24.5%
Production sold ^{b, d} (in fixed prices, PLN million)	115.3	213.4	+85.1%
Production sold ^{b, d} per one enterprise (million PLN/company, fixed prices)	40.1	98.3	+145.1%
Employment d (thousand persons)	321.2	335.6	+4.5%
Labor productivity ^{b, d} (thousand PLN/person, fixed prices)	391.5	694.0	+77.3%
Net financial result ^{c, d} (million PLN, fixed prices)	6.2	10.7	+71.6%
Return on revenue (ROR) ^d (%)	3.87	3.99	+0.12 percentage points
Return on equity (ROE) ^d (%)	13.99	11.06	-2.93 percentage points

^a 2018; ^b the index of increase in production prices of food, drinks and tobacco products sold has been used for conversion into fixed prices; ^c the index of inflation has been used for the conversion into fixed prices; ^d data from F-01 reports submitted by companies to the Central Statistical Office

Source: unpublished and published data from the Central Statistical Office (RS, 2005, 2006, 2019; MRS, 2020).

The development and economic and financial situation of the food industry is and will remain diverse, which is due to a number of factors, including, *inter alia*, the specific nature of individual industries, their level of concentration and the external conditions in which these sectors operate. In 2019, as in previous years, all sectors of the food industry had the ability to generate profit. The highest return on revenue (ROR) was observed in the brewing industry, followed by the bakery and spirits industries. Fish processing and traditionally the dairy and poultry industries had the lowest profitability, but the level of profitability can also be regarded as relatively good due to the specificity of the industries and the short stock cycle. The highest return on equity (ROE) was obtained in the beef industry, but it was also high in the bakery and spirits industries, and higher than the average in the food industry – in the meat, milling, potatoes, feed, tobacco industries and in the production of food concentrates and soft drinks. In other industries, the ROE was slightly lower than the average (Drożdż and Mroczeń, 2020).

In 2020, the COVID-19 pandemic caused by the SARS-CoV-2 virus had a major impact on the food industry and the entire food chain. However, food production was less affected by the effects of the pandemic in comparison with other industrial processing departments. Essential food products made in this sector have a lower income elasticity of demand. Market observations and reports from economic practices indicate that producers have made great efforts to ensure that the food production process is not disturbed, that the impact of pandemic-related obstacles on labor efficiency is as small as possible, the continuity of supply is maintained, and that consumers do not feel any hesitation or lack of choice in production. In food companies, priority was given to the implementation of solutions aimed at minimising the risk of infections and ensuring production safety, which was a condition for maintaining continuity of work in the plants (Szczepaniak, Ambroziak, Drożdż and Mroczeń, 2020). The supply-side measures taken by the companies, together with the continued high domestic and foreign demand, enabled a further increase in the sector's production sold in the first half of 2020³ (by ca. 3% as compared to the previous year) and an improvement in the basic financial ratios (return on revenue – by 0.6 percentage points and return on equity – by 1.1 percentage points).

Changes in the supply and demand situation

Factors shaping relations between supply and demand

Structural and modernization changes in the agri-food sector have resulted in an increase in production in agriculture, the distribution of which is increasingly carried out through market channels, including, above all, the food industry. Direct sales showed a downward trend and this was determined by the decreasing number of farms, an increase in the concentration of production in medium-sized and large farms, and the implementation of high phytosanitary and veterinary standards in the food trade, which small farms were unable to achieve. Between 1990 and 2018, the share of plant commodity production in global output increased from 19.3% to 28.9%, and

³ Own calculations based on unpublished data from the Central Statistical Office.

the share of animal commodity production from 34.1 to 44.7% (Figure 3). Individual industries of the agri-food sector were characterized by different dynamics of development, and the factors stimulating these processes were as follows:

- growth and change in the structure of food consumption and the consumption model in the internal market (e.g., increase in the consumption of meat and processed foods, the development of the HoReCa sector, etc.);
- demand on the following external markets: beef, poultry, dairy, fruit and vegetables, cereals, and others;
- processing and enriching imports: fish, tobacco, fruit and vegetables, meat, and feed industries;
- price and quality-related competitive advantages on external markets;
- technological changes in food production and processing, including innovative technologies;
- non-food use of agricultural raw materials (e.g., for biofuels): cereals and oil-seed industries;
- demand for by-products of agricultural raw material processing: cereals, oil-seeds, sugar, dairy, brewing, etc.).

In the analysed period, a number of barriers can also be identified which limited or slowed down the development of individual industries:

- the fragmented structure of the agricultural and food industries, which hindered competition on the globalized market and limited the use of production and processing potential (e.g., beef, pork, potato sectors);
- restrictions on access to external markets:
 - veterinary and phytosanitary restrictions, e.g., ASF and avian influenza (e.g., pork sector, poultry sector);
 - embargo imposed by Russia in 2014 on selected EU food products (meat and dairy products, fruit, etc.);
 - external market crises: eastern markets crisis in 1998, global financial crisis in 2008-2009, and the recession triggered by the COVID-19 pandemic.

Demand in the internal market has been crucial to the development of the sector, as food expenditure accounts for a large proportion of household expenditure. Between 2003 and 2008, the share of expenditure on food in total household expenditure decreased from 28.1 to 25.5% (Figure 3). In subsequent years, despite a significant improvement in the income situation of domestic consumers and large social transfers after 2015 (e.g., Rodzina 500+ Program), the share of expenditure on food in total expenditure stabilized at the level of 24.0-25.5%. Engel's law, which describes an observation in economics stating that as households' income increases, food expenditure increases but its share in total expenditure decreases, has not worked on the domestic food market since 2009 (Świetlik, 2019).

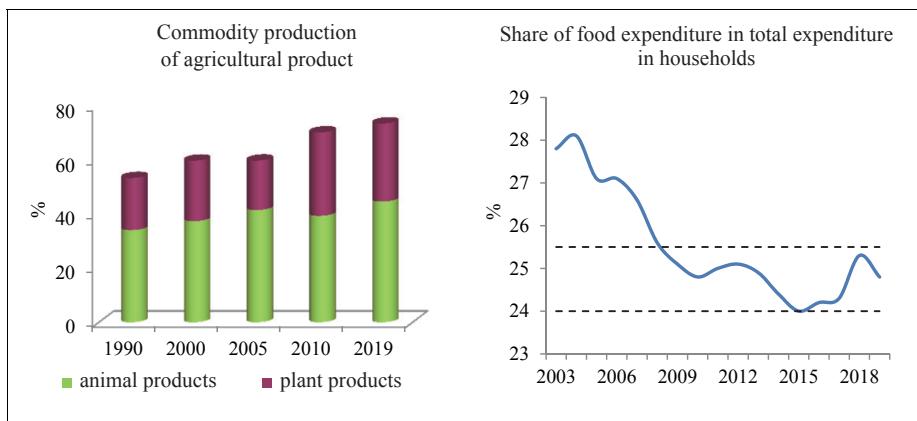


Fig. 3. Commodity of agricultural production (%) and share of food expenditure in total household expenditure (%).

Source: IAFE-NRI calculations, data from the Central Statistical Office.

New trends on the food market

The development of the Polish agri-food sector in subsequent years was also associated with the correct identification of new market trends. The current shape of the food market has been influenced primarily by the following trends: the production of organic and natural food, functional, convenience, and branded food, as well as the development of the HoReCa sector and e-commerce. However, we should be aware that trends in the food market and the fashion for food products are changing very quickly and should be under constant observation, including the use of digital tools.

1. Organic and natural food. The Polish agri-food sector has enormous potential for producing organic and natural food, as well as regional products. These products are valued worldwide for their quality, naturalness, traditional ingredients, unique taste, and aroma, among other things. Their consumption is one of the most important elements of a healthy lifestyle. It is estimated that the value of the market of organic products in Poland alone in 2018 was about PLN 1-1.1 billion (Żywność..., 2019). Although organic products will never be mass products in Poland, because their prices are much higher (due to traditional production methods, lower yields and lower durability of products), but according to forecasts, by 2030 this market has a chance to grow at a rate of about 20% per year (Rynek eko..., 2018). During the COVID-19 pandemic, consumers increased their interest in buying organic and natural food perceived as healthy.
2. Functional food, enriched with properties that take into account the specific needs of selected groups of consumers and therefore meeting specific expectations in terms of its impact on health. In Poland in 2016, the value of the func-

tional food market reached EUR 3.7 billion. According to experts, this segment of the food sector is still growing and will continue to grow, both in Poland and abroad (Rynek żywności..., 2017). This is particularly evident in larger cities and among educated and affluent consumer groups. Equally important, functional products allow for generating higher margins. Consumers are willing to pay more for the special properties of products enriched with valuable ingredients than for the same products without pro-healthy additives (Szczepaniak and Wigier, 2020). This sector has gained on importance during the pandemic.

3. Convenience food. The growing popularity of disposable, single-served products, ready to eat on the street or for lunch at work and products that are easy, fast, and convenient to prepare at home. These include snacks, semi-finished products, ready meals, boxed food, etc. The development of this trend is connected with a change in the lifestyle of contemporary consumers (Markowska and Polak, 2020). During the pandemic, the growth dynamics of this sector has weakened due to the closure of the economy.
4. Branded and personalized food. Food produced by recognized producers enjoys a reputation on the domestic market, and often also on the international market. This is a high quality, unique food, intended to reflect the personality of the consumer and dedicated to them individually (Markowska and Polak, 2020). Food, which is often produced using new technologies, giving the possibility of tracking the product "From Farm to Fork" (e.g. bean-to-bar chocolate), whose offer is dedicated to the richer sections of society.
5. Not so long ago, the development of the HoReCa sector, i.e., the catering and hospitality market in Poland, was not so far ahead of schedule, which was supported by the improvement of the population's income situation, changing lifestyles and an increased number of catering and hotel facilities in the country. It was estimated that the value of food sales in Poland under the HoReCa in 2017 exceeded PLN 24 billion (HoReCa..., 2017). In the conditions of the pandemic, this sector did not collapse completely.
6. E-commerce. Consumers of the 4.0 era increasingly use digital tools and expect purchasing processes to be fast and pleasant. This is evidenced by, among other things, food purchases made over the internet with the delivery and bringing home of products or the delivery of ready-made, hot meals to a specified address in a short time (Szczepaniak and Wigier, 2020). During the pandemic, the development of the e-commerce sector intensified. It can be expected that some customers who are satisfied with this form of shopping will also stay with it after the pandemic.

Integration of the domestic market with external markets

Development of foreign trade in agri-food products

One of the most important reasons for accelerating the development of the Polish agri-food sector after the accession to the European Union was Poland's inclusion in the European Single Market and, as a result, the entry of the Polish economy into the free trade area. The mutual full opening of markets meant, in practice, not only the possibility of an increase in exports of Polish agri-food products to the markets of other EU Member States, but also the possibility of an increase in imports of articles of this group produced in other EU countries.

By opening up the market to less than 40 million consumers, with relatively low purchasing power, Poland received in return free access to a developed and prosperous European market, which, following its enlargement, had around 500 million consumers. More than fifteen years after Poland's accession to the EU, it is clear that entry into the European Single Market has proved beneficial to the Polish agri-food sector. Despite different conditions, the results of foreign trade in agri-food products confirm that the sector is well prepared to operate on the EU and world markets. Food producers, taking advantage of their competitive advantages, mainly in terms of price, but also quality, etc., have improved their position on the market of the enlarged EU. During the membership, there was a dynamic development of foreign trade in agri-food products, as evidenced by the much higher turnover dynamics than in the pre-accession period (Table 3). Positive changes were already visible in the year preceding the accession (2003), when Poland became a net exporter of food for the first time, achieving a positive exchange balance and recording a double-digit growth rate of exports and imports. The value of the exchange also increased in subsequent years. In 2019, the total value of Poland's trade in agri-food products exceeded USD 57.5 billion, with exports reaching USD 34.5 billion and imports reaching USD 23.0 billion. Compared to 2003, this means an almost sevenfold increase in trade exchange, including more than eightfold of exports alone and nearly sixfold of imports.

Since Poland's accession to the EU, the positive balance of trade in agri-food products has also mostly increased. In 2019, the value of the balance of trade amounted to nearly USD 11.5 billion, which means that it was more than twenty-four times higher than in 2003 (Table 3). By comparison, in the same period, the cumulative GDP growth rate, expressed in constant prices, amounted to about 189% (GUS, *Wskaźniki...*, 2020). The dynamics of export growth and the balance of foreign trade in agri-food products clearly exceeds the GDP dynamics, confirming the export-oriented development of this economic sector in Poland.

Table 3
Dynamics of foreign trade in Poland's agri-food products between 1996 and 2019

Specification	2019 USD million	2019		Average annual growth rate		
		1996 = 100	2003 = 100	1996-2019	1996-2003	2003-2019
Export						
Products of the food industry	30,432.9	1,359.3	833.2	12.0	7.2	14.2
Products of agriculture	4,089.9	801.5	533.4	9.5	6.0	11.0
Agri-food products in total	34,522.8	1,255.7	781.2	11.6	7.0	13.7
Import						
Products of the food industry	15,438.5	706.5	586.9	8.9	2.7	11.7
Products of agriculture	7,586.8	421.8	578.2	6.5	-4.4	11.6
Agri-food products in total	23,025.3	578.0	584.0	7.9	-0.1	11.7
Balance						
Products of the food industry	14,994.4	27,847.0	1,467.4	x	x	18.3
Products of agriculture	-3,496.9	x	x	x	x	x
Agri-food products in total	11,497.5	x	2,412.6	x	x	22.0

Source: WITS-Comtrade data.

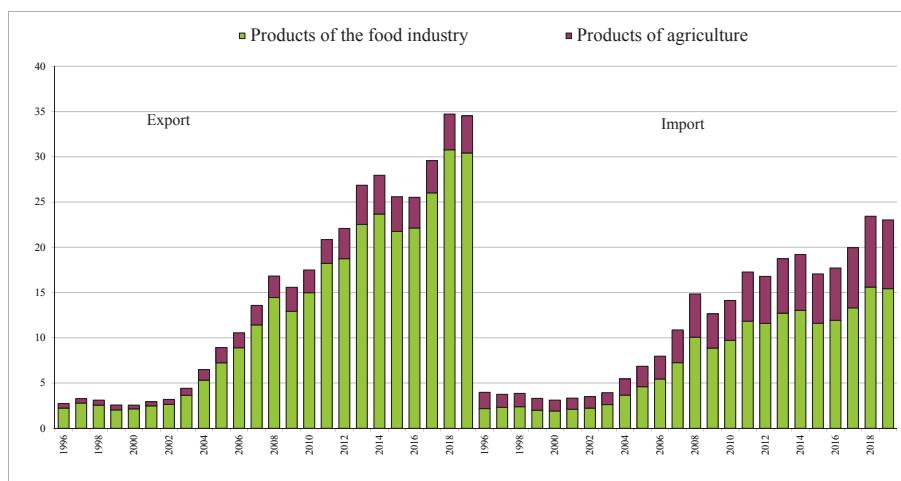


Fig. 4. Foreign trade in products of the food industry and agricultural products of Poland between 1996 and 2019 (USD billion).

Source: data from WITS-Comtrade.

The structure of Polish foreign trade in agri-food products is dominated by the food industry products (Fig. 4). The share of food industry products is particularly high in the total agri-food export, ranging from 80-90% (in 2019 it exceeded 88%, while in the EU countries it was 76%). The share of these products in agri-food imports is slightly smaller, as it does not exceed 70% (in 2019 it was 67%, similarly in the EU it was 68%). The balance of trade in food industry products is still positive and has been growing rapidly since 2004, while the deficit in foreign trade in agricultural products has always been deep (Figure 5). The structure of trade in agri-food products is beneficial for the Polish economy. By exporting processed products, producers benefit much more from the added value than by exporting only raw materials necessary for their production. The food processing industry for export also enables better use of resources, and the export of processed products promotes the Polish food sector on external markets.

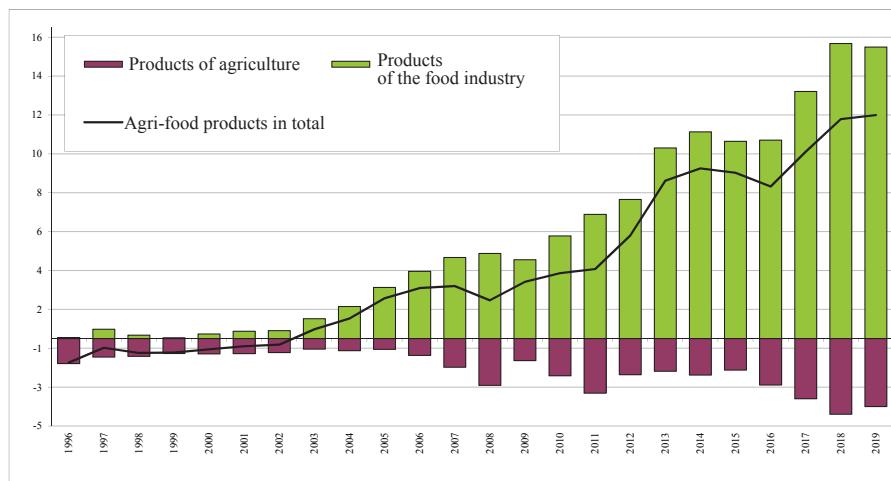


Fig. 5. Balance of trade in products of the food industry and agricultural products of Poland between 1996 and 2019(USD billion).

Source: data from WITS-Comtrade.

The period of Poland's membership in the European Union, preceded by intensive preparations over several years for functioning within the EU structure, was therefore marked by the dynamic development of trade in agri-food products, both exports and imports.

As a result of this development, Poland transformed from a net importer into an important net exporter of food. Poland's accession to the structure of the European Single Market has proved beneficial for the Polish agri-food sector. The mutual full opening up of markets has become a strong development impulse for Polish food producers. And even the outbreak of the COVID-19 pandemic in 2020 did not cause the upward trend in exports to collapse despite numerous fears about

the prospects for the development of Polish agri-food exports and the first alarming press releases. The increase in foreign food sales recorded in the first half of 2020⁴ compared with the same period of the previous year was 7.0%, in imports 4.8%, and in the positive balance of trade 11.8%.

Role of imports in the supply of raw materials in the agri-food sector

The agri-food sector in Poland processes both agricultural products manufactured by domestic agriculture and imported raw materials. Imported raw materials, together with agricultural products and semi-finished products, have continuously represented over 30% of the total raw material resources of the Polish agri-food sector since 2009. In 2019, the share of imported raw materials in the total value of their supply was 38.3%, i.e., 15.9 percentage points more than in the year of Poland's accession to the EU (2004). At the same time, in the last five years, a phenomenon of relative equalization of the share of imports in the total raw material resources of the national food production sector (37-39%) could be observed, which may indicate the stabilization of the situation regarding the use of domestic and imported raw materials in this sector (Fig. 6). However, throughout the entire period of Poland's membership in the EU, we can speak of a clear increase in the dependence of the food production sector on the supply of imported raw materials, which proves that the rapidly progressing process of internationalization of the Polish food economy also occurred in the sphere of raw material supply.

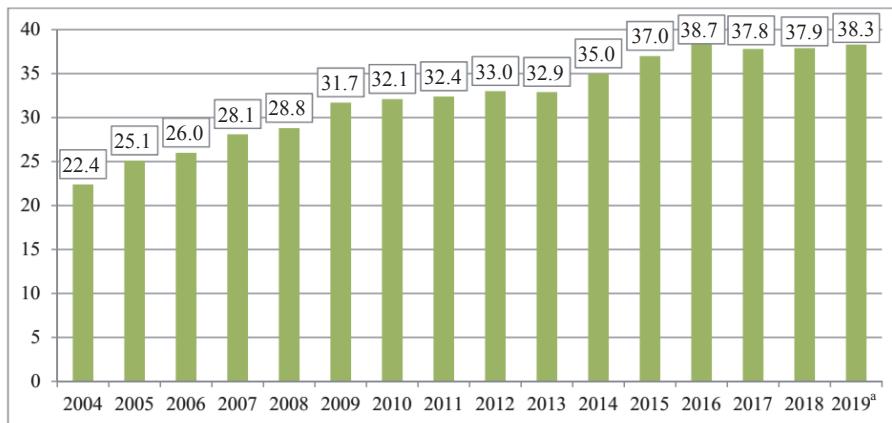


Fig. 6. Share of imports in the total raw material resources of the agri-food sector between 2004 and 2019 (%).

^a estimate

Source: data from the Central Statistical Office and the Ministry of Finance.

⁴ Own calculations based on unpublished data from the Ministry of Finance.

The imports of raw materials into the food sector are, on the one hand, complementary to the supply of domestic raw materials (during the period of their shortage) or extensive (with raw materials from other climate zones) and, on the other hand, processing, as some of the raw materials are processed in domestic food businesses and then re-exported (in this context, it is beneficial both for business and the economy as a whole). The imports of a processing nature, directed at the growth of exports, develop mainly due to relatively lower production costs (including labor, materials, and energy) and lower margins in the Polish food industry, which indicates that producers in this sector have competitive advantages in terms of prices and costs (Szczepaniak, 2019).

The rapidly progressing internationalization of the Polish food economy, resulting from the integration of the domestic market with international markets, resulted in a gradual increase in the dependence of the agri-food sector on the supply of imported raw materials. This does not change the fact, however, that food production in Poland is still based primarily on the national raw material base, i.e., raw materials produced by domestic agriculture.

Foreign direct investment inflow to the food industry

Foreign capital began to flow into Poland on a larger scale in the early 1990s, which was related to the processes of economic transformation in the country and privatization of food industry enterprises. In the period preceding Poland's membership of the EU, most of the foreign direct investments were located in the food industry in the second half of the 1990s. During this period, greenfield projects were carried out, among others, which consisted in building production plants from scratch. Investments of this type were particularly important for the economy, as they contributed to the inflow of new technologies and the modernization of production potential, and created new jobs both in and around newly established companies. After 2000, there was a reduction in the FDI inflow to the food industry, because under the conditions of the slowdown in the Polish economy, foreign investors focused on the restructuring and modernization of the purchased enterprises (Ambroziak, 2019).

In the first years after Poland's accession to the EU, the FDI inflow to the food industry generally did not exceed EUR 400 million per year (Figure 7). The record in terms of inflow turned out to be only 2009, when foreign capital in the form of direct investments worth more than EUR 1.7 billion (of which about two-thirds were loans granted by parent companies to their subsidiaries) was introduced to the food industry in Poland.

In turn, in 2010, the value of the stream of foreign direct investment inflow to the Polish food industry was negative and amounted to nearly EUR 1 billion. The negative balance was mainly due to the outflow of equity capital, which suggests that some investors withdrew from their activities in Poland. Between 2011 and 2015, despite the global economic slowdown, there was a moderate inflow of FDI to the food industry in Poland (not exceeding EUR 400 million annually). The value of

incoming investments began to be determined not so much by the funds contributed by the new, but by the existing investors (Chechelski, 2017). These were primarily the amounts worked out by subsidiaries of foreign companies supplying the flow of FDI in the form of reinvested profits. In 2016, the value of foreign direct investment that flowed into the food industry in Poland was again nearly EUR 1 billion, and in the next two years, after about EUR 500 million. Foreign funds involved in the food industry in Poland came primarily from the Netherlands, Germany, and France (Ambroziak, 2019).

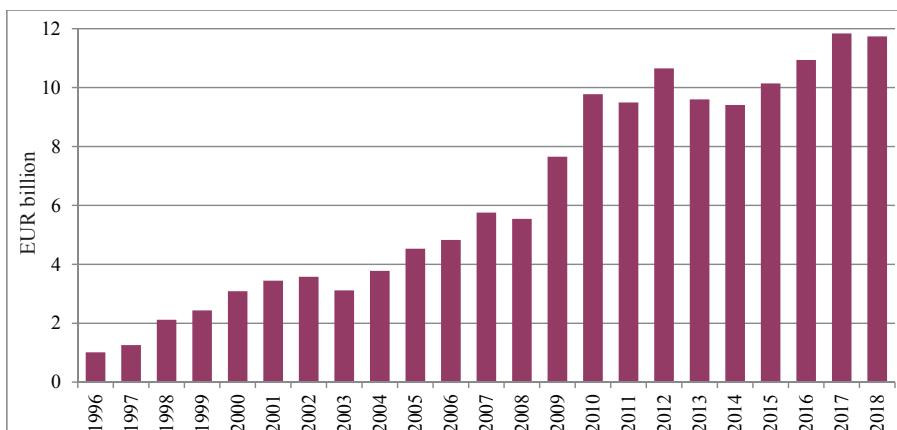


Fig. 7. Cumulative value of foreign direct investments in the food industry^a in Poland between 1996 and 2018 (as of the end of the year, in EUR billion).

^a including the tobacco industry

Source: data from the National Bank of Poland.

The cumulative value of foreign direct investments in the food industry in Poland between 2004 and 2018 increased from 3.8 to EUR 11.7 billion, i.e., more than three times (Figure 7). In the same period, the share of FDI in the food industry in the value of FDI in the industrial processing sector increased from 15.9 to 18.2%, i.e., by 2.3 percentage points. In general, the investment expansion of foreign companies in the Polish food market in recent years has been determined by factors such as: lower comparative costs (especially labor costs), economic and political stability, much faster development of the economy and food industry in Poland than in other EU countries, favorable investment conditions, an increased demand for food in the domestic market, and above all, the abolition of customs barriers in food exports to EU countries and the possibility of obtaining subsidies on exports to third countries.

The injection of foreign capital into Polish enterprises has undoubtedly accelerated the development of many sectors of the food industry and increased their concentration. Based on the index of the share of companies with foreign capital in the revenue of particular sectors of the food industry in 2017 (Fig. 8), it is pos-

sible to indicate the sectors where foreign capital plays the greatest role (over 70%) which are as follows: tobacco, brewing, spirits, oilseeds, and soft drinks industries, and those where foreign capital plays the least role (less than 35%): fruit and vegetables, feed, milling, bakery, meat, and dairy industries. The rest can be defined as industries with an average share of companies with foreign capital in revenues.

Foreign direct investments played an important role in the process of strengthening the competitive position of the Polish food industry as they accompanied privatisation and restructuring processes in the sector in the first half of the 1990s and were used in the construction of new processing plants from scratch in subsequent years. The inflow of foreign capital in the form of FDI, through the transfer of technology and innovation, contributed to the modernization and upgrading of the food industry and its individual sectors, which allowed Polish producers to successfully compete in the EU and global food markets.

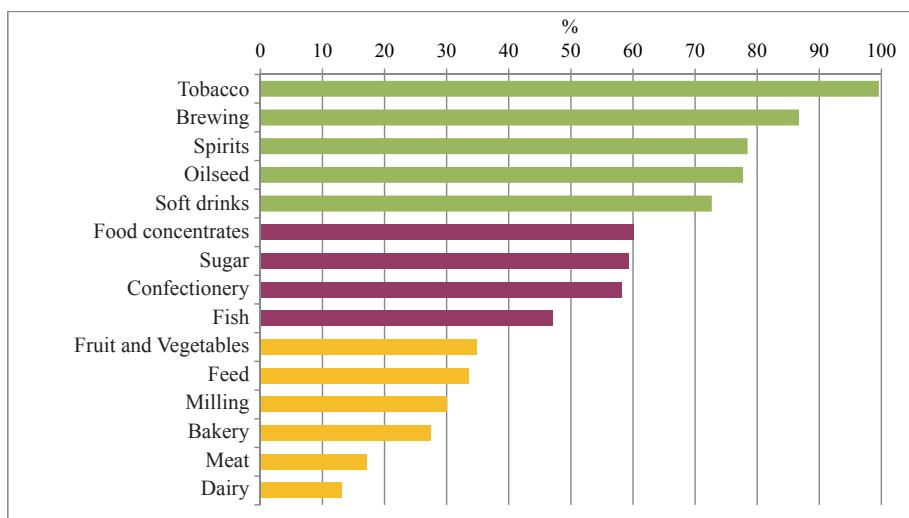


Fig. 8. Share of companies with foreign capital in the revenues of particular food industry sectors in Poland in 2017 (%).

Source: unpublished data from the Central Statistical Office.

Similar trends in domestic and world food prices

The dynamically growing turnover of foreign trade caused two phenomena. Firstly, in many industries of the domestic agri-food sector, the share of exports in the production sold (the so-called export specialization) significantly increased, and secondly, in others, the share of imports in the market supply increased (the so-called import penetration). The development of trade exchange and large direct foreign investments made by global food concerns resulted in an ever stronger integration of the domestic market with the EU and world markets.

Between 2000 and 2004, domestic procurement prices of agricultural raw materials and the sale prices of food industry products showed similar directions of change, but their volatility was not correlated with changes in world prices, which systematically increased in that period. The FAO Food Price Index is a synthetic indicator for assessing the economic situation on the world market, which illustrates price changes in relation to the base period 2014-2016. After the accession to the EU, the domestic market through the EU market was strongly integrated into the world market. The directions of changes in domestic procurement and sale prices were already analogous to changes in world food prices (Figure 9). The fluctuations in the global market situation through the EU market transmit to the supply and demand situation on the domestic market of agricultural and food products. The strong integration of the domestic market with external markets increases the chances of export expansion, especially in conditions of cost and price competitive advantages.

At the same time, large fluctuations in the global market situation generate greater production and trade risks, which the participants of the national food chain can minimize by skilfully using the market information system and risk management tools (e.g. futures contracts, insurance).

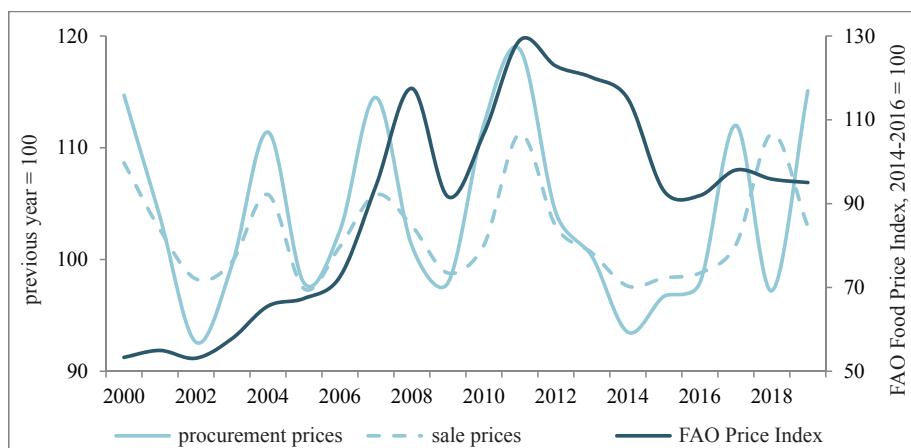


Fig. 9. Indicators of changes in domestic sales and procurement prices and world food prices.
Source: unpublished data from the Central Statistical Office, FAO Food Price Index.

Summary and conclusions

The Polish agri-food sector has undergone profound changes since 1989. From a rather backward sector, using outdated technologies and production methods, it has developed into a modern and dynamically developing agribusiness sector, which has shown great adaptability, is characterized by high growth dynamics and is successful both on the domestic and world markets. This is evidenced in particular by the following phenomena:

- growth in production in agriculture and the food industry,
- exports and foreign trade surplus growing rapidly since 2003,
- increase in demand and changes in consumption patterns in the internal market.

The positive structural and modernization changes that occurred in the Polish agri-food sector during the economic transformation and membership in the European Union resulted in an improvement in the technical and economic efficiency of entities in the sector. This is the outcome of several major trends, such as:

- increased concentration of production in agriculture and the food industry and the resulting economic benefits from the growing economies of scale;
- technological progress in agricultural production and food processing, and adaptation to standards in the area of quality and food security;
- increased level of management efficiency, which has been a source of permanent competitive advantage on the international market.

The individual industries of the agri-food sector, which are implemented by different strategies and characteristics, have different levels of development. In some sectors, export was the main driver of development, which determined the growth of agricultural production and industrial processing. Other industries developed by processing imported agricultural raw materials (e.g., from different climate zones), which were then sold on the domestic market or re-exported. Still, other industries were particularly oriented towards supplying the domestic market.

In the analyzed period, the domestic agri-food market integrated into the global market, which was determined by the growing importance of foreign trade in market balances, large foreign direct investments made by transnational food concerns and market regulations as part of successive reforms of the common agricultural policy. The challenges faced by operators in the national agri-food sector in the future will prove to be significant changes in macroeconomic and market conditions. A key role in this area will be played by the negative effects of the global economic recession caused by the COVID-19 pandemic. The second important factor will be a fundamental change in the EU's economic development strategy, whose economy will increasingly become socially and environmentally sustainable. These changes are heralded by the "European Green Deal" strategy and the "From Farm to Fork" strategy dedicated to the agri-food sector. Agricultural holdings and food industry enterprises will have to implement adjustment processes not only due to the changing external conditions, but also new trends in food consumption on the internal market.

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**EWOLUCJA SEKTORA ROLNO-SPOŻYWCZEGO
W WARUNKACH TRANSFORMACJI GOSPODARCZEJ,
CZŁONKOSTWA W UE
I GLOBALIZACJI GOSPODARKI ŚWIATOWEJ**

Abstrakt

Celem artykułu jest wkład do dyskusji i badań poświęconych ewolucji sektora rolno-spożywczego w okresie transformacji systemowej, członkostwa Polski w Unii Europejskiej i globalizacji gospodarki światowej. Ewolucja polskiego sektora rolno-spożywczego, rozpoczęta w pierwszych latach transformacji systemowej, nasilona w okresie przygotowań do akcesji do Unii Europejskiej (UE), a następnie stymulowana procesami pogłębiającej się integracji gospodarczej i handlowej z państwami członkowskimi UE oraz z rynkiem globalnym dowodzi, że sektor ten przeszedł głębokie przeobrażenia. Po przystąpieniu do UE polska gospodarka żywnościowa objęta została wsparciem finansowym z funduszy unijnych, co pozwoliło na przyspieszenie zmian strukturalnych i modernizacyjnych w sektorze. Niesagatelną rolę w procesie wzmacniania pozycji polskiego sektora rolno-spożywczego odegrały także bezpośrednie inwestycje zagraniczne. Kluczowym czynnikiem rozwoju sektora pozostawał jednak dynamiczny wzrost eksportu rolno-spożywczego, któremu towarzyszył rosnący popyt na żywność na rynku wewnętrznym. Zmiany uwarunkowań makroekonomicznych i rynkowych powodują, że przed podmiotami krajowego sektora rolno-spożywczego stoją nowe wyzwania, którym będą musiały sprostać w przyszłości.

Słowa kluczowe: rolnictwo, przemysł spożywczy, rynek, handel zagraniczny, trendy żywnościowe.

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