Polish food industry in 2008-2013

INSTITUTE OF AGRICULTURAL
AND FOOD ECONOMICS
NATIONAL RESEARCH INSTITUTE

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MULTI-ANNUAL PROGRAMME 2011 - 2014

COMPETITIVENESS OF THE POLISH FOOD ECONOMY UNDER THE CONDITIONS OF GLOBALIZATION AND EUROPEAN INTEGRATION

Warsaw 2014

Authors of the publication are the employees of the Institute of Agricultural and Food Economics – National Research Institute

This study was prepared under the theme: **Monitoring of agri-food markets under changing economic conditions**,
within the framework of the research task: *Processes adjusting the Polish food industry to the changing market environment.*

The aim of the study is to evaluate the functioning of the food industry and its various sectors in 2008-2013.

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AKME Projekty Sp. z o.o.

ISBN 978-83-7658-512-3

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Foreword

This year ends the Multi-Annual Programme 2011-2014, entitled "Competitiveness of the Polish food economy under the conditions of globalisation and European integration", implemented at the Institute of Agricultural and Food Economics – National Research Institute (*Polish: Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej – Państwowy Instytut Badawczy, IERiGŻ-PIB*). One of the goals of the Programme was the research task, entitled "Processes adjusting the Polish food industry to the changing market environment", which was carried out within the framework of the following theme: "Monitoring of agri-food markets under changing economic conditions".

This year's study, synthesising four years of research, differs from reports of previous years, i.e. 2011-2013. It evaluates and analyses how the Polish food industry and its various sectors fared during the years of the last global financial and economic crisis, which had its peak at the turn of 2008 and 2009.

The report consists of 14 chapters, 13 of which address individual sectors and one is a synthetic evaluation of the food industry as a whole. The study analyses the following issues:

1) domestic demand (consumption, domestic use),
2) foreign trade (exports, imports, self-sufficiency, ratio of exports to production and imports to domestic use),
3) supply of raw materials,
4) prices of the main products at three levels (purchase, processing and consumers),
5) production (in quantities and in terms of value, at current and constant prices),
6) resources (employment, assets),
7) productivity and efficiency,
8) financial performance,
9) financial standing,
10) business breakdown structure,
11) position against other EU-27 Member States.

The first two studies of 2011 and 2012, entitled *Adaptation processes of the Polish food industry to the changing market environment*[1], compared food industry sectors by selected issues, such as: development of sold production, employment, labour productivity and efficient use of production factors, etc. The research period was 2000-2010.

[1] *Procesy dostosowawcze polskiego przemysłu spożywczego do zmieniającego się otoczenia rynkowego (1) (Adaptation processes of the Polish food industry to the changing market environment (1))*, ed. R. Mroczek, Series "Program Wieloletni 2011-2014" (Multi-Annual Programme 2011-2014), No. 4, IERiGŻ-PIB, Warszawa 2011; *Procesy dostosowawcze polskiego przemysłu spożywczego do zmieniającego się otoczenia rynkowego (2) (Adaptation processes of the Polish food industry to the changing market environment (2))*, ed. R. Mroczek, Series "Program Wieloletni 2011-2014" (Multi-Annual Programme 2011-2014), No. 35, IERiGŻ-PIB, Warszawa 2012.

The report of 2013[2] analysed the main food industry sectors in three sub-periods, i.e. in 1998-2002, 2003-2007 and 2008-2012, which differed significantly from one another under Polish conditions. This year's report covers the shortest research period, i.e. 2008-2013. However, the period is characterised by high dynamics of changes in prices of agricultural raw materials for the food industry, a slowdown in economic growth and even recession in the world's major economies, falling demand for food and growing insecurity, as well as the threat of bankruptcies in various sectors, including the food sector. In view of the foregoing and the fact that specific food industry sectors, such as sugar and dairy sectors, were subject to strong regulations, the period was very interesting in terms of research, although difficult to evaluate and draw clear conclusions.

In recent years, just as before, the rate of development of the food industry in Poland has been contingent upon two factors, i.e. 1) domestic demand and 2) food exports. The last global financial crisis brought a decline in domestic demand for food due to a slowdown in economic growth in our country and also, e.g., rapidly rising food prices. In 2008-2013, the average production growth rate of the food industry amounted to 3.3% per year, which is almost two times less than in 2003-2007 (5.9%). This mainly concerns the production of beverages. The period also featured large differences in the scale of production changes as regards: food – from +0.6% to +6.5%, beverages – from +4.4% to -8.5%, tobacco products – from +7.1% to -3.8%, giving the average production from +1.0% to +6.2% for the food industry. During this period, a high rate of growth in the sector was achieved only in 2012. The main source of growth in the food industry was export, whose share in the increased value of sold production exceeded 60%, and ranged from 40% to 125%.

In recent years, more difficult external farming conditions have forced food enterprises operating in Poland to further improve the efficiency of production, although not all sectors have succeeded, e.g. oil-mill or alcoholic beverage sectors. We are the sixth largest producer of food in the European Union. The fact that we strengthened this position during the last global economic crisis proves our competitiveness and potential which, on a level playing field, can be quickly and efficiently used. Further diversification of markets is also necessary.

I would like to express my gratitude to the authors of this study and all those who have contributed to the development of three previous reports.

Robert Mroczek

[2] *Procesy dostosowawcze polskiego przemysłu spożywczego do zmieniającego się otoczenia rynkowego (3) (Adaptation processes of the Polish food industry to the changing market environment (3))*, ed. R. Mroczek, Series "Program Wieloletni 2011-2014" (Multi-Annual Programme 2011-2014), No. 75, IERiGŻ-PIB, Warszawa 2013.

1. Meat and poultry industry

In accordance with the Polish Classification of Activities (*Polish: Polska Klasyfikacja Działalności; PKD*), the main meat and poultry products bear the following codes:

– PKD 10.11 – processing and preserving of meat, excluding poultry meat,

– PKD 10.12 – processing and preserving of poultry meat,

– PKD 10.13 – production of meat products, including poultry meat products.

In terms of size (volume) of production, this industry branch is dominated by pre-processing, i.e. production of less-processed products which is raw meat. Cold cuts and other meat products are classified to main or secondary processing. The analysis below addresses codes 10.11 + 10.13 together as the meat industry, while code 10.12 – as the poultry industry.

1.1. Domestic demand

Domestic demand for meat and meat products was estimated on the basis of their consumption in households and balance sheet data, while its use was calculated according to the following formula: production + imports – exports. The results thereof are presented in Table 1.1.

Table 1.1. Domestic consumption and use of meat

Specification	2008	2009	2010	2011	2012	2013
Household consumption of meat and meat products (kg per capita annually)	67.2	66.6	66.8	66.2	65.0	63.0
including: raw meat	37.1	36.6	37.1	36.8	35.9	34.6
including: poultry	17.8	17.9	18.2	18.4	18.4	18.6
cold cuts and other meat products	28.7	28.6	28.2	28.1	27.8	27.7
Balance sheet consumption of meat in total (including offal) (kg per capita annually)	75.3	75.0	73.7	73.4	71.0	67.5
including: pork	42.7	42.4	42.2	42.5	39.2	35.5
beef	3.8	3.6	2.4	2.1	1.6	1.5
poultry	24.1	24.0	24.6	25.0	26.1	26.5
Domestic use (thousand tonnes) of meat and meat products	3,114.6	3,001.9	3,030.0	3,061.6	2,904.0	2,695.4
including: pork	2,018.5	1,949.2	1,957.6	1,972.8	1,753.7	1,532.6
beef	189.1	100.9	96.4	102.8	91.4	99.9
poultry	907.0	951.8	976.0	986.0	1,058.9	1,062.9
meat products	1,116.8	1,058.1	1,180.6	1,233.9	1,255.1	1,228.3
including: poultry	160.6	184.7	184.7	227.8	248.5	232.7

Source: own calculations based on the CSO Statistical Yearbooks of Agriculture 2009-2013, "CSO Statistical Bulletins" of 2008-2014, Report No. 47, entitled "Rynek mięsa. Stan i perspektywy"(Meat Market. Status and Prospects), Series "Analizy Rynkowe" (Market Analyses) of 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa and unpublished data from the Ministry of Finance on foreign trade results.

In 2008-2013, meat and meat product consumption dropped in households and on a balance sheet basis by 6.3% and 9.6%, respectively. Poultry consumption rose, but did not offset a decline in red meat consumption. Changes in meat and meat product consumption are reflected in their use: beef fell by half, pork by 1/4, while poultry and poultry products increased respectively by 17% and 45%.

Consumer income growth slightly increases demand for raw pork and poultry. Rates of income elasticity of demand for these products amount to about 0.1. Demand of consumers resulting from an increase in their income by 1% is much higher in the case of high-quality cold cuts and beef, as this ratio ranges from 0.4 to 1.0. The high elasticity of demand for high-quality cold cuts and beef is due to, among others, the fact that these are products of a higher degree of processing, produced from more expensive raw materials, thus having a higher value added and being designated for more affluent consumers.

1.2. Foreign trade in meat

In the analysed period, the export value of meat and meat products almost doubled from EUR 2.0 billion to EUR 3.8 billion, i.e. by 13.9% per year. Meat imports were about half the size of exports and grew at a slower rate (7.6% per year). The export--import coverage ratio increased from 192% in 2008 to 254% in 2013, which means strengthening our position as a net exporter of meat and meat products. The share of exports in production reaches almost half, while the share of imports in use is about 1/3. The self-sufficiency ratio of meat production increased to 136%, which means that meat production is by over 1/3 higher than its domestic use. The share of meat exports in food product exports is the largest among all industry sectors and, additionally, the sector has recently strengthened its position, increasing its share by 2 pp – up to 22.8% (Table 1.2).

In 2008-2013, the balance of trade in pork and pork products grew from EUR -231 million to EUR 142.5 million. This change can be explained by the fact that, firstly, imports of live pigs are not counted (included) which, at the time, increased to about 5 million units – mainly piglets (which is about 180 thousand tonnes of meat worth about EUR 440 million) and, secondly, pork and pork product consumption in Poland in 2013 fell by almost 1/10 to 35.5 kg per capita (cf. Table 1.1). The export-import coverage ratio increased to 110% and the self-sufficiency ratio of production exceeded 100% by only about 5% (Table 1.3).

For years, the balance of trade in beef and poultry has been positive, while the value of exports and positive balances almost doubled in the analysed period (Table 1.3). Beef and poultry exports are several times higher than imports. The share of exports in pork production is similar to that of imports in use, while the share of beef and poultry exports in production is several times higher than the share of imports in domestic use.

Table 1.2. Results of foreign trade in meat and meat products[a]

Specification	2008	2009	2010	2011	2012	2013
Value (EUR million)						
exports	1,994.2	1,867.0	2,463.0	2,862.1	3,338.5	3,814.4
imports	1,040.9	1,112.2	1,014.4	1,177.3	1,216.3	1,502.8
balance	953.3	754.8	1 448.6	1,684.8	2,122.2	2,311.6
Volumes (thousand tonnes)[b]						
exports	889.2	901.9	1,186.7	1,269.5	1,448.8	1,654.3
imports	516.6	597.6	594.9	656.7	680.3	687.7
balance	372.6	304.3	591.8	612.8	768.5	966.6
Indicators (%)						
– export-import coverage	191.6	167.9	242.8	243.1	274.5	253.8
– self-sufficiency[c]	113.0	112.9	121.0	121.3	127.7	135.9
– share of exports in production[c]	25.3	26.6	32.4	34.2	39.4	45.1
– share of imports in use[c]	18.8	23.2	23.0	25.5	29.5	34.1
– share of meat in exports of food products	20.8	20.0	21.2	22.0	22.7	22.8

[a] pork, beef and poultry, [b] of meat, meat products in product weight, [c] in quantitative terms

Source: unpublished data from the Ministry of Finance on foreign trade results and own calculations.

Table 1.3. Results of foreign trade in pork, beef and poultry

Specification	Year	Meat and meat products			Including: meat products
		pork	beef and veal	poultry	
Export value (EUR million)	2008	725	570	699	276
	2013	1,516	1,023	1,275	654
Balance (EUR million)	2008	-231	541	643	222
	2013	142.5	975	1,195	560
Export-import coverage (%)	2008	75.8	1,965.5	1,252.7	513.0
	2013	110.4	2,109.3	1,583.9	692.8
Self-sufficiency[a] (%)	2008	96.0	220.0	128.4	107.7
	2013	104.8	398.4	156.2	116.1
Share of exports in production[a] (%)	2008	20.1	49.7	25.3	8.4
	2013	43.4	77.7	39.0	15.5
Share of imports in domestic use[a] (%)	2008	23.3	4.9	4.0	1.3
	2013	40.7	13.9	4.7	1.9

[a] in quantitative terms

Source: own calculations based on Tables 1.1 and 1.4 and unpublished data from the Ministry of Finance on foreign trade results.

A more than twofold increase was observed in the sales value of meat products, i.e. products with a higher value added. A positive balance of trade in these products rose to EUR 560 million, so did the share of exports in production reaching 15.5%. Out of these three markets, the poultry market is the one which develops the most harmoniously, as growing exports increased the domestic production of poultry livestock, not limiting its internal consumption, as is the case in the beef market.

1.3. Supply of raw materials in the meat and poultry industry and meat prices

In the period concerned, the production of livestock for slaughter in Poland remained relatively stable reaching about 3.7 million tonnes (hot carcass weight, hcw), but noting a change in its structure. In 2008-2013, pork production dropped by 17%, as opposed to poultry production which rose by 42% (Table 1.4). Beef production remained relatively stable and amounted to 394-424 thousand tonnes (hot carcass weight).

Table 1.4. Production and purchase of livestock for slaughter

Specification	2008	2009	2010	2011	2012	2013
Livestock production in hcw (thousand tonnes)	3,518	3,389	3,665	3,715	3,709	3,664
including: pork	1,937	1,717	1,863	1,876	1,733	1,606
beef and veal	416	424	422	412	394	398
poultry	1,165	1,248	1,380	1,427	1,582	1,660
Purchase of livestock in terms of meat (including fats) (thousand tonnes)						
including: pork	1,513	1,379	1,551	1,627	1,446	1,573
beef and veal	291	305	330	290	277	344
poultry	1,041	1,143	1,270	1,343	1,470	1,558
Meat imports (thousand tonnes)	503	581	574	635	661	666
including: pork	461	532	526	588	603	613

Source: own elaboration based on the CSO Statistical Yearbooks of 2009-2013 and unpublished data from the Ministry of Finance on foreign trade results.

The purchase of poultry livestock grew the fastest (by 8.4% per year), being twice as fast as that of beef livestock. The largest variations were observed in the purchase of pork livestock, which was slightly higher in 2013 than in 2008.

As regards the supply of the meat industry, imported pork plays an important role, accounting for over 90% of meat imported from abroad and 40% of commercially slaughtered pigs (cf. Table 1.6).

In recent years, sales prices and retail prices of meat have followed an upward trend, growing faster than inflation (except for 2010). This means that meat and meat products got more expensive not only in nominal but also real terms. Especially in 2011--2012, prices of raw materials for meat processing, in particular pig and beef livestock, grew even faster, thus decreasing the relative level of processing margins (Table 1.5).

Table 1.5. Meat prices and purchase prices of livestock for slaughter
(price changes in % per year)

Specification	2008	2009	2010	2011	2012	2013
Inflation	4.2	3.5	2.6	4.3	3.7	0.9
Retail prices of meat	4.7	8.4	-1.4	11.1	5.0	1.8
Sales prices of meat	2.4	6.9	-4.2	6.0	6.9	0.6
Purchase prices (basket averages)[a] of:	6.2	10.1	-9.4	18.1	11.7	-0.2
– pig livestock	15.9	15.2	-15.8	16.2	19.5	-0.2
– beef livestock (excluding calves)	2.3	13.2	0.0	22.4	14.7	-3.1
– poultry livestock	-1.7	5.5	-5.8	18.6	2.5	1.0

[a] basket to determine the average purchase price is as follows: 0.45 for pigs + 0.45 for poultry + 0.10 for cattle

Source: own elaboration based on "CSO Statistical Bulletins" of 2009-2014.

1.4. Meat and poultry production

In the period concerned, the commercial slaughter of livestock for slaughter increased by nearly 9%, from 3.1 to 3.4 million tonnes (hot carcass weight), while the slaughter of pigs decreased by 10%, cattle and calves – by 9%, and that of poultry grew by 42% (Table 1.6). Meat enterprises increased their production of all kinds of meat, in particular poultry – by 52% and, to a lesser extent, beef and pork – by 10% and 16%, respectively. The production of meat products rose by 18.5% (from 1.2 to 1.4 million tonnes), including cold cuts – by 14.7%, and canned meat – by 61.6%, meaning that small and micro companies decreased their meat production, as opposed to large companies which strengthened their position. The value of sold production in the meat industry (at current prices) grew from PLN 37.1 billion to PLN 55.6 billion, i.e. by 50% and, at constant prices, by 28% (5.1% per year). A slightly larger increase in production was observed in medium and large companies.

Table 1.6. Meat and poultry production

Specification	2008	2009	2010	2011	2012	2013
Commercial slaughter of livestock[a] in hcw (thousand tonnes)	3,130	3,064	3,310	3,349	3,429	3,409
including: pork	1,623	1,453	1,618	1,627	1,586	1,463[b]
beef and veal	368	384	387	370	337	336
poultry	1,127	1,216	1,295	1,343	1,498	1,603
Industrial production[c] of meat (thousand tonnes)	2,254	2,243	2,418	2,508	2,822	2,977
including: pork	1,020	909	929	911	1,101	1,183
beef and veal	194	191	219	234	231	214
poultry	1,040	1,143	1,270	1,363	1,491	1,580
Production of meat products	1,203	1,161	1,307	1,372	1,424	1,426
including: cold cuts	1,104	1,034	1,163	1,224	1,266	1,266
canned meat	99	127	144	148	158	160
Value of sold production (PLN billion)	37.1	39.8	40.3	47.5	53.9	55.6[d]
including: large and medium companies	30.0	32.3	32.8	38.9	44.9	46.3[d]
in accordance with F-01	34.1	37.9	36.6	42.6	49.6	50.9
Change in the value of sold production at constant prices[e] (%)	4.5	2.5	5.8	11.3	6.3	2.5

[a] slaughtered in abattoirs and slaughterhouses (in line with the *Statistical Yearbooks of Agriculture and Rural Areas*, CSO), [b] non-final data, [c] in companies with over 9 employees, [d] estimate based on F-01 statements, [e] sales price index for meat products as a deflator

Source: own calculations based on the CSO data and Reports Nos. 43 and 47, entitled "Rynek mięsa. Stan i perspektywy" (Meat Market. Status and Prospects), Series "Analizy Rynkowe" (Market Analyses) of 2012 and 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa.

1.5. Resources of production factors

In 2008-2013, employment in the meat industry followed a slight downward trend, i.e. decreased by 1.0% per year, and in large and medium companies this rate was twice lower (Table 1.7). However, the book value of fixed and company assets

grew steadily (fixed assets – by 21.3% over five years, i.e. by 3.9% per year, and company assets – by 31.0%, i.e. 5.4% per year). Faster growth in company assets than fixed assets was due to a large increase in current assets (55.7%)[3].

Table 1.7. Resources of production factors in the meat industry

Specification	2008	2009	2010	2011	2012	2013
Employment (thousand employees)						
industrial companies	115.3	106.5	112.6	111.1	110.9	109.7[a]
including: large and medium companies	97.7	90.1	96.1	94.7	95.7	95.5[a]
in accordance with F-01	103.5	99.6	100.2	99.9	102.4	101.5
Gross fixed assets of large and medium companies (PLN billion)	10.8	10.6	11.4	12.0	12.9	13.1[a]
Company assets in accordance with F-01 (PLN billion)	15.3	15.6	16.0	17.4	19.5	19.9
including: fixed assets	9.2	9.2	9.3	9.5	10.4	10.4
Labour cost (PLN million)	2,726.3	2,823.0	2,933.1	3,112.5	3,248.7	3,383.3
Total resources[b] in accordance with F-01 (PLN billion)	23.5	24.0	24.8	26.8	29.3	30.0
Investments (PLN billion)	1.2	0.8	0.9	1.1	1.1	1.1
Capital-labour ratio[c] (PLN thousand per capita)	110.8	117.6	118.4	126.8	134.7	137.2
Capital intensity of production[d] in accordance with F-01 (PLN/PLN)	0.45	0.41	0.44	0.41	0.39	0.39
Total resources/production (PLN/PLN)	0.69	0.63	0.68	0.63	0.59	0.59

[a] estimate based on F-01, [b] fixed and current assets increased by the value of labour, defined as the equivalent of three times labour cost per year, [c] applies to large and medium enterprises, [d] the ratio of the value of fixed and current assets to the value of sold production at the basic prices

Source: own calculations based on published and unpublished CSO data.

During the last global financial and economic crisis, the meat industry reduced its capital expenditure. In 2009, capital expenditure decreased in this sector of processing by 1/3 compared to 2008. It was a temporary decline in investments driven by companies' caution, rather than lack of resources. In subsequent years, these expenditures turned back to the level of 2008, i.e. PLN 1.1-1.2 billion.

The last three years have brought stabilisation in investments at the level of PLN 1.1 billion, representing 8-9% of the gross value of fixed assets of meat enterprises. This leads consequently to an increase in the capital-labour ratio, which was by almost 1/4 higher in 2013 than in 2008 (Table 1.7). However, this did not result in an increase in the capital intensity of production, since the value of (fixed and current) assets per unit of production was by about 13% lower in 2013 than in 2008. In the period studied, the total value of the resources of production factors grew by 27.7%, decreasing by 14.5% per unit of production.

[3] Real growth in these resources is difficult to estimate, as there is no basis for converting book values into constant prices (i.e. at constant prices of "old" fixed assets increased by gains on investments at current prices).

1.6. Productivity and efficiency

In 2008-2013, labour productivity in the meat industry increased by 58% (from PLN 321.6 thousand to PLN 506.8 thousand per capita) and, at constant prices, by 35% (Table 1.8). The average remuneration in the meat industry is about PLN 2.2 thousand gross, which is one of the lowest remunerations across all branches of the food industry. Labour productivity growth was accompanied by growth in asset and resource productivity (respectively from 2.78 to 3.53 PLN/PLN and from 1.45 to 1.69 PLN/PLN).

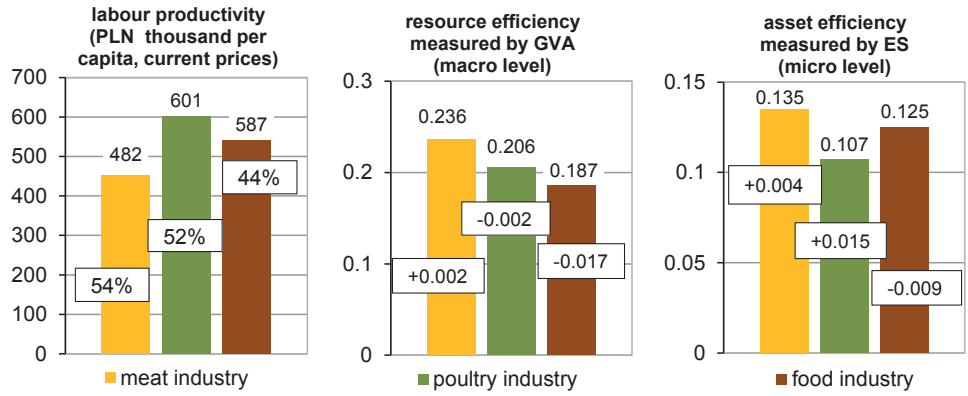
Table 1.8. Productivity and efficiency of meat production

Specification	2008	2009	2010	2011	2012	2013
Labour productivity (PLN thousand)						
at current prices	321.6	373.4	357.8	427.3	486.4	506.8[a]
including: large and medium companies	307.5	358.7	341.3	410.8	469.1	484.8[a]
at constant prices[b]	375.3	407.8	407.9	459.3	491.3	506.8[a]
Productivity of fixed assets[c]	2.78	3.05	2.88	3.24	3.48	3.53[a]
Productivity of resources[d]	1.45	1.58	1.47	1.59	1.69	1.69
Efficiency measured by GVA[d] (macro) of:						
labour inputs	1.61	1.76	1.75	1.64	1.70	1.66
assets	0.350	0.388	0.389	0.357	0.349	0.349
resources	0.228	0.251	0.251	0.232	0.233	0.231
Efficiency measured by ES[d] (micro) of:						
labour inputs	0.57	0.71	0.70	0.59	0.65	0.61
assets	0.123	0.156	0.156	0.129	0.134	0.129
resources	0.080	0.101	0.101	0.084	0.089	0.085

[a] estimate based on F-01 statements, [b] sales price index for meat products as a deflator, [c] applies to large and medium companies, [d] in accordance with F-01

Source: own calculations based on published and unpublished CSO data.

Figure 1.1. Comparison of selected productivity indicators for the meat, poultry and food industry in 2013 (as on 2013 and the change after 2008)



Source: own calculations based on unpublished CSO data from the companies that made the financial statements.

In the meat industry, the efficiency of almost all production factors grew both at the macro (measured by GVA) and micro level (measured by ES). The efficiency rise of micro indicators was at least twice bigger than that of the macro ones. In 2008--2013, the efficiency of assets measured by GVA changed only slightly, while measured by ES – increased by 5%. The efficiency of resources rose by 1% and 6%, respectively. The efficiency of assets (measured by ES) in the meat industry (including the poultry industry) is by about 3% higher than the average for the food industry, while that of resources (measured by GVA) – by almost 24% higher. However, the efficiency of labour inputs in the meat industry is by about 1/5 lower than the average for the food industry. The efficiency of resources and assets is by 15-25% higher in the case of meat enterprises than poultry companies (Figure 1.1).

1.7. Financial performance and standing

The meat industry is one of the branches of the food industry with low return on sales, ranging mostly from 1.0% to 2.0%. In the analysed period, it approached the average level in the food industry only in 2010. However, return on equity improved twice and came close to the average for the food industry.

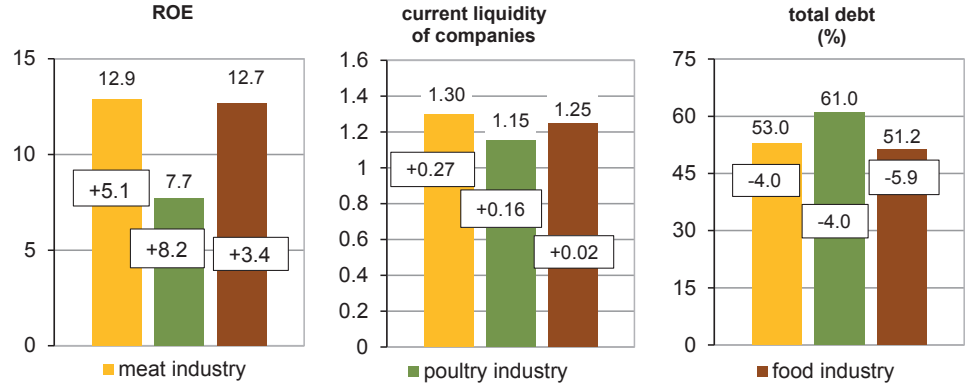
In the period under analysis, the amount of net profit increased almost threefold, while the value of equity grew by half. Current liquidity improved and now remains at a stable and safe level. Own funds in the market increased sevenfold to about PLN 2.0 billion. Total debt remains at a fairly safe level (below 60% of the total value of assets). Equity finances little less than 50% of company assets, while own funds in the market – about 20% of current assets (Table 1.9). The share of long-term debt in total debt fell by 4 pp to 55%. It is also important that over 80% of companies generate profits and that their share in the sector's turnover is the same.

Table 1.9. Net profit, returns and financial standing of meat producers

Specification	2008	2009	2010	2011	2012	2013
Net profit (PLN million)	391.1	665.5	1,211.6	853.2	1,042.9	1,081.8
Return on sales (%)	1.17	0.88	2.71	1.57	1.90	1.81
ROE (%)	6.19	9.33	16.01	11.06	12.29	11.99
Equity (PLN billion)	6.3	7.1	7.6	7.7	8.5	9.0
including: own funds in the market	0.3	0.9	1.1	1.4	1.7	2.0
Total liabilities (PLN billion)	9.0	8.4	8.5	9.7	11.0	10.9
including: short-term liabilities	5.9	5.5	5.6	6.6	7.4	7.5
Current liquidity	1.04	1.15	1.20	1.21	1.23	1.26
Total debt (%)	59.0	54.0	53.0	56.0	57.0	55.0

Source: own calculations in accordance with unpublished CSO data.

Figure 1.2. Financial indicators for the meat, poultry and food industry
(as on 2013 and changes after 2008)



Source: own calculations in accordance with unpublished CSO data.

1.8. Business breakdown structure of the sector

The meat industry is one of the branches of the food industry with the lowest concentration. It includes about 1.3 thousand industrial companies (Table 1.10). What is more, Eurostat data show that nearly 1.7 thousand micro companies are engaged in meat production. The number of meat companies decreases in all groups of enterprises. The process is the fastest in the group of micro companies (up to 9 staff members), while slower – in small and medium companies.

Table 1.10. Industrial companies producing meat and meat products (PKD 10.1)

Specification	2008	2009	2010	2011	2012	2013
Number of industrial companies	1,444	1,352	1,336	1,340	1,309	1,306
including: large companies	98	92	89	91	94	88
Share of large companies in (%):						
– employment	46.7	47.6	50.9	51.1	53.2	53.6
– production	47.4	48.2	49.2	52.4	53.2	.

Source: unpublished CSO data and own calculations.

Production concentration in the meat industry proceeds very slowly. The share of large companies (with at least 250 employees) in the employment and production of the meat sector has already exceeded 50%; however, production concentration is still low. The share of six major players in the Polish meat market does not exceed 1/4 of the sold production of the sector. Highly fragmented business breakdown structures in the meat industry are also associated with low production capacity utilisation (especially as regards slaughtered cattle and pigs). Examples from other EU Member States, being the largest meat producers, show that the market is also open for small businesses, but they need to be efficient and competitive as well.

Table 1.11. Number of meat plants in Poland in 2005-2012

Specification	Potential of plants	2005	2012
Meat plants authorised to:	large production capacity	510	802
slaughter	small production capacity	745	46
	in total	1,255	848
	large production capacity	664	1,132
cutting	small production capacity	1,114	30
	in total	1,772	1,162
	large production capacity	595	871
processing	small production capacity	1,145	2
	in total	1,740	873

Source: based on a presentation delivered by W. Ziętara at the seminar entitled Polskie gospodarstwa trzodowe na tle gospodarstw wybranych krajów (Polish Pig Holdings against Holdings from Selected Countries), IERiGŻ-PIB, Warszawa, 4 July 2014.

The decreasing number of meat companies in Poland is confirmed by data in Table 1.11, which show that 2005-2012 brought a decline in the number of plants in each production profile, i.e. slaughter, cutting and processing. At the same time, plants with small capacity were "reclassified" to those with large production capacity. As a result of these changes, plants with large production capacity grow in numbers in the structure of meat companies, while those with small production capacity – vanish.

1.9. Strength of Polish meat producers against other EU Member States

Poland is the fourth largest meat producer in the European Union with a share of 10.8%. Meat production is almost twice larger in Germany and half larger in France, while similar in Spain (Table 1.12). In Poland, production per capita calculated at comparable prices is one of the highest in the EU. Only Ireland and Denmark are ahead of us with 989 and 807 EUR per capita, respectively, while Germany, Spain and France are worse by 15-20%. We are one of the leading European meat producers particularly in terms of the degree of production concentration. Turnover per company in Poland is twice higher than in Germany and France, and by about 1/3 higher than in Italy and Spain, but two times lower than in the UK. Among the countries listed in Table 1.12, labour productivity in the meat industry is higher in Italy (by about 85%), Spain (by about 45%), as well as France and the UK (by about 24% each).

Poland was one of the countries with the highest growth rate of production in this sector. In 2000-2012, the value of sold production (at comparable prices) in the EU-27 meat industry rose by 46% (by 38% in the EU-15 and almost doubled in the EU-12), while in Poland it increased 2.5-fold, just as in Romania and Bulgaria. In Germany and Spain, meat production increased by 3/4, while France, Italy and Denmark witnessed 1/5 growth in this regard. This means that we strengthened our position among the largest meat producers in the EU (our share increased by 4.5 pp).

Table 1.12. Meat producers in Poland and other EU Member States in 2012

Member States	Production[a] value (EUR billion)	Share in the EU-27 (%)	Production[a] per capita (EUR)	Labour[a] productivity (EUR thousand)	Turnover[a] per company (EUR million)
EU-27	**206.98**	**100.0**	**412.5**	**232.8**	**5.4**
EU-15	**166.09**	**80.2**	**414.9**	**262.3**	**5.4**
Germany	40.18	19.4	491.0	224.8	3.6
France	30.35	14.7	464.8	240.9	4.5
Spain	22.62	10.9	483.1	279.3	5.8
Italy	19.67	9.5	331.2	357.6	5.5
UK	17.38	8.4	273.7	239.7	16.9
EU-12	**40.89**	**19.8**	**402.9**	**159.9**	**5.6**
Poland	22.35	10.8	579.9	193.0	8.0
Romania	5.13	2.5	255.4	113.7	6.6
Hungary	4.19	2.0	422.0	152.9	6.9
Bulgaria	2.11	1.0	287.9	127.1	4.2
Slovakia	0.90	0.4	166.7	121.6	3.0

[a] at comparable prices, i.e. current prices adjusted by the purchasing power parity

Source: own elaboration based on Eurostat data.

1.10. Conclusions

The meat industry is the largest sector of the food industry in Poland and the share of meat in its exports exceeds 1/5. In 2008-2013, labour productivity in the meat industry increased by almost 60% (at current prices). Labour productivity growth was accompanied by an improvement in asset and resource productivity, while the efficiency of labour, assets and resources grew at least twice faster at the micro (enterprise) rather than macro (measured by GVA) level.

Net return on sales in the meat industry remains low (1.0-2.0%), as opposed to return on equity which doubled (up to 11-12%) and reached the average for the food industry. In the period concerned, the economic situation of the meat industry improved. The amount of net profit increased threefold, while the value of equity rose by half. Current liquidity is at a stable and safe level. Own funds in the market increased sevenfold to about PLN 2.0 billion. Furthermore, total debt remains at a fairly safe level (at about 55% of the total value of assets).

The efficiency of resources and assets is by about 1/5 higher in the case of meat enterprises than poultry companies. At the same time, the meat industry faces a shrinking raw material base and large fluctuations in pork prices. In this respect, the poultry industry is better organised, which lies behind its success, i.e. dynamically increasing production, rapidly growing exports and increased poultry consumption. Since 2008, we have become a net pork importer and a reversal of this trend in 2013 is unlikely to be sustained.

2. Dairy industry[4]

2.1. Domestic demand for milk and dairy products

Domestic demand for milk and dairy products can be evaluated based on household consumption and balance sheet data, while its use was estimated according to the following formula: production + imports – exports. In this way, we estimate total demand, including both consumer demand and intermediate use. The results thereof are shown in Table 2.1.

Table 2.1. Domestic consumption and use of milk

Specification	2008	2009	2010	2011	2012	2013
Household consumption of milk and dairy products (kg per capita annually), including:	72.2	71.6	72.7	70.6	69.5	69.8
– milk	45.0	43.4	43.4	42.5	42.1	42.0
– dairy beverages	8.4	8.9	10.1	10.0	9.6	9.8
– cheese	10.6	11.0	11.4	11.4	11.4	11.4
– butter	3.5	3.5	3.2	3.1	3.1	3.0
Balance sheet consumption of milk and butter (kg per capita annually):						
– milk	187.4	192.3	194.5	199.3	198.5	200.3
– butter	4.3	4.7	4.3	4.0	4.1	4.1
Domestic use of milk[a] (thousand tonnes) including industrial production:	10,572	10,886	10,901	11,195	11,301	11,690
– milk and cream	1,417.3	1,650.1	1,721.2	1,664.5	1,692.9	1,884.7
– milk powder	58.8	50.9	60.1	95.5	92.1	143.4
– dairy beverages	492.2	567.4	609.2	629.0	620.3	631.8
– cheese and curd	574.7	613.0	624.1	653.2	666.9	676.5
– butter	158.5	171.4	162.7	148.9	152.5	153.7
Supplies of milk and dairy products[b] to the market (thousand tonnes) including:	780.3	810.8	822.4	859.8	884.8	947.0
– milk powder and cream	62.3	46.8	57.4	84.8	87.8	134.0
– cheese and curd	562.0	602.0	603.0	627.0	647.0	660.0
– butter	156.0	162.0	162.0	148.0	150.0	153.0

[a] use calculated based on the cow's milk balance sheet, [b] by industrial companies with over 49 employees

Source: own calculations based on the CSO Statistical Yearbooks of 2009-2013, "CSO Statistical Bulletins" of 2008-2014, Report No. 46, entitled "Rynek mleka. Stan i perspektywy" (Milk Market. Status and Prospects), Series "Analizy Rynkowe" (Market Analyses) of 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa and data from the Ministry of Finance on foreign trade results.

In the period at issue (2008-2013), the household consumption of milk and butter dropped by 6.7% and 14.3%, respectively, while the consumption of cheese and dairy beverages increased (by 7.5% and 16.7%). In balance sheet terms, milk consumption increased from 187.4 to 200.3 kg per capita annually, i.e. by 6.9%, as opposed to butter

[4] In accordance with the Polish Classification of Activities, dairy products bear code 10.51 – operation of dairies and cheese making.

consumption which decreased by 4.7% (from 4.3 to 4.1 kg per capita). This proves that a decline in household demand for milk and butter was offset by higher intermediate use in other sectors of the food industry.

In 2008-2013, the domestic use of milk grew by 10.4% (from 10.6 to 11.7 million tonnes). The largest, i.e. 2.5-fold, growth was observed in the case of demand for milk powder, while demand for drinking milk and cream rose by 33%. The use of dairy beverages increased by 28%, while that of cheese and curd – by 17.7%. Demand for butter dropped slightly. The changes that have taken place in the production and consumption of milk and dairy products in recent years can be considered beneficial and largely conditioned by health reasons and consumer preferences.

The period in question noted an upward trend in industrial supplies of milk and dairy products to the domestic market. The fastest growth was noted for the supply of milk powder (over twofold increase), while that of cheese and curd grew slower, i.e. by 17%. Supplies of butter remain relatively stable (148-162 thousand tonnes). Supplies of milk and dairy products carried out by industrial companies almost entirely cover the domestic use of these products.

The demand for milk and dairy products (just like demand for meat) is characterised by highly diversified income elasticity. It is low for products with a low degree of processing, such as fresh milk, and high for butter, yogurt and dairy beverages, whose ratio of income elasticity of demand ranges from 0.5 to 0.7[5].

2.2. Foreign trade in dairy products[6]

In 2013, the share of exports of dairy products in production value of the sector was 25.6%, which is by 3.9 pp more than in 2008. The average annual growth rate of exports of dairy products during this period reached almost 7% (Table 2.2). In the last five years, the fastest growth rate has been reported for exports of whey (+27% per year), butter (+9.2%), raw milk and cream (+8.5%), as well as cheese (+7.6%). In 2013, the commodity structure of exports of dairy products was dominated by cheese (42.5% of exports of dairy products), whose value of exports rose by 44% (Table 2.3). The second is milk powder with a share of 16% (volume and value of exports lower by 29% and 6.7%, respectively). Exports of milk and cream take the third place with a share of 14% (increased by 18% and 50%, respectively). Next is whey with a share of 12.5% (88.5% growth and over threefold increase, respectively), butter represents 7.5% of exports in the dairy sector (volume and revenues increased by 6% and 55%, respectively), dairy beverages – 7.3% of exports (increased by 11.5% and 5%, respectively). The balance of trade in dairy products has been positive for years. Over the last five years, it has grown by 10% to almost EUR 1.0 billion.

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[5] *Popyt na żywność (Demand for Food)*, [in:] *Analiza produkcyjno-ekonomicznej sytuacji rolnictwa i gospodarki żywnosciowej w 2012 roku (Analysis of Production and Economic Situation of Agriculture and Food Economy in 2012)*, ed. A. Kowalski, IERiGŻ-PIB, Warszawa 2013, p. 248.

[6] Dairy products: liquid milk and cream, milk powder, dairy beverages and whey, butter, cheese and curd.

Table 2.2. Foreign trade in dairy products

Specification	2008	2009	2010	2011	2012	2013
Value (EUR million)						
exports	1,168.0	882.1	1,134.8	1,320.8	1,356.1	1,628.4
imports	267.2	259.3	368.9	458.4	450.4	632.7
balance	900.8	622.8	765.9	862.4	905.7	995.7
Volumes (thousand tonnes)						
exports	801.3	814.1	818.1	841.9	924.9	991.9
imports	175.7	188.9	230.8	261.9	300.8	443.0
Indicators (%)						
– export-import coverage	437.1	340.2	307.6	288.1	301.1	257.4
– self-sufficiency[a]	117.5	114.3	112.6	111.1	112.2	108.9
– share of exports in production[a]	19.6	17.6	17.9	17.4	18.2	18.1
– share of imports in use[a]	5.5	5.8	7.5	8.3	8.2	10.8
– share of dairy products in exports of food products	12.2	9.5	9.9	10.2	9.2	9.8

[a] in quantitative terms, self-sufficiency = production/domestic use × 100

Source: own calculations based on unpublished data from the Ministry of Finance.

Over the past five years, the export-import coverage indicator for dairy products has decreased by as much as 179.7 pp (to 257.4%), the self-sufficiency of the sector has dropped by 8.6 pp (to 108.9%), the share of exports in the sold production of the sector has declined to 18.1% (by 1.5 pp), while the share of imports in domestic use has doubled to 10.8%.

Table 2.3. Results of foreign trade in dairy products

Specification	Year	Milk and cream	Milk powder	Dairy beverages	Whey	Butter	Cheese and curd
Export value (EUR million)	2008	152.1	281.5	114.0	61.5	78.9	480.0
	2013	228.5	262.7	119.6	203.4	122.4	691.8
Balance (EUR million)	2008	116.9	228.6	80.3	39.6	57.4	378.0
	2013	122.8	107.9	76.9	154.8	62.6	470.7
Export-import coverage (%)	2008	432.1	532.1	338.3	280.8	367.0	470.6
	2013	216.2	169.7	280.1	418.5	204.7	312.9
Self-sufficiency[a] (%)	2008	114.6	285.5	113.3	109.3	115.1	121.6
	2013	107.1	107.3	112.3	112.6	112.2	121.7
Share of exports in production[a] (%)	2008	15.7	79.3	17.3	11.8	16.8	22.1
	2013	14.9	61.5	15.2	17.3	18.8	25.2
Share of imports in domestic use[a] (%)	2008	3.3	40.8	6.3	3.6	4.2	5.3
	2013	8.8	58.7	4.8	6.9	8.8	9.0

[a] in quantitative terms

Source: own calculations based on unpublished data from the Ministry of Finance.

Having analysed the export-import coverage indicators of dairy products, it can be concluded that, among the products under examination, significant comparative advantages were observed for exports of whey (418.5%), cheese and curd (312.9%), as well as dairy beverages (280.1%). Over the past five years, this rate for trade in milk powder has decreased by as much as 362.4 pp to 169.7%. Generally, the entire dairy

industry is highly competitive in terms of foreign trade in dairy products, although the measures of the competitive position of Polish dairy product producers follow a downward trend. The dairy sector is being internationalised.

2.3. Supply of raw materials and dairy product prices

In the period concerned, milk production in Poland showed little change. A decline in the stock of cows was compensated by increasing milk yields. In 2008-2013, the production of raw milk grew by 1.4% to 12.2 billion litres (Table 2.4). Major changes occurred in the structure of production distribution. In the analysed period, purchase of milk by the dairy industry rose by 11.8% to 9.6 billion litres.

Table 2.4. Supply of raw materials in the dairy industry (million litres)

Specification	2008	2009	2010	2011	2012	2013
Milk production	12,064	12,084	11,921	12,052	12,299	12,237
Purchase of milk by the dairy industry	8,567	8,846	8,725	9,013	9,516	9,578
Milk quotas[a]	9,568	9,663	9,760	9,858	9,956	10,056

[a] in marketing years since 2008/2009

Source: own calculations based on the CSO data and reports from different years, entitled "Rynek mleka. Stan i perspektywy" (Milk Market. Status and Prospects).

Milk supply in the domestic market is regulated by milk quotas[7] that grew in subsequent years by 1%[8]. Over the past five years, the national quota granted to Poland has grown by 5.1% to 10.06 billion litres and was not exceeded in any of the analysed years.

Table 2.5. Dairy product prices (% price changes per year)

Specification	2008	2009	2010	2011	2012	2013
Inflation	4.2	3.5	2.6	4.3	3.7	0.9
Retail prices of:						
food	6.2	4.1	2.8	5.6	4.3	2.2
milk and dairy products	9.6	-2.4	1.9	4.3	3.3	2.2
including: drinking milk	11.6	-0.6	0.6	4.5	3.0	2.2
milk powder	11.5	2.7	1.9	5.1	7.7	8.0
dairy beverages	8.9	-2.0	0.2	3.4	4.5	1.7
butter	4.5	-3.1	15.0	8.3	-1.2	4.2
cheese	8.6	-4.7	3.5	4.7	2.1	1.8
Sales prices of dairy products	-1.9	-4.4	7.7	7.0	0.5	8.5
Purchase prices of milk	-4.6	-12.3	19.0	13.7	-1.2	13.2

Source: the CSO data and own calculations.

[7] The quota system for milk production mainly aims at maintaining balance between supply and demand in the milk market and providing suppliers with a favourable sales price for the milk produced. A quota year runs from 1 April of a calendar year to 31 March of the following year. As part of milk production quotas, the volume of milk, which can be marketed by each EU Member State in the aforesaid period without incurring financial consequences, is determined.

[8] Each year, based on fixed conversion, carried out by milk producers in a given quota year, the European Commission sets out the division of the national quota into the national quota of "supplies" and the national quota of "direct sales" for the entire EU-27.

In 2013, a growth in purchase prices of milk was much higher than increases in sales prices and retail prices of dairy products (Table 2.5). In the past years, these changes were more varied. The past five years have been characterised by high volatility in sales prices of dairy products (from -4.4 to +8.5% per year), while the range of fluctuations in purchase prices of milk has been even greater (from -12.3 to +19% per year). High volatility was also typical of retail prices of individual products in the dairy sector. Each year their prices relatively increased, but they were slower than inflation (except for 2008 and 2013).

Having analysed the rates of price changes at different levels of the milk market, it can be stated that, at the times of prosperity, increased purchase prices were much higher than price increases at other levels of the market and, during a market downturn, quite the opposite – purchase prices fell the fastest. In the analysed period, increased purchase prices were much higher than price increases at other levels of the milk market. Sales prices grew less than purchase prices and this growth was twice higher than that of retail prices of dairy products. This indicates that processors being, at the times of prosperity, under pressure of low supply and, during a decline in world market prices, under pressure of trade, in which retail chains represent an increasing share, have the weakest market position[9].

2.4. Production of the dairy industry

In 2008-2013, the production of drinking milk increased by 36.8%, dairy beverages – by 27.1%, cheese and curd – by 17.8%, while whey – by 28.2%. In contrast, there was a decrease in the production of cream (by 29.7%), milk powder (by 8.4%) and butter (by 5.5%). These changes were driven, for instance, by changes in demand for milk and dairy products.

Table 2.6. Production of dairy products

Specification	2008	2009	2010	2011	2012	2013
Production value at current prices (PLN billion)	18.8	18.6	20.8	23.1	23.4	25.0[a]
Production change at constant prices (%)	+0.3	+3.5	+3.8	+3.8	+0.8	-1.5
Industrial production of milk and dairy products, including:						
– drinking milk (million litres)	1,318.9	1,641.0	1,681.4	1,625.4	1,625.6	1,804.4
– cream (million litres)	305.7	242.6	231.9	216.0	231.8	214.9
– milk powder (thousand tonnes)	167.9	144.9	123.9	148.3	154.9	153.8
– butter (thousand tonnes)	182.5	179.6	175.4	168.6	171.6	172.5
– cheese and curd (thousand tonnes)	698.8	717.3	731.3	754.2	793.6	823.2
– whey (thousand tonnes)	1,123.4	1,119.1	1,120.4	1,213.4	1,354.3	1,440.7
– dairy beverages (million litres)	557.9	653.9	704.9	713.0	697.1	709.3
Production value in accordance with F-01 (PLN billion)	18.5	18.9	21.1	23.7	24.0	26.9
Gross value added[b]						
– PLN billion, current prices	2.7	3.4	3.2	3.3	3.2	3.5
– % of production	14.6	18.0	15.2	13.9	13.3	13.0
Economic surplus[b] (PLN billion)	1.0	1.6	1.4	1.4	1.3	1.5
– % of production	5.4	8.5	6.6	5.9	5.4	5.6

[a] estimate, [b] applies to companies submitting financial statements

Source: unpublished CSO data and own calculations.

[9] "Rynek mleka. Stan i perspektywy" (Milk Market. Status and Prospects), No. 47, Series "Analizy Rynkowe" (Market Analyses) of 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa.

In 2013, the production value of the dairy industry at constant prices was by 11% higher than in 2008. Until 2012, it had followed an upward trend and only the last year brought a decline in this regard.

The development of the sector is characterised by an increase in business performance measured by both the value added and the economic surplus. Over the last five years, the gross value added (at current prices) in the dairy sector has grown by 30% reaching PLN 3.5 billion. In contrast, its share in production value in 2013 dropped to 13%, as opposed to 14.6% in 2008, while the share of the economic surplus in production value in 2013 amounted to 5.6%, which is similar to that of 2008.

2.5. Resources of production factors

The labour resources (employment) of industrial companies in the dairy sector slowly trend downwards (Table 2.7). In 2008-2013, they decreased by 10.3% falling about 2.2% per year on average. This decline was similar in large and medium companies (10.5%), in contrast to companies submitting financial statements in which it was smaller (7%). Over the past five years, the value of fixed assets of dairy enterprises (in accordance with F-01) has increased by 64% and labour cost – by 18%. In 2013, the total resources of production factors were by about 46% higher than in 2008. This situation was followed by capital-labour ratio growth (+33% in 2008-2013) and an increase in the capital intensity of production (+16%).

Table 2.7. Resources of production factors in the dairy industry

Specification	2008	2009	2010	2011	2012	2013
Employment in industrial companies (thousand employees)	36.9	35.5	35.3	34.8	33.9	33.1
including: large and medium companies	35.1	33.7	33.4	32.9	32.2	31.4
in accordance with F-01	35.2	35.2	34.9	34.0	33.5	32.7
Gross fixed assets of large and medium companies (PLN billion)	8.42	8.90	9.25	9.61	9.96	10.00[a]
Company assets in accordance with F-01 (PLN billion)	8.81	10.74	12.20	13.33	13.19	14.23
including: fixed assets	4.68	6.36	7.25	7.71	7.56	7.69
Labour cost (PLN million)	4.73	4.81	5.09	5.28	5.48	5.60
Total resources[b] in accordance with F-01 (PLN billion)	13.54	15.55	17.29	18.61	18.67	19.83
Investments (PLN million)	725	624	834	676	646	684
Capital-labour ratio[c] (PLN thousand per capita)	239.8	264.0	276.9	292.0	309.3	318.4
Capital intensity of production[d] in accordance with F-01 (PLN/PLN)	0.25	0.34	0.34	0.32	0.31	0.29
Total resources/production (PLN/PLN)	0.73	0.82	0.82	0.78	0.78	0.74

[a] estimate, [b] fixed and current assets increased by the value of labour, defined as the equivalent of three times labour cost per year, [c] applies to large and medium enterprises, [d] the ratio of the value of fixed assets to the value of sold production at the basic prices

Source: own calculations based on published and unpublished CSO data.

At the same time, investment activity of dairy undertakings dropped. Over the past five years, investments in the dairy industry have decreased by 6% and, over the last three years – remained at about PLN 650 million per year, with the rate of investment ranging from 9% to 6.8%.

2.6. Productivity and efficiency

Labour productivity in the dairy industry is steadily increasing (Table 2.8). Over the past five years, it has increased more than 4% per year (at constant prices). In 2013, it amounted to over PLN 750 thousand per employee (at current prices) and was nearly 40% higher than the average for the food industry. At the same time, the productivity of fixed assets rose (+16.6%); however, the growth rate was below labour productivity growth (+23% at constant prices). The productivity of resources declined slightly.

The efficiency of the dairy sector followed a slightly different trend. In the period under analysis, the efficiency of labour inputs at the macro level (GVA) increased by 11.5%, while at the micro level – it was threefold higher. Asset and resource efficiency at the macro level (GVA) dropped significantly, i.e. by 18.3% and 11%, respectively. At the micro level (ES), changes in this regard were slighter: efficiency of assets decreased by 1.8%, while that of resources increased by 3%.

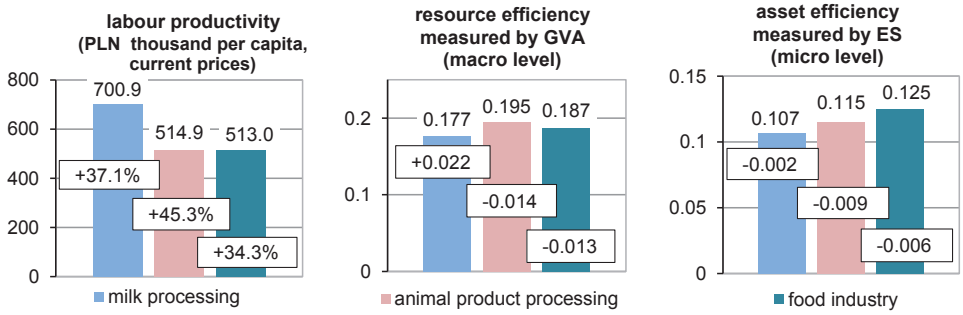
Table 2.8. Productivity and efficiency of dairy production

Specification	2008	2009	2010	2011	2012	2013
Labour productivity (PLN thousand)						
– at current prices	509.3	523.1	590.9	665.0	690.1	755.2[a]
including: large and medium companies	511.0	534.9	603.6	673.1	700.9	790.7[a]
– at constant prices	611.8	657.3	689.4	725.1	748.1	755.2[a]
Productivity of fixed assets[b]	2.130	2.025	2.178	2.305	2.265	2.483[a]
Productivity of resources[c]	1.366	1.215	1.220	1.274	1.285	1.357
Efficiency measured by GVA[c] (macro) of:						
– labour inputs	1.680	2.093	1.892	1.860	1.750	1.873
– assets	0.301	0.312	0.263	0.246	0.242	0.246
– resources	0.199	0.219	0.185	0.177	0.171	0.177
Efficiency measured by ES[c] (micro) of:						
– labour inputs	0.611	1.023	0.828	0.793	0.684	0.812
– assets	0.109	0.153	0.115	0.105	0.095	0.107
– resources	0.074	0.103	0.081	0.075	0.070	0.076

[a] estimate, [b] applies to large and medium companies, [c] in accordance with F-01

Source: own calculations based on published and unpublished CSO data.

Figure 2.1. Labour productivity and efficiency in the dairy, food and animal product processing industry[a] (in 2012 or 2013 and changes after 2008)



[a] productivity applies to large and medium industrial companies in 2012; efficiency calculated based on data from companies submitting financial statements in 2013

Source: own calculations based on published and unpublished CSO data.

While comparing the level of measures of labour productivity and efficiency of the dairy sector with the animal product sector and the food industry, it can be concluded that labour productivity in this sector is by about 40% higher (Figure 2.1). In turn, efficiency measures are, both at the macro and micro level, slightly lower than in the animal products processing and the entire food industry.

2.7. Financial performance and standing

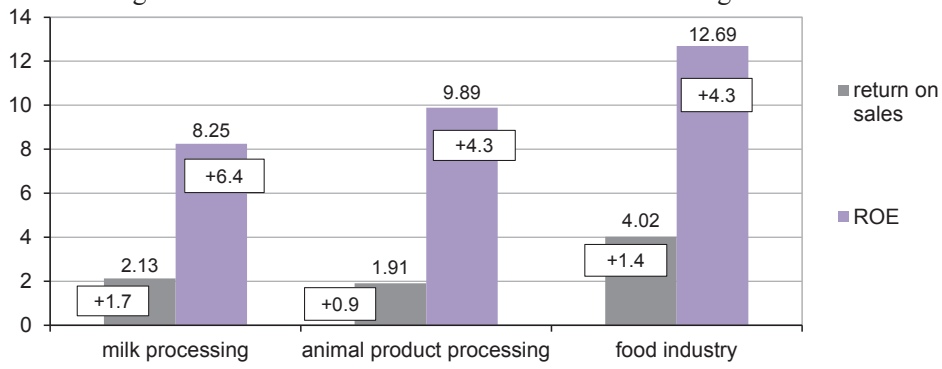
Throughout the period concerned (2008-2013), the dairy industry achieved positive financial performance (Table 2.9), which amounted to PLN 640 million in 2013 (PLN 86.8 million in 2008). In 2013, net return on sales in the dairy industry exceeded 2%, which is 1.7 pp more than in 2008 (Figure 2.2). However, it was almost twice lower than the average of the food industry. In 2013, return on equity (ROE) in the dairy industry grew nearly fivefold to 8.25%. Nevertheless, the rate was by about 1/3 lower than in the food industry.

Table 2.9. Financial performance of dairy producers

Specification	2008	2009	2010	2011	2012	2013
Net profit (PLN million)	86.8	702.0	519.0	472.0	367.5	640.1
Return on sales (%)	0.42	3.36	2.21	1.77	1.37	2.13
ROE (%)	1.88	14.0	8.50	6.93	5.21	8.25

Source: own calculations based on unpublished CSO data.

Figure 2.2. Differences in returns in 2013 and the change after 2008



Source: own calculations based on unpublished CSO data.

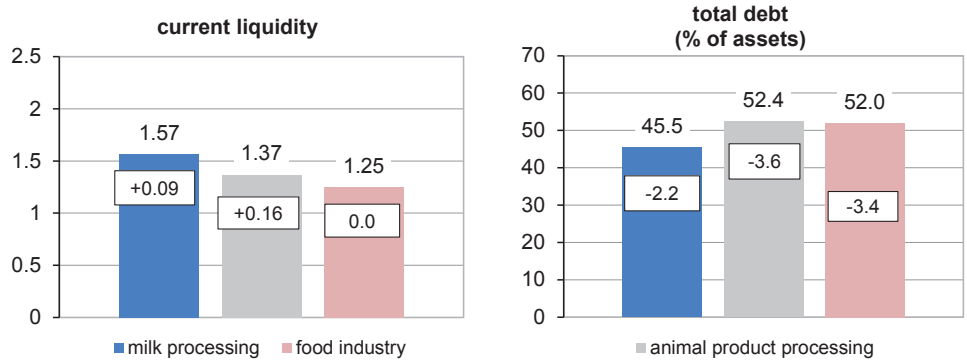
In the analysed period, the value of equity of dairy enterprises grew by 68% reaching PLN 7.76 billion, while own funds in the market increased by 76% to PLN 2.36 billion (Table 2.10). Moreover, the current liquidity of the sector trends upwards and exceeds the level considered adequate for discharging financial liabilities (over 1.3), while total debt is at a safe level (Figure 2.3). Financial liabilities increased by over 50% to PLN 6.5 billion, so did short-term liabilities reaching PLN 4.2 billion.

Table 2.10. Financial standing of dairy enterprises

Specification	2008	2009	2010	2011	2012	2013
Equity (PLN billion)	4.61	5.02	6.10	6.81	7.06	7.76
including: own funds in the market	1.34	1.45	1.68	1.82	1.99	2.36
Liabilities (PLN billion)	4.21	5.72	6.09	6.52	6.14	6.47
including: short-term liabilities	2.79	2.93	3.27	3.80	3.64	4.18
Current liquidity	1.48	1.49	1.51	1.48	1.55	1.57
Total debt (%)	47.7	53.3	50.0	48.9	46.5	45.5

Source: own calculations based on unpublished CSO data.

Figure 2.3. Differences in financial standing in 2013 and the change after 2008



Source: own calculations based on unpublished CSO data.

2.8. Business breakdown structure

The business breakdown structure of the dairy industry indicates its large and increasing concentration. The number of industrial companies in the sector decreased by 16% to 197 companies, while the number of large companies – by 25% to 30 companies (Table 2.11).

Table 2.11. Structure of industrial companies in the dairy industry

Specification	2008	2009	2010	2011	2012	2013
Number of industrial companies	234	222	215	211	205	197
including: large companies	40	37	36	34	33	30
Share of large companies in the sector in (%):						
– employment	53.4	55.6	57.4	56.2	58.8	57.2
– sales value	65.1	67.4	67.0	64.6	65.5	66.5[a]

[a] estimate

Source: unpublished CSO data and own calculations.

The dairy industry is highly concentrated, as evidenced by the share of large companies in the sector's employment, amounting to almost 60%, while in production – to almost 70%, both being by about 10 pp higher than the average for the food industry. The share of the three largest companies in the sector's turnover is already 34.5%.

2.9. Polish dairy industry against other EU Member States

Poland is the fifth largest dairy product producer in the European Union with a share of almost 8%. Dairy production is almost twice larger in France and Germany, it is by 64% larger in Italy and quite the same, as in Poland, in the Netherlands (Table 2.12). The sector's production per capita in Poland (EUR 255.8) is already close to the EU-15 average (267.8) and countries such as Germany (273.8), Italy (272.8) and higher than in the UK (119.2) and Spain (194.4). The Netherlands, Belgium, Denmark and Ireland are ahead of Poland.

Table 2.12. Dairy product producers in Poland and other EU Member States in 2012

Member States	Production[a] value (EUR billion)	Share in the EU-27 (%)	Production[a] per capita (EUR)	Labour[a] productivity (EUR thousand)	Turnover[a] per company (EUR million)
EU-27	**124.35**	**100.00**	**247.8**	**418.41**	**14.05**
EU-15	**107.18**	**86.19**	**267.8**	**486.52**	**14.36**
France	22.61	18.18	346.3	428.22	26.35
Germany	22.41	18.02	273.8	670.96	68.95
Italy	16.20	13.03	272.8	477.88	5.31
Netherlands	10.01	8.05	598.3	878.07	49.80
EU-12	**17.17**	**13.81**	**169.2**	**223.28**	**12.36**
Poland	9.86	7.93	255.8	288.30	32.54
Lithuania	1.50	1.21	500.0	208.33	40.54
Romania	1.44	1.16	71.7	130.91	3.45
Hungary	1.39	1.12	140.0	220.63	15.80
Bulgaria	0.89	0.72	121.4	108.54	3.53

[a] at comparable prices, i.e. current prices adjusted by the purchasing power parity

Source: own elaboration based on Eurostat data.

Labour productivity in the Polish dairy industry (EUR 288.3 thousand per employee) is by 40% lower than the EU-15 average, over 50% lower than in Germany and more than 30% lower than in France, while being significantly higher than in the EU-12. Average turnover per dairy company in Poland is over twice larger than the EU-15 average, but still lower than in Germany, the Netherlands and Ireland.

2.10. Conclusions

The dairy industry holds a significant position in the Polish food industry. Over the past five years, milk and dairy product processing has been characterised by a relatively high growth rate. Production value at constant prices has gone up by about 11% to PLN 25 billion, which is about 13% of the value of sold production in the entire food industry (at basic prices). The sector operates under strict regulation of supply of raw materials and shrinking processing margins. The supply of milk limited by the quota system, under the conditions of increasing demand, mainly export demand and, to a lesser extent, domestic demand, resulted in price increases primarily at the level of producers.

Foreign trade in dairy products increased significantly. The growth rate of exports was twice that of imports and, consequently, the balance of trade in dairy products improved systematically. Having analysed the shares of specific products in exports, it can be concluded that there are major differences in individual product groups. The largest foreign demand is for milk powder, which covers over half of production. Additionally, butter and cheese are products with a relatively high share of exports in production (15-20% are exported). The lowest share in exports is reported for liquid milk and cream which, due to their nature, are exported on a small scale.

Adaptation processes of the dairy industry to difficult external conditions involved:

- constant increase in exports,
- reduction in employment with cost-effective investments,
- development and expansion of the range of products, mainly cheese.

Relatively good and stable financial standing of dairy product producers allowed them to increase their equity. Throughout the period considered, their financial standing was safe. The current liquidity ratio was significantly higher than the level determined as safe. The value of own funds in the market is also increasingly higher.

3. Fishing industry[10]

3.1. Domestic demand

Domestic demand for fish and fish products in 2008-2012 followed a downward trend, which was reversed in 2013. Their balance sheet consumption (live weight) first decreased by 14.4%, i.e. by 3.8% per year on average, and then increased by 4% in 2013 (Table 3.1), thus being still by about 11% lower than in 2008. However, household budget surveys show that fish and fish product consumption continues to decline, decreasing by 12.5%, i.e. 3.2% per year on average, in 2008-2012. In 2013, it slowed down to 1.4%.

Table 3.1. Domestic consumption and use of fish and fish products[a]

Specification	2008	2009	2010	2011	2012	2013
Consumption of fish and seafood (kg of live weight per capita annually)	13.67	13.07	13.05	12.21	11.70	12.17
Average household consumption of fish and fish products (kg of product weight per capita annually)	5.76	5.52	5.40	5.16	5.04	4.97[a]
Supply of edible fish to the domestic market (thousand tonnes of live weight)	566.5	502.9	500.9	472.7	448.2	468.4
Direct use (thousand tonnes of product)	547.1	442.9	516.3	495.8	541.6	577.2
of which: fresh, chilled and frozen fish	143.8	75.2	141.2	130.1	182.2	195.0
fillets and fish meat	181.3	165.1	169.4	170.3	160.0	170.5
smoked, salted and dried fish	68.4	65.9	67.8	63.0	60.3	58.5
fish products[b]	153.6	136.7	137.9	131.9	139.2	153.2

[a] estimate because as of 1 January 2013 the CSO changed the grouping of goods and services, thus making fish consumption data used in household budget surveys incomparable to data of 2012; therefore, the data were estimated using the rate of changes in expenditure on fish and fish products (decrease from PLN 8.12 to PLN 8.10, i.e. by 0.25%) and retail prices for this product group (1.1% increase), [b] including seafood

Source: own calculations based on unpublished data from the CSO, the Ministry of Finance and the following publications: Internal Market of 2008-2013, CSO, Warszawa 2009-2014; "Rynek ryb. Stan i perspektywy" (Fish Market. Status and Prospects), Nos. 13 and 22, Series "Analizy Rynkowe" (Market Analyses) of 2010, 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa.

There were differences in the domestic use of fish and fish products across individual commodity groups. Throughout the period considered, it rose by 4.6% in all the groups together. However, for the last few years (after a major decline in 2009), the use of fresh, chilled and frozen fish and fish products has been growing, with a relatively stable use of fillets and fish meat, and a decrease in the use of smoked, salted and dried fish. In 2008-2013, there was a significant (by 36%) increase in the domestic use of fresh, chilled and frozen fish (mainly for processing purposes), while that of fish products returned to the level of 2008, after a temporary decline in 2009-2012.

[10] This includes enterprises classified according to PKD 2007 to group 10.2 – processing and preserving of fish, crustaceans and molluscs.

3.2. Foreign trade

In 2008-2013, there was an increase in foreign demand for Polish products of the fish processing industry, which compensated for the effects of low growth in domestic demand for these products. In the analysed period, their exports and imports improved by 75% and 72% in terms of value (Table 3.2) and by 61.7% and only 18.8% in terms of volume. Nevertheless, the balance of trade in these products was constantly negative, except for 2012, and the trade deficit generally did not exceed EUR 50 million. The share of the products of the fish processing industry in exports of food products was relatively stable and remained at about 9%, which indicates that the growth rate of exports of fish and fish products was similar to the rate of changes in exports of food products. Nonetheless, the indicators of the competitive position rose, as self-sufficiency grew by over 12 pp (to 80.8%), while exports accounted for 4/5 of production. There was also an increase in the share of imports in use (by about 8 pp) exceeding the share of exports in production, throughout the period considered, by several percentage points.

Table 3.2. Results of foreign trade in fish and fish products

Specification	2008	2009	2010	2011	2012	2013
Value (EUR million)						
exports[a]	823.0	840.5	1,045.0	1,138.7	1,232.7	1,442.4
imports	863.6	852.9	1,130.1	1,150.2	1,226.2	1,489.5
balance	-40.6	-12.4	-85.1	-11.5	6.5	-47.1
Volumes (thousand tonnes)						
exports[a]	252.0	328.8	326.0	351.5	364.7	407.4
imports	425.0	419.8	465.9	450.9	465.5	504.9
Indicators (%)						
– export-import coverage	95.3	98.5	92.5	99.0	100.5	96.8
– self-sufficiency[b]	68.4	80.2	71.6	75.6	78.1	80.8
– share of exports in production[b]	63.5	88.3	80.0	84.2	77.7	79.7
– share of imports in use[b]	75.0	90.6	85.7	88.1	82.6	83.6
– share of fish and fish products in exports of food products	8.6	9.0	9.2	8.8	8.4	8.6

[a] export data differ from data presented by the CSO and the Ministry of Finance, as the volume and value of exports were estimated including "exports from board", i.e. sale of fish by Polish units in foreign ports or direct transhipment of fish at sea to foreign-flagged vessels, [b] in quantitative terms, excluding non-edible products

Source: own calculations based on data from the Ministry of Finance.

Foreign trade results for specific product groups of the fish processing industry indicate (Table 3.3):

- strong and improving position of Polish producers of smoked, salted and dried fish and fish products,
- raw material-based imports, applying to fresh, chilled and frozen fish, as well as fillets and fish meat,
- major re-exports of fish, fillets and fish meat (fresh, chilled and frozen).

Table 3.3. Results of foreign trade by commodity groups

Specification	Year	Fresh, live, chilled or frozen fish	Fillets and fish meat	Smoked, salted and dried fish	Fish products[a]
Export value	2008	46.1	192.4	304.7	276.6
(EUR million)	2013	108.4	327.4	587.7	403.8
Balance	2008	-361.4	-127.1	297.3	158.5
(EUR million)	2013	-736.2	-126.9	573.8	246.7
Export-import	2008	11.3	60.2	4,090.5	234.1
coverage (%)	2013	12.8	72.1	4,228.1	257.0
Self-sufficiency[b]	2008	29.9	18.0	143.9	130.2
(%)	2013	44.8	28.3	187.2	144.4
Ratio of exports	2008	146.2	131.7	32.5	49.8
to production[b] (%)	2013	152.3	136.6	48.3	54.1
Ratio of imports	2008	113.8	105.7	2.8	34.6
to domestic use[b] (%)	2013	123.4	110.3	3.1	33.7

[a] including seafood, [b] in quantitative terms

Source: own calculations based on unpublished data from the CSO and the Ministry of Finance.

3.3. Supply of raw materials

Imports, from which 80% of raw materials come from, are the main source of supply for the Polish fish processing industry (Table 3.4). Baltic Sea catches account for about 12-15% of raw materials supplied to Polish processing plants, while freshwater fishing – for about 4%.

Table 3.4. Sea and freshwater fishing (thousand tonnes of live weight)

Specification	2008	2009	2010	2011	2012	2013
Baltic Sea fish	94.5	131.4	110.1	110.8	120.6	138.3
Freshwater fish[a]	52.3	53.2	48.4	46.0	48.8	50.8
In total	131.2	169.7	145.1	142.9	157.7	177.3
Imports of fish, fillets and meat	646.8	662.2	705.3	703.4	699.3	755.8
In total	**778.0**	**831.9**	**850.4**	**846.3**	**857.0**	**933.1**

[a] excluding angling

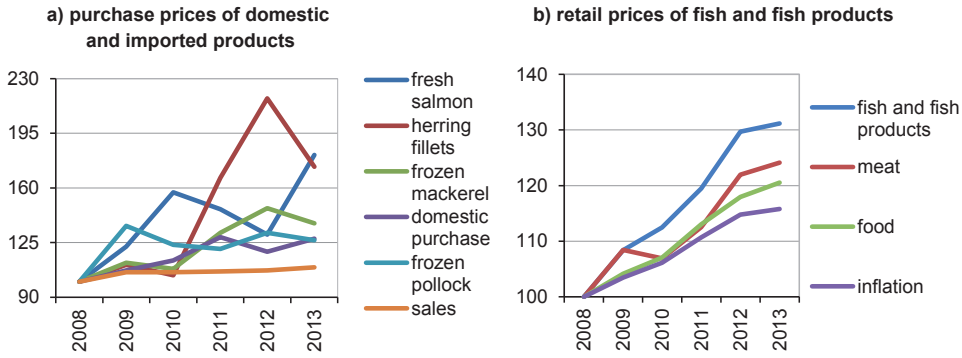
Source: own calculations based on unpublished data prepared by K. Hryszko and data from the CSO Statistical Yearbooks of 2009-2013 and the Concise Statistical Yearbook of Poland 2014, CSO, Warszawa 2014.

3.4. Prices of fish and fish products

At the level of producers, prices of products of the fish processing industry changed significantly slower than purchase prices of both domestic and imported fish (Figure 3.1a). Sales prices grew by 1.8% per year and those of domestic or imported raw materials – by 5-12% per year. In 2008-2013, sales prices of fish and fish products grew by about 9%. At the same time, prices of fish from domestic catches rose by 27.5%, while those of imported fish increased by 73%, 81%, 37%, 26% as regards herring fillets, fresh salmon, frozen mackerel and pollock, respectively.

An increase in retail prices of fish and fish products was three times higher than that in producer prices, which means trade margin growth at the expense of processing margins. In 2008-2013, consumer prices of fish and fish products (Figure 3.1b) increased by over 31%, i.e. much faster than prices of meat (24%), food (20%) and inflation (15%), thus meaning relatively higher prices of fish and fish products.

Figure 3.1. Growth rate of purchase prices of fish (domestic and imported), sales prices of fish and fish products and retail prices (%, 2008 = 100)



Source: own calculations based on published and unpublished CSO data.

3.5. Production of fish and fish products

In 2008-2013, the production of fish and fish products trended steadily upwards (Table 3.5). It increased by 4.9% per year being by about 1/4 higher in 2013 than in 2008. The biggest growth rate of production was reported for frozen fish, which increased fourfold. The production of other products of the fish processing industry rose by 3-5% per year, except for that of salted and dried fish, which was relatively stable.

Table 3.5. Production of fish and fish products

Specification	2008	2009	2010	2011	2012	2013
Production value at current prices (PLN billion)	4.57	5.20	5.25	6.16	6.70	7.50[a]
Changes in production value at constant prices[b] (%)	-0.8	13.9	0.5	16.5	6.8	2.5
Production (thousand tonnes)	374.1	355.3	369.6	374.9	423.2	466.2
of which: live, fresh or chilled fish	28.4	20.4	25.4	22.3	23.6	31.2
frozen fish	14.6	12.2	10.6	6.5	39.7	56.1
fillets and fish meat	32.6	34.7	35.3	39.3	43.6	48.2
salted and dried fish	21.0	19.8	20.6	19.4	19.7	19.6
smoked fish	77.4	75.1	83.0	80.5	85.1	89.9
products in total	200.1	193.1	194.7	206.9	211.5	221.2
of which: canned fish and preserves	60.2	60.4	68.1	74.2	67.3	68.8
marinades	83.6	93.1	82.8	84.0	87.1	87.1
other products	56.1	39.6	43.8	48.7	57.1	65.3
Production value in accordance with F-01 at current basic prices (PLN billion)	4.28	5.35	5.09	6.06	6.53	7.59
Gross value added[c]: PLN billion, current prices	0.95	1.23	0.94	1.09	1.05	1.07
% of production	22.20	22.99	18.47	17.99	16.08	14.10

[a] estimate, [b] calculated using the price index of sold production for products of processing and preserving of fish, crustaceans and molluscs, [c] applies to companies submitting financial statements

Source: own calculations based on unpublished CSO data.

In 2013, the production value of this processing industry (at constant prices) was by almost half higher than in 2008. However, the value added generated by fish and fish product producers has been relatively stable for three years. Its amount varies

between PLN 1-1.1 billion. Nevertheless, its share in production declined from over 22% in 2008-2009 to 16.1% in 2012 and 14.1% in 2013. This was due to the growing share of material costs, mainly raw material costs.

3.6. Resources of production factors

Labour resources in industrial fish processing companies trended downwards to the end of 2012 (Table 3.6). In 2008-2012, they declined by 1.5% per year on average, but in 2013 – they returned to the level of 2008. In contrast, the value of the assets of these companies followed an upward trend. It grew by 10.7% per year, just as fixed assets. The total resources of production factors (capital and labour) increased by 56%, including a 66% increase in capital resources. A large increase in fixed assets, accompanied by decreasing employment, led to an increase in the capital-labour ratio, which was by almost half higher in 2013 than in 2008. However, this does not imply growth in the capital intensity of production, since the value of fixed assets per unit of production in 2013 was similar to that in 2008, but there was a drop in the total resources of production factors per unit of production from 1.12 in 2008 to 0.93 in 2013.

Table 3.6. Resources of production factors

Specification	2008	2009	2010	2011	2012	2013
Employment (thousand employees)						
industrial companies	15.6	15.5	15.0	15.0	14.7	15.6
including: large and medium companies	13.6	13.8	13.1	13.0	13.0	13.6
in accordance with F-01	14.2	14.4	13.5	13.5	13.3	14.1
Gross fixed assets of large and medium companies (PLN billion)	1.52	1.57	1.66	1.90	2.08	2.25[a]
Company assets in accordance with F-01 (PLN billion)	3.00	3.38	3.55	4.29	4.50	4.99
including: fixed assets	1.29	1.34	1.54	1.89	1.98	2.15
Total resources[b] in accordance with F-01 (PLN billion)	4.50	5.01	5.20	6.01	6.30	7.03
Investments in accordance with F-01 (PLN million)	133.3	127.2	198.8	284.6	169.8	352.6
Capital-labour ratio[c] (PLN thousand per capita)	111.5	113.8	126.4	146.4	159.9	165.5[a]
Capital intensity of production[d] in accordance with F-01 (PLN/PLN)	0.30	0.25	0.30	0.31	0.30	0.28
Total resources/production (PLN/PLN)	1.12	1.17	0.97	0.99	0.96	0.93

[a] estimate, [b] fixed and current assets increased by the value of labour, defined as the equivalent of three times labour cost per year, [c] applies to large and medium enterprises, [d] the ratio of the value of fixed assets to the value of sold production at the basic prices

Source: own calculations based on unpublished CSO data and the Statistical Yearbooks of Industry 2009-2013.

3.7. Productivity and efficiency

Over the last five years, the labour productivity of fish processing enterprises has grown by 5.7% per year (at constant prices) being by over half higher than at the beginning of the period concerned (Table 3.7), with a relatively large increase in labour cost. The average gross remuneration in large and medium industrial companies rose by 5.3% per year to be by about 1/3 higher in 2012 than in 2008, which is about

2/5 of productivity growth at current prices. Labour productivity growth was followed by growth in both asset and resource productivity. After its temporary decline in 2010--2011, it increased respectively by 20.7% and 13.7%.

A slightly different trend was observed for the efficiency measures of the fish processing industry. The share of the gross value added and the economic surplus in the basic price declined, thus decreasing efficiency at both the macro and micro level. The efficiency of labour decreased less than that of resources, while the largest drop was reported for the efficiency of assets. The efficiency measures examined are still relatively high, as labour growth by 1 unit increases the value added by 1.5 units and the economic surplus – by 0.5 units. However, resource growth by 1 unit raises the value added by 0.15 units and the economic surplus – by 0.05 units.

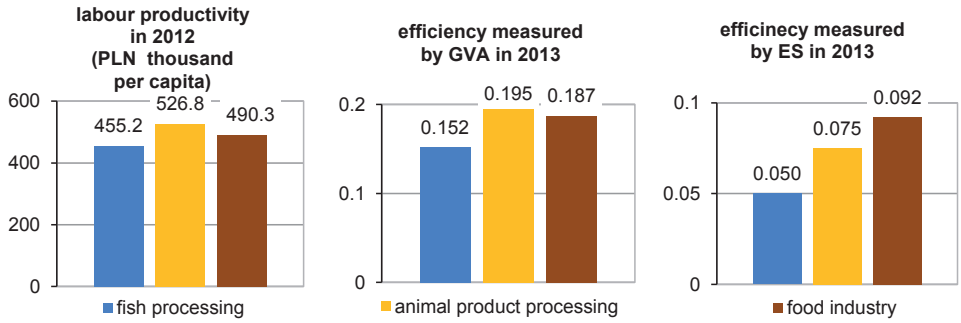
Table 3.7. Productivity and efficiency of the fish processing industry

Specification	2008	2009	2010	2011	2012	2013
Labour productivity (PLN thousand)						
– at current prices	292.1	336.7	350.6	410.9	455.2	497.1[a]
– at constant prices[b]	328.3	378.8	392.5	456.8	497.1	497.1[a]
including: large and medium companies at current prices	287.7	345.5	363.0	422.0	465.9	507.8[a]
Productivity of fixed assets[c]	2.56	3.01	2.87	2.89	2.89	3.09[a]
Productivity of resources[d]	0.95	1.07	0.98	1.01	1.04	1.08
Efficiency measured by GVA[d] (macro) of:						
labour inputs	1.907	2.271	1.719	1.902	1.743	1.570
assets	0.317	0.365	0.266	0.254	0.233	0.213
resources	0.212	0.246	0.182	0.181	0.166	0.152
Efficiency measured by ES[d] (micro) of:						
labour inputs	0.865	1.229	0.678	0.861	0.702	0.522
assets	0.144	0.197	0.105	0.115	0.094	0.071
resources	0.096	0.133	0.072	0.082	0.067	0.050

[a] estimate based on F-01, [b] calculated using the price index of sold production for products of processing and preserving of fish, crustaceans and molluscs, [c] applies to large and medium companies, [d] in accordance with F-01

Source: own calculations based on unpublished CSO data.

Figure 3.2. Labour productivity and resource efficiency in the fish processing industry against the animal product processing industry and the food industry[a]



[a] labour productivity given at current prices and calculated for all industrial companies; efficiency applies to companies submitting F-01 financial statements

Source: own calculations based on unpublished and published CSO data.

Labour productivity and resource efficiency in the fish processing industry are below those in the whole food industry and the animal product processing industry (Figure 3.2). It is more about efficiency at the micro than macro level. Resource efficiency in the fish processing industry at the micro level in 2013 was almost half of that in the food industry and about 1/3 of that in the animal product processing industry, while at the macro level – it was lower by 19% and 22%, respectively.

3.8. Financial performance and standing

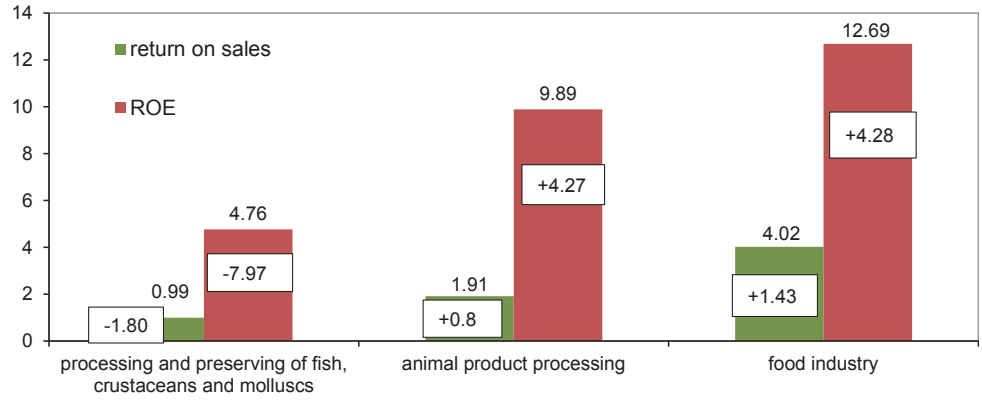
Processing and preserving of fish, crustaceans and molluscs is one of the branches of the food industry, which has achieved low returns for four years. In 2009, its net income was higher than ever, while subsequent years brought a decline in this regard. In 2013, it was by about 2/5 lower than in 2008 and by about 2/3 lower than at its peak (Table 3.8). Return ratios exceeded the average of the food industry and animal product processing branches only in 2008-2009 (Figure 3.3). In subsequent years, they were more than half of the size of those in the food industry and slightly lower than those in the animal product processing industry. Return on equity was close to interest on bank deposits, but by over 5 pp lower than in the animal product processing industry and by nearly 8 pp lower than in the food industry.

Table 3.8. Financial performance of fish and fish product producers

Specification	2008	2009	2010	2011	2012	2013
Net profit (PLN million)	135.2	264.3	148.0	102.6	105.4	83.4
Return on sales (%)	2.79	4.32	2.60	1.51	1.44	0.99
ROE (%)	12.73	20.56	10.52	5.86	5.83	4.76

Source: own calculations based on unpublished CSO data.

Figure 3.3. Differences in returns in 2013 and the change after 2008



Source: own calculations based on unpublished CSO data.

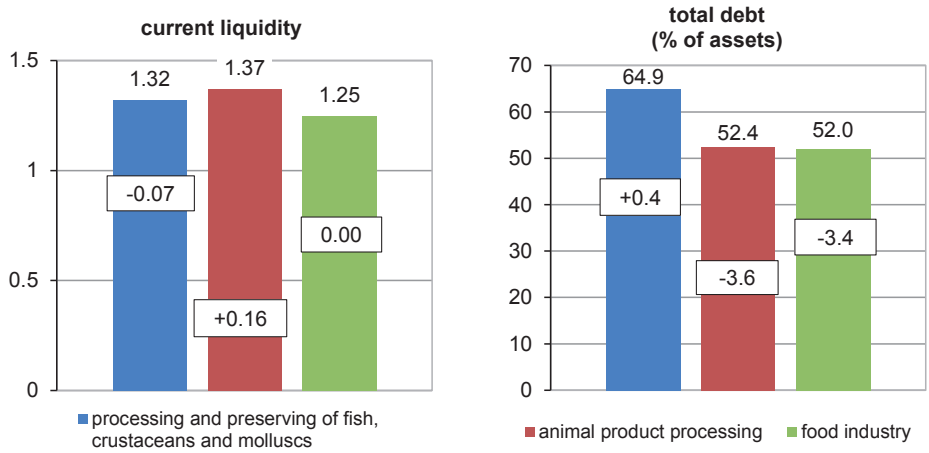
The fish processing industry is characterised by stable and secure financial standing. The current liquidity ratio remains above the level considered safe for meeting short-term liabilities in due time (Table 3.9). Furthermore, the value of equity increased, including the amount of own funds in the market. In 2013, it was higher than in 2008 respectively by 65% and 43%, although it reached its peak in 2011-2012.

Table 3.9. Financial standing of fish processing enterprises

Specification	2008	2009	2010	2011	2012	2013
Equity (PLN million)	1,062.8	1,285.6	1,406.9	1,750.0	1,809.4	1,754.5
including: own funds in the market	481.5	656.5	476.6	909.2	645.9	689.9
Liabilities (PLN billion)	1.9	2.1	2.1	2.5	2.7	3.2
including: short-term liabilities	1.23	1.37	1.53	1.49	1.87	2.16
Current liquidity	1.39	1.48	1.31	1.61	1.35	1.32
Total debt (% of total assets)	64.5	61.9	60.4	59.2	59.8	64.9

Source: own calculations based on unpublished CSO data.

Figure 3.4. Differences in financial standing in 2013 and the change after 2008



Source: own calculations based on unpublished CSO data.

The current liquidity ratio of the fish industry was higher than the average for the food processing industry, so was the debt of enterprises (Figure 3.4). Liabilities financed almost 65% of assets, i.e. by 13 pp more than the average for the food industry.

3.9. Business breakdown structure

In 2008-2013, the business breakdown structure of the fish processing industry underwent minor changes. After a temporary decline in the number of industrial companies in 2009-2012, there was an increase in this respect (Table 3.10). The number of both medium and small industrial companies grew, while that of large companies – dropped.

Table 3.10. Structure of industrial companies in the fish processing industry

Specification	2008	2009	2010	2011	2012	2013
Number of industrial companies	155	148	152	151	146	159
including: large companies	16	16	15	14	15	13
Share of large companies in the sector in (%):						
– employment	50.9	54.2	52.1	49.0	54.3	49.3
– sales value	62.6	67.0	64.3	64.5	67.3	.

Source: own calculations based on unpublished CSO data.

The small scale of changes in the business breakdown structure of the fish processing industry is also proven by:

- stable share of individual groups of enterprises in employment (share of small companies at about 13%, medium companies at about 37% and large ones at about 50%),
- increase (by about 5 pp) in the share of large companies in the production of the fish processing industry (to 67%) at the expense of both small and medium companies.

3.10. Polish fishing industry against other EU Member States

The position of Polish fish and fish product producers is much stronger than that of the whole food industry. We are the third largest fish processor in terms of production value (Spain and France are ahead of us) and the second largest – in terms of employment, just after Spain, which covers 1/5 of the EU production, employing 16.7% of those working in the EU fish processing industry (Table 3.11). Poland holds a share of 11.7%, with a slightly higher share in employment, i.e. 13.7%. Our production is at a similar level to that in, e.g. the UK and Italy. Our fish and fish product producers are significantly above the EU average in terms of value per capita or the degree of production concentration. We are below the EU average only as regards labour productivity. In terms of production value per capita, Denmark, Lithuania, Portugal and Spain are ahead of us, while Danish and German fish processing industries enjoy a higher degree of production concentration.

Table 3.11. Fish and fish product producers in Poland and other EU Member States in 2012

Member States	Production[a] value (EUR billion)	Share in the EU-27 (%)	Production[a] per capita (EUR)	Labour productivity[a] (EUR thousand per employee)	Turnover[a] per company (EUR million)
EU-27	**24.08**	**100.0**	**49.7**	**220.3**	**6.85**
EU-15	**19.78**	**82.1**	**50.2**	**254.1**	**6.99**
Spain	4.84	20.1	102.2	265.2	7.82
France	2.98	12.4	46.8	253.0	9.46
UK	2.70	11.2	42.6	199.9	8.11
Italy	2.25	9.3	37.7	438.6	5.77
Germany	2.10	8.7	25.7	265.5	10.66
Denmark	1.22	5.1	217.9	305.0	12.98
Portugal	1.17	4.9	110.5	185.1	6.50
EU-12	**4.30**	**17.9**	**49.7**	**136.6**	**6.24**
Poland	2.82	11.7	73.2	188.1	9.07
Lithuania	0.57	2.4	179.8	125.6	6.95

[a] at comparable prices, i.e. current prices adjusted by the purchasing power parity

Source: own calculations based on Eurostat data.

Despite the high potential of our fish processing industry, its labour productivity is over twice lower than in Italy, 1.5-fold lower than in Denmark, Germany and Spain, but by almost half higher than the average for the EU-12 and Lithuania.

Also the Norwegian fish processing industry enjoys a strong position in Europe, employing about 9 thousand people, i.e. by about half less than Spain, and its production value is by about 10% higher than in Spain (at nominal current prices), while being by about 2/5 lower at comparable prices.

3.11. Conclusions

The fish processing industry in Poland generates 3.5% of the sold value of the food industry, employing almost 4% of all employed in the production of food products. This industry holds a larger share in foreign trade in foodstuffs. Its share in exports is estimated at about 9%, while in imports – at almost 15%.

In recent years, the fish processing industry has developed due to growing exports under weakening domestic demand conditions. Fish and fish product producers have significantly improved their competitive position in foreign markets. The fishing industry is based on imported raw materials. In 2008-2013, sales prices of fish and fish products grew several times slower than domestic purchase prices of fish or prices of fish, fillets and fish meat from imports, while consumer prices rose faster than prices of meat, food or inflation. Processing margins, the share of GVA and ES shrank.

In 2008-2013, the production of fish and fish products increased by 1/4, with decreasing labour resources, but growing capital involvement. The capital-labour ratio increased, just like the productivity of labour, assets and resources, while the efficiency of labour and assets decreased, but remained relatively high. Economic and financial performance of enterprises in the industry declined, but their financial standing was still safe. The industry was characterised by a relatively high degree of production concentration, as the share of large companies in employment and production is about 50% and about 67%, respectively. Poland is a major fish producer in the EU, taking the third position in 2012 in terms of production value (calculated using the purchasing power parity).

4. Milling industry[11]

4.1. Domestic demand

Domestic demand for grain products (including grain mill products) is characterised by a long-term downward trend. In line with balance sheet data, the consumption of grains and grain products is now by about 10% lower than at the beginning of the last decade (Table 4.1). Over the last five years, it has dropped by 3.6% (to 108 kg in flour equivalent). In accordance with household budget surveys, a downward trend in the consumption of flour and groats has been maintained in recent years, while the consumption of flakes increased (from 0.05 to 0.06 kg per capita monthly). In 2013, the consumption of flour was by 13.6% lower than in 2008, while that of groats decreased by 12.5%. Compared to 1998, they dropped by 40% and 33%, respectively. The household consumption of all grain products is by about 1/8 smaller than in 2008 and by 1/3 – than in 1998.

Table 4.1. Domestic demand for grain products

Specification	2008	2009	2010	2011	2012	2013
Consumption in flour equivalent (kg per capita annually)	112	111	108	108	108	108
Household consumption (kg per capita annually):	89.16	86.04	84.12	80.40	79.20	77.40
including: flour	10.56	10.56	10.56	9.84	9.84	9.12
groats	1.92	1.80	1.80	1.68	1.56	1.68
flakes	0.60	0.60	0.72	0.72	0.72	.[a]
Direct use (thousand tonnes)	2,572.1	2,624.9	2,651.9	2,633.6	2,619.6	2,607.2
including: flour	2,329.7	2,397.0	2,411.9	2,399.5	2,427.3	2,436.3
Supplies to the domestic market (thousand tonnes)						
wheat flour	2,095	2,175	2,198	2,172	2,190	2,207
rye flour	105	134	141	139	137	136

[a] the CSO data for 2013 are incomparable with the data for former years

Source: own calculations based on unpublished data from the CSO, the Ministry of Finance and "CSO Statistical Bulletins" of 2008-2014, Nos. 1-12, and the Internal Market of 2008-2013.

The domestic use of flour in the period concerned trended slightly upwards; in 2008-2013, it increased by 4.7% to 2.4 million tonnes. This was due to slowly growing demand of the industrial production for fresh bread and pastry goods.

4.2. Foreign trade

Grain mill products are mainly placed in the domestic market, as the share of exports in production does not exceed 10% (Table 4.2). Although there was a rapid upward trend, as exports of these products rose 2.5-fold in 2008-2013 (to over 0.5 million tonnes), their significance for agri-food trade as a whole remained unchanged, because exports in the period at issue accounted for about 2% of the value of exports

[11] It was assumed that this applies to class 10.61 – manufacture of grain mill products.

in the whole food industry. This sector achieved a positive trade balance, which has increased over the last five years by 20% per year on average to exceed EUR 0.2 billion in 2013. In 2008, a trade deficit was observed in relation to flour, groats, flakes and bran, while in 2013 – only to flakes (Table 4.3).

Table 4.2. Foreign trade in grain mill products

Specification	2008	2009	2010	2011	2012	2013
Value[a] (EUR million)						
exports	185.5	199.1	224.6	269.3	265.5	325.8
imports	103.7	88.2	98.8	124.9	120.2	119.4
balance	81.8	110.9	125.8	144.4	145.3	206.4
Volumes[a] (thousand tonnes)						
exports	208.7	265.9	291.7	331.6	353.4	526.9
imports	297.6	308.7	342.5	310.6	298.5	255.5
Indicators (%)						
– export-import coverage[a]	178.8	225.8	227.2	215.6	220.9	272.8
– self-sufficiency[b]	99.6	102.2	101.5	102.0	102.4	104.5
– share of exports in production[b]	4.8	7.3	7.3	7.9	8.2	9.8
– share of imports in use[b]	5.2	5.3	5.9	6.0	6.0	5.8
– share of grain mill products[a] in exports of food products	1.94	2.13	1.98	2.07	1.80	1.95

[a] these volumes apply to flour, groats, flakes, wheat gluten, products obtained by the swelling or roasting of grains and bran, [b] in quantitative terms, consumer products only

Source: own calculations based on unpublished data from the CSO and the Ministry of Finance.

Table 4.3. Results of foreign trade in respective grain mill products

Specification	Year	Flour	Groats and flakes	Products obtained by the swelling and roasting of grains
Export value (EUR million)	2008	12.9	7.7	123.2
	2013	31.4	32.7	171.7
Balance (EUR million)	2008	-12.2	-20.9	99.4
	2013	1.0	5.0	135.4
Export-import coverage (%)	2008	51.6	27.1	517.2
	2013	103.2	117.6	473.9
Self-sufficiency[a] (%)	2008	99.4	68.1	156.5
	2013	101.3	119.8	185.0
Share of exports in production[a] (%)	2008	1.7	17.7	46.3
	2013	4.0	73.1	59.7
Share of imports in domestic use[a] (%)	2008	2.2	44.0	15.9
	2013	2.8	67.9	25.5

[a] in quantitative terms

Source: own calculations based on unpublished data from the CSO and the Ministry of Finance.

The measures of the competitive position of grain milling indicate a weak, albeit strengthening, position of the sector in the international market. The export-import coverage indicator grew, so did the surplus production over domestic use. The share of exports in production and imports in domestic use was small, but growing. The largest competitive advantages were reported for the market of products obtained by the swelling and roasting of grains, and recently on the groats and flakes market.

4.3. Supply of raw materials

In the period under analysis, the domestic use of grains (in all branches, i.e. grain milling, fodder, malt, alcohol and starch production) trended upwards, being by almost 30% higher in 2013 than in 2008, although declining by 13% in 2013 (Table 4.4).

Table 4.4. Purchase of and foreign trade in grain seeds (thousand tonnes)

Specification	2008	2009	2010	2011	2012	2013
Domestic use (purchase – export + import)	7,320.3	7,964.8	8,779.7	9,261.7	10,763.0	9,350.6
Purchase of edible and fodder grains	**6,453.8**	**9,438.8**	**9,322.6**	**9,282.6**	**11,042.3**	**10,558.0**
including: basic cereals	5,580.1	8,436.4	8,221.2	7,637.1	8,385.8	8,005.7
including: wheat	3,849.6	5,587.1	5,581.0	5,644.7	5,657.2	5,014.0
Grain imports	**2,406.3**	**1,160.9**	**1,169.9**	**1,609.3**	**1,516.5**	**1,067.3**
including: wheat	1,163.1	619.0	693.0	835.1	735.1	581.8
Grain exports	**618.6**	**3,139.6**	**2,057.2**	**1,530.6**	**2,896.4**	**4,094.8**
including: wheat	376.6	2,015.9	1,019.7	795.1	1,060.6	1,692.9

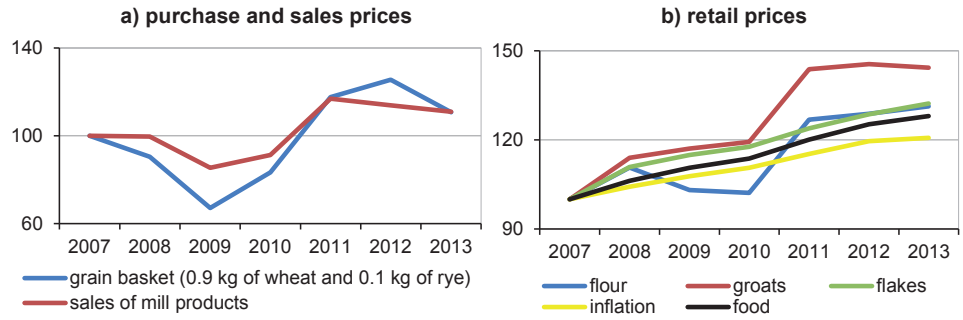
Source: own calculations based on unpublished data from the Ministry of Finance and data from the CSO Statistical Yearbook of 2010 and 2013.

Wheat is the main raw material for grain milling. Its supply ranged from 4.6 to 5.6 million tonnes, but dropped to 3.9 million tonnes in 2013. Wheat purchase rose by 1/3, imports decreased by half, while exports increased by several times. In 2013, the domestic use of rye in the processing industry was also lower than in previous years. It dropped to less than 400 thousand tonnes (from 500-700 thousand tonnes in previous years), with large fluctuations in rye exports in specific years.

4.4. Prices of grains and products of primary grain processing

In recent years, the grain market has noted large fluctuations in purchase prices of grains (from -25.9% to 41.1% per year), which were over 10% higher in 2013 than in 2007 (Figure 4.1a). Volatility in sales prices of grain mill products was slightly lower (from -14.2% to 28.1% per year), being by about 11% higher in 2013 than in 2007. On average, they grew at 1.8% per year, with a similar growth rate of purchase prices.

Figure 4.1. Growth rate of prices of grains and products of primary grain processing (%, 2007 = 100)



Source: own calculations based on published and unpublished CSO data.

Larger changes were observed in retail prices of grain products. Retail prices of groats grew the fastest (by 6.3% per year on average), while those of flour and flakes – slightly slower, i.e. by 4.6% and 4.8% per year, respectively (Figure 4.1b). These products got relatively more expensive, because the growth in their retail prices (growing by 4.6-6.3% per year) was higher than inflation, which reached 4.2% per year on average at the time. Retail prices of mill products grew two- or threefold more than sales prices, which means shrinking processing margins in the milling industry, with a significant increase in trade margins.

4.5. Production of grain products

In 2008-2013, the production of grain products went up by 1.5% per year on average (Table 4.5). This was a result of growing demand of exporters. The production of multicomponent mixtures and flour enjoyed a constant upward trend, with a slightly lower growth rate. However, the production of groats systematically decreased by 2.7% per year on average, which was by about 13% lower in 2013 than in 2008. The production of prepared food varied and was by 3% higher in 2013 than in 2008.

Table 4.5. Production of industrial grain mill products

Specification	2008	2009	2010	2011	2012	2013
Production value at current prices (PLN billion)	5.20[a]	5.26[a]	4.63	6.03	5.95	5.95[a]
Production change at constant prices (%)	24.2	17.9	-17.5	1.7	1.3	2.6[a]
Production value in large and medium companies (PLN billion)	3.54	4.25	3.14	4.12	3.94	3.95[a]
Production (thousand tonnes)	2,632.0	2,755.9	2,762.1	2,785.5	2,778.1	2,833.3
of which: wheat flour	2,093.7	2,228.7	2,230.2	2,204.4	2,207.4	2,229.6
other flour	223.0	223.1	207.1	222.4	231.0	237.4
groats and flakes	103.2	108.4	109.9	107.6	96.4	109.8
prepared food	141.9	123.4	143.7	152.2	147.2	146.4
multicomponent mixtures	70.2	72.3	71.2	98.9	96.1	110.1
Production value at current basic prices[b] (PLN billion)	3.97	3.59	4.23	5.62	5.58	5.57
Gross value added[b]						
PLN billion, current prices	0.62	0.65	0.80	0.88	0.81	0.84
% of production	15.62	18.11	18.91	15.66	14.52	15.08
Economic surplus[b]						
PLN billion, current prices	0.30	0.32	0.43	0.46	0.40	0.41
% of production	7.53	8.80	10.10	8.10	7.08	7.43

[a] estimate, [b] applies to companies submitting F-01 financial statements

Source: own calculations based on published and unpublished CSO data.

The production value of this industry grew faster, i.e. by about 14% and 2.8% at current and fixed prices, respectively. In large and medium industrial companies, production value was relatively stable and its changes in specific years were due only to price dynamics. The production value of companies submitting financial statements grew more, i.e. respectively by 40% and 25% at current and constant prices. The growth rate

of production value exceeding that of production volume indicates that the product structure of the industry changed. The industry is further characterised by a not too large, but relatively stable, share of the gross value added and the economic surplus in the value of sold production, respectively amounting to about 16% (from 14.5% to 18.9%) and 8.2% (from 7.4% to 10.1%) on average in the period concerned.

4.6. Resources of production factors

Employment in the grain milling industry trended upwards, although the last two years have brought a decrease in this regard of 0.7 thousand people. Nevertheless, it was by almost 10% higher than in 2008 (Table 4.6). In large and medium industrial companies, it dropped by about 15% and in those submitting F-01 financial statements it went up by 7.8%.

As regards companies submitting financial statements, there was a significant increase in labour cost (by 31% since 2008). However, the value of company assets grew faster than labour cost, increasing by nearly 70% within five years, with a similar level of growth in the value of fixed and current assets. In 2013, the total resources of production factors were by almost 60% higher than in 2008. Grain mill enterprises invested cautiously, thus the rate of investment exceeded 10% only in 2011.

Table 4.6. Resources of production factors in the grain milling industry (PKD 10.61)

Specification	2008	2009	2010	2011	2012	2013
Employment (thousand employees)						
industrial companies	7.1	7.5	8.1	8.5	7.9	7.8
including: large and medium companies	6.3	6.1[a]	5.8	6.0	5.3	5.4[a]
in accordance with F-01	6.4	6.4	7.0	7.5	7.0	6.9
Gross fixed assets of large and medium companies (PLN billion)	1.98	2.29[a]	1.93	2.16	2.13	2.19[a]
Company assets in accordance with F-01 (PLN billion)	2.46	2.48	3.20	3.99	4.27	4.16
including: fixed assets	1.37	1.42	1.66	2.16	2.27	2.34
Total resources[b] in accordance with F-01 (PLN billion)	3.34	3.41	4.23	5.19	5.43	5.33
Investments in accordance with F-01 (PLN million)	186.8	129.3	164.8	229.8	196.3	148.2
% of fixed assets[c]	9.4	5.7	8.5	10.6	9.2	6.8[a]
Capital-labour ratio[c] (PLN thousand per capita)	314.1	375.9[a]	333.2	359.9	402.6	405.5[a]
Capital intensity of production[d] in accordance with F-01 (PLN/PLN)	0.345	0.396	0.392	0.386	0.407	0.420
Total resources/production (PLN/PLN)	0.84	0.95	1.00	0.92	0.97	1.01

[a] estimate, because the CSO data apply only to class 10.6, [b] fixed and current assets increased by the value of labour, defined as the equivalent of three times labour cost per year, [c] applies to large and medium enterprises, [d] the ratio of the value of fixed assets to the value of sold production at the basic prices

Source: own calculations based on published and unpublished CSO data.

The growing involvement of specific production factors results not only in capital--labour ratio growth by over 5% per year, but also an increase in the capital intensity of production by 4% per year and resources per unit of production – by 3.8% per year.

4.7. Productivity and efficiency

Labour productivity in the grain milling industry is by half higher than the average for the food industry and by 17% higher than in the plant product processing industry (Table 4.7 and Figure 4.2). In recent years, it has grown by 2.1% per year (at constant prices), however, the increase has been higher in large and medium industrial companies (by 3.8% per year), as opposed to resource productivity, which has dropped by about 12%, i.e. by less than half of labour productivity growth, while that of fixed assets has been relatively stable. The average remuneration in large and medium companies went up by about 20%, thus the rate of pay for labour productivity growth reached 56%.

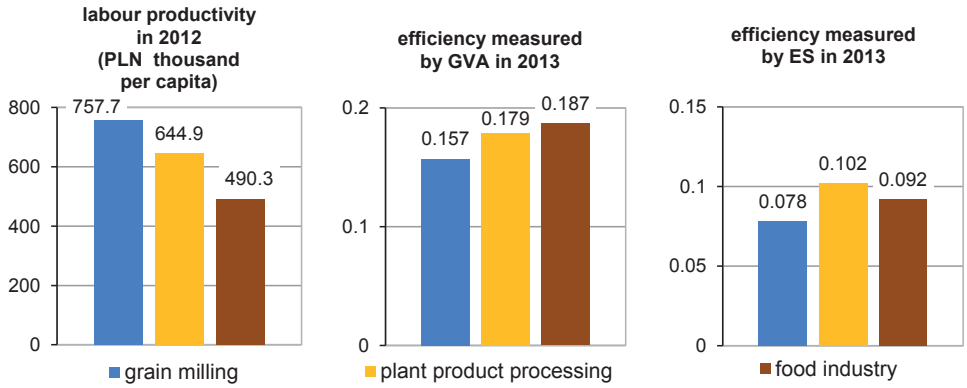
Table 4.7. Productivity and efficiency of the grain milling industry

Specification	2008	2009	2010	2011	2012	2013
Labour productivity (PLN thousand)						
– at current prices	617.5[a]	593.3[a]	571.9	711.0	757.7	763.7[a]
– at constant prices	687.7[a]	770.1[a]	695.7	675.2	738.8	763.7[a]
including: large and medium companies (at current prices)	562.5	697.0[a]	540.5	686.2	743.2	762.9[a]
Productivity of fixed assets[b]	1.79	1.85	1.62	1.91	1.85	1.80[a]
Productivity of resources[c]	1.19	1.05	1.00	1.08	1.03	1.05
Efficiency measured by GVA[c] (macro) of:						
labour inputs	2.101	2.109	2.341	2.225	2.111	2.153
assets	0.253	0.262	0.250	0.222	0.191	0.201
resources	0.186	0.191	0.189	0.171	0.150	0.157
Efficiency measured by ES[c] (micro) of:						
labour inputs	1.011	1.022	1.254	1.145	1.025	1.067
assets	0.122	0.127	0.134	0.114	0.093	0.099
resources	0.089	0.093	0.101	0.088	0.073	0.078

[a] estimate, [b] applies to large and medium companies, [c] in accordance with F-01

Source: own calculations based on unpublished CSO data.

Figure 4.2. Differences in labour productivity and resource efficiency in the grain milling industry[a] at the background of plant product processing and food industry



[a] labour productivity given at current prices and calculated for all industrial companies; efficiency applies to companies submitting F-01 financial statements

Source: own calculations based on unpublished and published CSO data.

The grain milling industry experienced labour efficiency growth, as opposed to a drop in asset and resource efficiency, both by the gross value added and the economic surplus (Table 4.7 and Figure 4.2). Resource efficiency at the macro level decreased by nearly 16% and at the micro level – by over 12%, while asset efficiency respectively by almost 21% and 19%. The level of resource efficiency in the grain milling industry is lower than the average for the food industry by 16% at the macro level and by 15% at the micro level, but also below that in the plant product processing industry by 12% and 24%, respectively.

4.8. Financial performance and standing

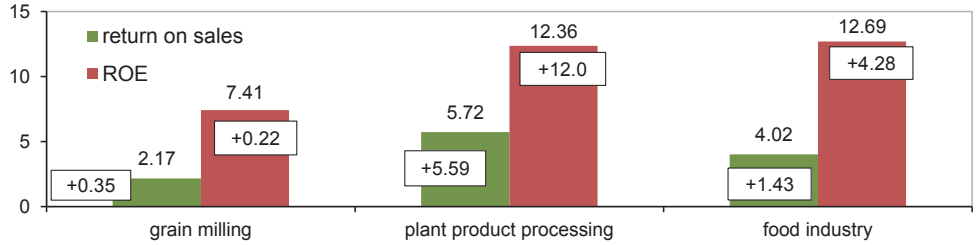
The milling industry is characterised by relatively low returns (Table 4.8) and their rates are less than half of those for the food industry (Figure 4.3). For several years, return on sales of milling companies has reached about 2%, while return on equity has been higher by a few percentage points than profits from other safe capital investments (deposits or bonds). Financial standing of milling enterprises is at a safe level. The value of current assets exceeds the amount of short-term liabilities by about 20%, the level of total debt is stable, though slightly higher than the average for the food industry (Figure 4.4). In the period under analysis, the amount of net profit almost doubled, while the amount of own funds in the market grew almost fourfold, the value of equity also increased by 73%. Equity finances 45% of company assets, while own funds in the market – about 16% of current assets. It is also important that about 80% of companies achieve positive financial performance and their share in the turnover of the processing industry exceeds 90%.

Table 4.8. Economic and financial performance of grain milling enterprises

Specification	2008	2009	2010	2011	2012	2013
Net profit (PLN million)	77.8	109.1	198.8	178.9	112.0	138.9
Return on sales (%)	1.82	2.85	4.14	2.85	1.75	2.17
ROE (%)	7.19	9.67	14.01	9.79	6.06	7.41
Equity (PLN billion)	1.08	1.13	1.42	1.83	1.85	1.87
including: own funds in the market (PLN million)	68.8	69.0	170.0	377.0	251.9	300.9
Liabilities (PLN billion)	1.37	1.36	1.78	2.17	2.42	2.29
including: short-term liabilities	1.02	1.00	1.37	1.45	1.75	1.52
Current liquidity	1.07	1.07	1.12	1.26	1.14	1.20
Total debt (% of assets)	55.9	54.6	55.7	54.2	56.7	55.0

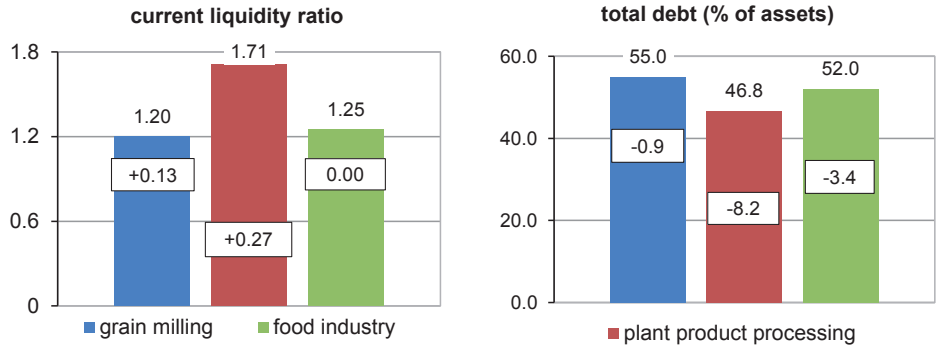
Source: own calculations based on unpublished CSO data.

Figure 4.3. Differences in returns in 2013 and the change after 2008



Source: own calculations based on unpublished CSO data.

Figure 4.4. Differences in financial standing in 2013 and the change after 2008



Source: own calculations based on unpublished CSO data.

4.9. Business breakdown structure

The milling industry has a relatively low degree of production concentration. There are about 150 industrial milling companies (Table 4.9) and 500 micro companies in operation. During the period concerned, the number of industrial companies in this sector rose by 18%; large companies almost doubled in number, as opposed to micro enterprises whose number decreased (from 787 to 498).

Table 4.9. Structure of industrial companies in the grain milling industry (in accordance with PKD 2007)

Specification	2008	2009	2010	2011	2012	2013
Number of industrial companies	127	129	139	148	153	150
including: large companies	4	4	6	6	5	7
Share of large companies in sector in (%):						
– employment	32.9[a]	41.0	40.4	40.1	32.1	38.0
– sales value	40.7[a]	47.2[a]	34.0	30.3	26.2	.

[a] estimate based on class 10.6, as there are no data available for class 10.61

Source: own calculations based on published and unpublished CSO data.

The low level of concentration of the Polish milling industry is also proven by the share of large companies in employment and sales. In 2008-2013, the share of large companies in employment was relatively stable and amounted to about 40%, while in revenues it declined from 40% in 2008 to 26% in 2012. The level of these milling concentration measures is lower than the average for the food industry: by about 8-10 pp in the share in employment and about twice lower as regards the share in producers' revenues.

4.10. Strength of the Polish milling industry against other EU Member States

Poland is the sixth largest mill product producer in the European Union. In 2012, our share in the production of these products at the Community level was 8.2% at comparable prices, which is less by 3/5 than in Italy, 1/2 than in the UK, 2/5 than in

Germany, and by 1/3 than in France and Spain. The sector's production per capita in Poland was similar to that of the EU-15, but twice lower than in Belgium and by 2/5 lower than in Italy (Table 4.10). At the same time, it was by 1/4 higher than the EU-12 average.

Table 4.10. Grain mill product producers in Poland and other EU Member States in 2012

Member States	Production[a] value (EUR billion)	Share in the EU-27 (%)	Production[a] per capita (EUR)	Labour productivity[a] (EUR thousand per employee)	Turnover[a] per company (EUR million)
EU-27	**31.4**	**100.0**	**64.7**	**389.8**	**5.7**
EU-15	**26.6**	**84.7**	**67.4**	**490.9**	**7.2**
Italy	6.3	20.0	105.2	950.9	6.0
UK	4.9	15.7	77.8	550.5	37.9
Germany	4.1	13.0	50.0	348.4	7.5
France	3.6	11.5	56.5	382.5	7.3
Spain	3.4	10.9	72.4	630.8	7.0
Belgium	1.4	4.3	123.1	981.8	20.0
EU-12	**4.8**	**15.3**	**53.0**	**182.4**	**2.7**
Poland	2.6	8.2	66.6	298.2	4.1
Romania	1.1	3.6	60.2	105.4	1.5

[a] at comparable prices, i.e. at current prices adjusted by the purchasing power parity

Source: own calculations based on Eurostat data.

Labour productivity in the Polish milling industry is by about 1/4 lower than the EU average, by about 2/5 lower than in the EU-15, but by almost 2/3 higher than in the EU-12. All leading mill product producers enjoy higher productivity. In Italy and Belgium, it is over three times higher, while in Spain and the UK – twice higher. The concentration level of the milling industry measured by turnover per company in Poland is by over 1/4 lower than the EU average, but 1.5-fold higher than that for the EU-12. The highest turnover per unit is reported for the UK and Belgian milling industries, which is respectively nine and five times higher than in the Polish milling industry.

4.11. Conclusions

The milling industry in Poland generates 3.1% of the sold production of the food industry, employing 2% of all the employed in this sector, with the share of food products in exports and imports reaching about 2% and just over 1%, respectively.

In recent years, growing export demand has been the main driver for the development of the grain milling industry, with decreasing domestic demand for products of primary grain processing. Although the balance of trade in these products doubled, we were competitive only in the market of products obtained by the swelling and roasting of grains, wheat gluten and, last year, bran as well. As evidenced by a twofold increase in both the export-import coverage rate and the share of exports in production, as well as an increase in the self-sufficiency rate by a few percentage points, we improved our competitive position in the market of grain products under high grain price conditions.

The sales price growth rate of mill products lower than the purchase price growth rate of grains suggests a decreasing share of the gross value added and processing margins in the basic price. Retail prices of these products grew faster than those of food, exceeding also the rate of inflation and growth in processor prices.

Growth in industrial grain milling reached 1.5% per year under the conditions of gradually increasing employment and company assets. There was an increase in the capital-labour ratio and labour productivity, with resource productivity at a relatively stable level. Asset efficiency dropped, while the efficiency of labour use improved both at the macro and micro level.

Economic performance of milling enterprises is below the average for the food industry, but their return ratios are relatively high, while financial standing – secure. About 75% of companies achieve positive financial performance and their share in the revenues of the industry exceeds 90%. We are a major producer of grain mill products within the Community and the largest one among the new EU Member States.

Adaptation processes of the milling industry to difficult market conditions (weakening domestic demand and shrinking processing margins) involved mainly developing exports and the production of more processed products (flakes, prepared food and mixtures), as well as extending the range of traditional products. The foregoing is evidenced by growth in production value faster than that in production volume or an increase in prices. It also indicates that companies focused their efforts on the efficient use of production resources, in order to maintain their financial standing at a secure level.

5. Sugar industry

In 2006, the EU sugar market regulation reform was launched, involving, e.g., a gradual reduction in sugar production by 6 million tonnes (from 19 million tonnes in 2005/06) and lowering purchase prices of sugar beet.

Immediately prior to the EU integration, in the marketing year of 2003/04, Poland had an "A" quota on sugar production (intended for the domestic market) amounting to 1,520 thousand tonnes and a "B" quota (for subsidised exports) reaching 102.2 thousand tonnes. After integration, in 2004/05, the former was increased to 1,580 thousand tonnes, while the latter was reduced to 91.9 thousand tonnes. In 2005/06, both quotas were reduced to 1,495.3 thousand tonnes and 86.9 thousand tonnes, respectively[12].

In line with the accepted principles of the EU sugar market reform, "A" and "B" quotas on sugar production were replaced by a single quota, whose basis for our country was set at 1,671.9 thousand tonnes. In the marketing year of 2006/07, the quota was reduced to 1,498 thousand tonnes. In the marketing year of 2007/08, after the purchase of an additional quota of 100.6 thousand tonnes, on the one hand, and a re-reduction in the basic quota, on the other, Poland was entitled to place 1,533.2 thousand tonnes of sugar on the market. Before the season of 2008/09, the European Commission increased financial incentives to give up sugar production quotas, convincing numerous Member States to renounce some of their quotas. As a result of these changes, the Polish sugar quota for 2008/09 amounted to 1,405.6 thousand tonnes and remained at this level in subsequent years[13]. The actual production of sugar in Poland differed significantly from the quotas above, which will also be examined later in the chapter.

5.1. Domestic demand

Domestic demand for raw sugar was presented as follows (Table 5.1), i.e.:

- average consumption in accordance with household budget surveys,
- in balance sheet terms – as the consumption of sugar in households and mass catering facilities, intermediate use in the food processing industry and other technical branches,
- total use of sugar was estimated according to its distribution.

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[12] Ł. Chudoba, *Wpływ Wspólnej Polityki Rolnej Unii Europejskiej na polski handel zagraniczny cukrem i krajowy rynek cukru (Impact of the Common Agricultural Policy of the European Union on Polish Foreign Trade in Sugar and the Domestic Sugar Market)*, [in:] *Wpływ instrumentów polityki handlowej Unii Europejskiej na handel zagraniczny produktami rolno-spożywczymi (Impact of Trade Policy Instruments of the European Union on Foreign Trade in Agri-Food Products)*, ed. R. Mroczek, Series "Program Wieloletni 2005-2009" (Multi-Annual Programme 2005-2009), No. 155, IERiGŻ-PIB, Warszawa 2009, p. 33.

[13] Ibidem, p. 33.

Table 5.1. Domestic consumption and use of sugar

Specification	2008	2009	2010	2011	2012	2013
Household consumption (kg per capita annually)	16.9	16.6	15.6	14.2	14.2	14.0
Balance sheet consumption (kg per capita annually)	38.4	38.8	39.9	39.4	42.5	42.0
Domestic use (thousand tonnes)	1,620	1,595	1,570	1,560	1,610	1,630
including:						
– in households (including mass catering facilities)	715	700	660	600	600	595
– in the food industry (intermediate use)	855	840	850	900	950	975
– for other technical purposes	50	55	60	60	60	60

Source: "Rynek cukru. Stan i perspektywy" (Sugar Market. Status and Prospects), Nos. 38, 40 and 41, Series "Analizy Rynkowe" (Market Analyses) of 2011, 2013 and 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa.

In the analysed period, the household consumption of sugar dropped by 17.2% (from 16.9 to 14.0 kg per capita annually). This decrease was offset by increased demand in the food processing industry, including mainly the following sectors: confectionery, sweets, fruit and vegetables and brewing. The reduced household consumption of sugar may be due to, e.g., taking better care of their own health by consumers, as well as using alternative sweeteners. However, the use of sugar for other technical purposes was constant and remained at about 60 thousand tonnes. The income elasticity of demand for sugar is very low (coefficient of income elasticity of demand is close to zero), which means that a change in personal income of the population has virtually no impact on the household consumption of sugar.

5.2. Foreign trade in sugar

The sugar market is subject to strong regulations in the form of, for instance, production quotas and sugar reference prices. Despite these regulations, sugar production fluctuates, which primarily results from weather conditions and their impact on yields and sugar content in beets. This implies the need to store sugar or increase its exports or imports. In 2008-2013, Polish sugar exports and imports increased respectively by 25% to 508 thousand tonnes and by 57% to 197 thousand tonnes, while the trade balance was positive (Table 5.2). For comparison, we exported 547 thousand tonnes of sugar on average in 2004-2007, while the balance was positive and reached 494 thousand tonnes[14].

The share of sugar in Polish exports of food products is small and, in the analysed period, ranged from 1.1% to 2.6%, while the self-sufficiency rate for this sector of the food industry increased by as much as 24.7 pp (to 108%); however, our quota on sugar production for food purposes is about 220 thousand tonnes below sugar use. The share of sugar exports in sugar production (except for 2009 and 2011) was two to four times higher than the share of imports in domestic use, which is also due to regu-

[14] "Rynek cukru. Stan i perspektywy" (Sugar Market. Status and Prospects), No. 41, Series "Analizy Rynkowe" (Market Analyses) of 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa.

lations governing the market and fluctuations in sugar production. With a stable level of domestic sugar use reaching about 1.6 million tonnes, the surplus must be exported, while shortages – offset by imports.

Table 5.2. Results of foreign trade in sugar

Specification	2008	2009	2010	2011	2012	2013
Value (EUR million)						
exports	164.2	101.8	186.4	230.4	377.2	307.2
imports	68.1	126.3	93.4	163.8	154.4	117.5
balance	96.1	-24.5	93.0	66.6	222.8	189.7
Volumes (thousand tonnes)						
exports	403.7	188.2	380.7	335.2	576.1	507.9
imports	125.3	244.7	200.9	288.0	252.1	197.0
balance	278.4	-56.5	179.8	47.2	324.0	310.9
Indicators (%)						
– export-import coverage	241.1	80.6	199.6	140.7	244.3	261.4
– self-sufficiency[a]	83.3	103.2	93.3	119.2	116.3	108.0
– share of exports in production[a]	29.9	11.4	26.0	18.0	30.8	28.8
– share of imports in use[a]	7.7	15.3	12.8	18.5	15.7	12.1
– share of sugar in exports of food products	1.7	1.1	1.6	1.8	2.6	1.8

[a] in quantitative terms

Source: unpublished data from the Ministry of Finance on foreign trade results and own calculations.

5.3. Supply of raw materials and prices

Sugar beet is used as a raw material in the sugar industry. Its production in the period concerned was characterised by 8-10% fluctuations in harvests and yields. They varied respectively in the range of ±0.9 million tonnes and ±55 dt/ha. The sugar content in sugar beet roots was more stable (±2.6% fluctuations). In the last three years, the values described above have been relatively stable (Table 5.3). In 2008-2013, purchase prices of sugar beet (except for sugar payments) grew by 43% (from 103.7 to 148.7 PLN per tonne). Fluctuations in sugar beet yields and harvests (in quantitative and qualitative terms) determined the volume of sugar produced in a given year.

Table 5.3. Harvests and purchase prices of sugar beet in Poland

Specification	2008	2009	2010	2011	2012	2013
Harvests (thousand tonnes)	8.7	10.8	10.0	11.6	12.3	11.2
Yields (dt/ha)	465	543	509	611	630	608
Purchase prices (PLN/tonne)[a]	103.7	115.7	113.1	144.0	137.2	148.7
Sugar content in beet roots (%)	15.2	14.8	14.3	16.2	15.4	15.3

[a] these purchase prices do not include the so-called sugar payment, which was PLN 39.45 per tonne in 2008, while in 2009 – PLN 53.47 per tonne, in 2010 – PLN 50.42 per tonne, in 2011 – PLN 55.60 per tonne, in 2012 – PLN 52.50 per tonne, in 2013 – PLN 54.10 per tonne

Source: own calculations based on "Rynek cukru. Stan i perspektywy" (Sugar Market. Status and Prospects), No. 41, Series "Analizy Rynkowe" (Market Analyses) of 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa.

In the analysed period, the sugar market underwent major and rapid price changes at the level of all the main links in the chain (Table 5.4). The largest amplitude of changes in sugar prices was observed at the level of processors, smaller at the level of retailers and sugar beet growers, who also received the so-called sugar payments. In accordance with FAO data, changes in sugar prices worldwide were even higher than in Poland.

Table 5.4. Price changes in the sugar market (% per year)

Specification	2008	2009	2010	2011	2012	2013
Inflation	4.2	3.5	2.6	4.3	3.7	0.9
Retail prices of packed sugar[a]	-10.0	15.1	-12.5	49.1	-2.7	-9.1
Sales prices of packed sugar[a]	-11.7	15.5	-11.9	53.5	-0.8	-14.3
Sales prices of bagged sugar[a]	-12.4	15.1	-14.7	37.7	9.9	-5.5
Purchase prices of sugar beet[b]	-4.2	11.6	-2.2	27.3	-4.7	8.4
FAO sugar price index	27.0	41.7	17.4	22.2	-21.4	-17.9

[a] price changes per year on average, [b] changes in purchase prices do not include the so-called sugar payments to which growers are entitled

Source: own calculations based on the CSO and FAO data.

5.4. Sugar production

In spite of numerous regulations, such as production quotas[15], the sugar market is characterised by a high volatility in the volume of production (Table 5.5). In the period at issue, Poland produced 1,659 thousand tonnes of sugar on average (with a tolerance of ±172 thousand tonnes), thus exceeding its quota on sugar production for food purposes by almost 1/5. Over the last three years, sugar production has reached almost 2.0 million tonnes, which is 50% more than in 2008. However, this was a year of poor sugar beet yields and the end of the EU sugar market reform. It is also important that the current level of sugar production is only slightly lower than that of 2002-2005, i.e. 2,003 thousand tonnes on average.

Table 5.5. Sugar production

Specification	2008	2009	2010	2011	2012	2013
Production of white sugar (thousand tonnes)	1,307	1,515	1,579	1,943	1,996	1,952
Production of molasses (thousand tonnes)	335	357	374	396	443	442
Production value at current prices (PLN billion)	4.06	3.88	4.01	4.85	5.95	5.40[a]
Production change at constant prices (%)	3.1	-17.1	20.0	-15.0	15.2	-1.3
Production value in accordance with F-01 (PLN billion)	4.00	3.88	4.00	4.84	5.90	5.37
Gross value added[b] (GVA) (PLN billion)						
current prices	1.37	1.96	1.58	2.40	2.89	2.18
% of production value	34.3	50.5	39.5	49.6	49.0	40.6
Economic surplus[b] (ES) (PLN million)						
current prices	169.4	1,195.9	1,166.8	1,999.6	2,467.1	1,680.9
% of production value	5.1	28.7	29.4	35.4	37.0	30.2

[a] estimate, [b] applies to companies submitting financial statements

Source: own calculations based on unpublished CSO data and "Rynek cukru. Stan i perspektywy" (Sugar Market. Status and Prospects), Nos. 38, 40, 41, Series "Analizy Rynkowe" (Market Analyses) of 2011, 2013 and 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa.

[15] As of 2017, sugar production quotas set for the EU Member States are to be abolished.

Major changes in the value of sugar production between specific years are also a result of large fluctuations in production volumes and sales prices of sugar. In 2013, the value of sold production of the sugar industry (at constant prices) was similar to the level of 2008. The relative level of GVA and ES in this sector is the highest among the sectors of the food industry, but it is largely due to the supply control scheme, rather than measures taken by sugar plants themselves.

5.5. Resources of production factors

Labour resources (employment) in sugar plants has stabilised over the last three years at about 3.4 thousand people, after major downsizing in previous years from 5.9 thousand people in 2008 to 3.5 thousand people in 2011, i.e. at 16% per year (Table 5.6). However, the book value of fixed and company assets grew steadily (fixed assets – by 23.5% over five years, i.e. about 4.3% per year, while company assets – by 40.5%, i.e. 7.0% per year). Real growth in these resources is difficult to estimate. Faster growth in company assets than current assets was due to a large increase in current assets (by about 62%).

Table 5.6. Resources of production factors in sugar plants

Specification	2008	2009	2010	2011	2012	2013
Employment (thousand employees)						
industrial companies	5.9	4.8	4.1	3.5	3.4	3.4
including: large and medium companies	5.9	4.7	4.1	3.5	3.4	3.4
in accordance with F-01	5.3	4.7	4.1	3.5	3.4	3.4
Gross fixed assets of large and medium companies (PLN billion)	3.32	3.48	3.69	3.77	3.92	4.10[a]
Company assets in accordance with F-01 (PLN billion)	5.93	6.36	6.26	8.54	9.28	8.33
including: fixed assets	2.77	3.37	2.93	3.31	3.31	3.22
Labour cost (PLN million)	341.5	277.7	241.3	220.5	222.7	232.6
Total resources[b] in accordance with F-01 (PLN billion)	6.95	7.19	6.99	9.21	9.95	9.03
Investments (PLN million)	307.3	233.4	289.1	281.0	290.3	205.2
Capital-labour ratio[c] (PLN thousand per capita)	562.7	740.4	900.0	1,077.1	1,152.9	1,205.9
Capital intensity of production[d] in accordance with F-01 (PLN/PLN)	1.48	1.64	1.57	1.76	1.57	1.55
Total resources/production (PLN/PLN)	1.74	1.85	1.75	1.90	1.69	1.68

[a] estimate, [b] fixed and current assets increased by the value of labour, defined as the equivalent of three times labour cost per year, [c] applies to large and medium enterprises, [d] the ratio of the value of fixed and current assets to the value of sold production at the basic prices

Source: own calculations based on published and unpublished CSO data.

In 2008-2013, capital expenditure in the sugar industry ranged from PLN 205 million to PLN 307 million, which allowed (except for 2013) for regenerating and increasing fixed assets of sugar plants by 10% (with respect to the value of gross fixed assets). The capital-labour ratio more than doubled, which was primarily due to a decrease in employment by over 40% (Table 5.6). In this context, the capital intensity of

production rose only slightly (from 1.48 to 1.55). This also applies to the total resources of production factors, whose value in the period under consideration went up by 30% and was even slightly lower per unit of production.

5.6. Productivity and efficiency

Rapidly rising labour productivity is typical of sugar producers (Table 5.7), which increased nearly 11% per year (at constant prices) within five years. In 2013, the average gross remuneration in the sugar industry was by about 38% higher than in 2008, and the rate of pay for labour productivity growth with average remuneration growth was only 30%. Labour productivity growth was accompanied by a slight improvement in asset and resource productivity (respectively from 1.22 to 1.32 PLN/PLN and from 0.58 to 0.59 PLN/PLN), but following a temporary reduction in this regard in 2009 and 2010.

Table 5.7. Productivity and efficiency of sugar production

Specification	2008	2009	2010	2011	2012	2013
Labour productivity (PLN thousand)						
at current prices	688.1	808.3	978.0	1,385.7	1,750.0	1,588.2[a]
at constant prices	952.5	970.1	1,363.4	1,357.1	1,608.8	1,588.2[a]
Productivity of fixed assets[b]	1.22	1.11	1.09	1.29	1.52	1.32[a]
Productivity of resources[c]	0.58	0.54	0.57	0.53	0.59	0.59
Efficiency measured by GVA[c] (macro) of:						
labour inputs	3.42	5.93	5.44	8.98	10.49	7.56
assets	0.232	0.309	0.252	0.263	0.314	0.262
resources	0.198	0.273	0.226	0.261	0.291	0.242
Efficiency measured by ES[c] (micro) of:						
labour inputs	0.42	3.61	4.02	7.48	8.95	5.82
assets	0.029	0.188	0.186	0.234	0.267	0.202
resources	0.024	0.166	0.167	0.217	0.248	0.186

[a] estimate based on F-01, [b] applies to large and medium companies, [c] in accordance with F-01

Source: own calculations.

In the period at issue, there was a significant rise in the efficiency of the sugar industry. The growing share of the gross value added (GVA) and the economic surplus (ES) in the basic producer price improved efficiency of the sector both at the macro and micro level, while growth in the efficiency of labour inputs was greater than that of the efficiency of assets or total resources. In 2011-2012, one unit of labour inputs rose GVA by as much as 9-10 units and ES – by 7-9 units, while one unit of resources increased GVA and ES by 0.26-0.29 units and 0.2 units, respectively. In the analysed period, production efficiency growth in the sugar sector was influenced by several factors, namely (at the macro level) changes in the regulation scheme of the EU sugar market – following its last reform, a profound restructuring of the sugar industry (reduction in the number of sugar plants in operation to 18 plants[16]) and saving measures

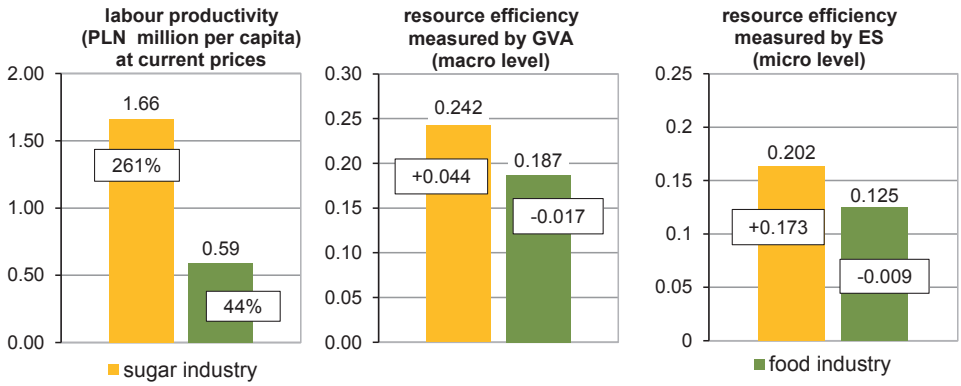
[16] In 2003, there were 57 sugar plants in operation.

taken by individual companies (at the micro level). It is difficult to clearly indicate the extent to which these factors contributed to improving the production efficiency of the sector.

In terms of the parameters analysed, sugar companies compare favourably to the food industry as a whole, because:

– their labour productivity is three times higher,
– they also have a 30% higher resource efficiency and 60% higher efficiency of assets,
– moreover, in the period at issue, increases in these indicators were higher and positive compared to the average of the food industry (Figure 5.1).

Figure 5.1. Comparison of selected indicators for the sugar and food industry (as on 2013 and the change after 2008)



Source: own calculations based on unpublished CSO data from the companies that submitted financial statements.

5.7. Financial performance and standing

After 2008[17], the sugar industry achieved high returns, as well as stable and secure financial standing. The average (net) return on sales in the last five years amounted to over 16%, with relatively large fluctuations of ±3.7%. Returns in the sugar industry are several times higher than the average of the food industry. Return on equity is also high (above 20% on average), i.e. about 4 times higher than the level of income from other safe capital investments (deposits or bonds). Over the last three years, the amount of net profit has exceeded PLN 1.2 billion, thus being two times higher than in 2009-2010. Furthermore, the value of equity doubled (Table 5.8). Current liquidity is very high (above 3.0), while total debt is relatively low, dropping below 1/3 of the total value of assets (Figure 5.2). Foreign capital finances 20-25% of company assets and own funds in the market – already about 70% of current assets. After 2008, economic performance and financial standing of the sugar industry in Poland were significantly better and more stable than the average of previous years.

[17] In the period concerned, 2008 differs significantly from other years in terms of economic performance, thus it will not be taken into account in all comparisons.

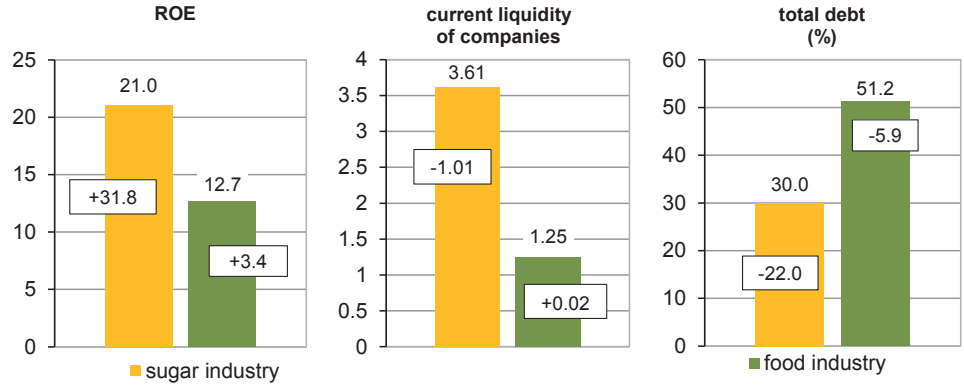
Table 5.8. Net income, returns and financial standing of sugar producers

Specification	2004--2007[a]	2008	2009	2010	2011	2012	2013
Net profit (PLN million)	314.2	-310	764	654	1,270	1,670	1,229
Return on sales (%)	5.36	-7.52	16.46	14.27	19.42	21.92	19.54
ROE (%)	10.3	-10.8	20.1	16.3	23.6	26.4	21.0
Equity (PLN billion)	3.51	2.87	3.81	4.03	5.39	6.32	5.85
including: own funds in the market	1.70	1.94	1.76	2.33	3.50	4.25	3.70
Total liabilities (PLN billion)	3.14	3.06	2.55	2.24	3.15	2.91	2.48
including: short-term liabilities	2.90	1.21	1.23	1.00	1.74	1.72	1.42
Current liquidity	1.63	2.60	2.43	3.33	3.01	3.48	3.61
Total debt (%)	41.3	52.0	40.0	36.0	37.0	32.0	30.0

[a] average for the period

Source: own calculations based on unpublished CSO data.

Figure 5.2. Financial indicators for the sugar and food industry (as on 2013 and changes after 2008)



Source: own calculations based on unpublished CSO data.

Free funds available to the sugar industry can be effectively invested in take-overs, mergers or further development of additional activities based on owned assets. This is important because, after the abolition of quotas on sugar production in 2017, this industry branch is to be exposed to fierce competition from companies worldwide.

5.8. Business breakdown structure

In recent years, the business breakdown structure of the sugar industry has been stable and manifested the characteristics of an oligopoly. The market was dominated by four corporations (sugar holdings), comprising 18 sugar plants engaged in production activity. The sector is dominated by large companies (with at least 249 employees) – Table 5.9.

Table 5.9. Structure of sugar companies

Specification	2008	2009	2010	2011	2012	2013
Number of industrial companies	17	6	6	5	6	5
including: large companies	5	5	5	5	5	5
Share of large companies in the sector in (%):						
– employment	86.3	99.4	98.9	100.0	99.3	100.0
– sales value	80.8	99.8	99.8	100.0	98.2	.

Source: unpublished CSO data and own calculations.

Production concentration in the sector at issue is one of the largest in the Polish food industry, in addition to: oil-mill, brewing, spirit, soft beverage and tobacco industries.

5.9. Strength of Polish sugar producers against other EU Member States

Poland is the third largest sugar producer in the European Union with a share of 18%. Only Germany and France, whose production is by about 1/3 higher, are ahead of us, while other countries are well below us (Table 5.10). The sector's production per capita in Poland is the highest in the European Union, exceeding that in Germany and France by 3/5 and 1/5, respectively. Furthermore, we are also one of the leading European sugar producers in terms of labour productivity and the degree of production concentration. Among the countries listed in Table 5.10, a similar level of labour productivity in this sector can also be reported for: Spain, Slovakia, Hungary and Bulgaria, while in Germany and France, it is by about 1/5 lower. For comparison, technical performance of sugar production in Poland in 2008-2013 more than doubled, but it is still significantly lower than in Germany, but much higher than in Italy or Spain. Production in Germany is nearly twice more concentrated than in Poland, while that in France is lower by almost 40%.

Table 5.10. Sugar industry in Poland against other EU Member States in 2012

Member States	Production[a] value (EUR billion)	Share in the EU production (%)	Production[a] value per capita (EUR)	Labour productivity		Turnover[a] per company (EUR million)
				EUR thousand[a] per employee	tonnes of sugar per employee	
EU-27	**14.99**	**100.0**	**29.9**	**587.8**	**.**	**86.1**
EU-15	**10.63**	**70.9**	**26.6**	**546.0**	**.**	**84.4**
France	3.74	25.0	57.3	575.4	630.3	170.0
Germany	3.61	24.1	44.1	661.2	841.8	515.7
Spain	1.19	7.9	25.4	743.8	360.6	29.0
Italy	0.72	4.8	12.1	648.6	335.1	45.0
EU-12	**4.36**	**29.1**	**43.0**	**723.1**	**.**	**90.8**
Poland	2.70	18.0	70.1	789.5	592.4	270.0
Romania	1.03	6.9	51.3	585.2	67.7	73.6
Slovakia	0.26	1.7	48.2	742.9	397.1	37.1
Hungary	0.19	1.3	19.1	730.8	434.6	23.8
Bulgaria	0.18	1.2	24.6	750.0	.	30.0

[a] at comparable prices, i.e. at current prices adjusted by the purchasing power parity

Source: own elaboration based on Eurostat data.

In 2000-2012, the production value of the sugar industry in the EU-27 remained virtually unchanged. Only the largest sugar producers reported increases in this regard, i.e. Germany – by 31.3%, France – by 24.7%, and Poland – by 8.9%, which means that these countries, including also Poland, strengthened their position in the European Union.

5.10. Conclusions

The EU sugar market reform, which was accompanied by the profound restructuring of the sugar industry in Poland, and the prosperity in world markets significantly improved financial standing of this food industry sector. In recent years, labour productivity and resource and asset efficiency have grown (at the macro and micro level). Return on sales and return on equity are among the highest in the food industry. Putting the market under strong regulations resulted in the highest share of GVA and ES in sales prices in food industry sectors. This food industry sector is still characterised by low debt. Own funds in the market more than doubled. A high level of the current liquidity ratio (over 3.0) is indicative of free funds, which can be efficiently used. This is important because, after the abolition of quotas on sugar production in 2017, this industry branch is to be exposed to fierce competition from companies worldwide.

6. Oil-mill industry

In accordance with the Polish Classification of Activities (i.e. PKD), the main oil products bear the following codes:

– PKD 10.41 – oils and liquid fats,

– PKD 10.42 – margarine and edible fats.

In terms of size (volume) of production, this industry branch is dominated by pre-processing, i.e. production of less-processed products.

6.1. Domestic demand

Domestic demand for vegetable oils and fats is presented (Table 6.1) on the basis of their household and balance sheet consumption, while their use for food purposes was estimated based on the size of the Polish population and the average consumption of these fats per capita.

Table 6.1. Domestic consumption and use of vegetable oils

Specification	2008	2009	2010	2011	2012	2013
Household consumption of edible fats (kg per capita annually)	16.7	16.6	16.2	15.8	15.6	14.8
including: margarine (kg per capita annually)	5.8	5.5	5.5	5.5	5.5	5.3
oils and olive oils (litres per capita annually)	6.0	6.2	6.1	6.1	6.1	6.2
Balance sheet consumption of edible fats (kg per capita annually)	31.5	31.8	32.1	32.0	32.3	32.5
including: vegetable fats[a]	20.8	21.1	21.5	21.9	22.2	22.6
Domestic use of oils and margarine (thousand tonnes)						
vegetable fats	793.2	804.7	820.6	843.8	855.5	871.5
including: margarine	297.5	303.8	309.2	313.7	325.3	343.0
technical oils[b]	473.4	632.5	886.1	945.8	737.1	742.1
Supplies of margarine[c] to the market (thousand tonnes)	295.0	301.0	301.0	292.0	312.0	331.0

[a] IERiGŻ-PIB estimate, [b] use of technical oils corresponds to the use of esters in the biofuel sector, according to the following formula: production + imports – exports, [c] by industrial companies with over 49 employees

Source: own calculations based on the CSO Statistical Yearbooks of 2008-2013, "CSO Statistical Bulletins" of 2008-2014, Report No. 46, entitled "Rynek rzepaku. Stan i perspektywy" (Oilseed Rape Market. Status and Prospects), Series "Analizy Rynkowe" (Market Analyses) of 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa and unpublished CSO data on industrial production.

The household consumption of edible fats decreases, including in particular animal fats and margarine. Moreover, the consumption of vegetable oils, including olive oils, remains stable at about 6.1 litres per capita annually. However, balance sheet data indicate a slight increase in the consumption of edible fats (i.e. by 3.2%, from 31.5 to 32.5 kg per capita annually), which resulted from almost 9% growth in the consumption of vegetable fats (from 20.8 to 22.6 kg), offsetting a drop in the consumption of

animal fats. This increased demand for edible vegetable fats results from industrial processing. There was a 1.5-fold increase in the consumption of technical oils (from 473.4 to 742.1 thousand tonnes), which was associated with the development of biofuel production. The income elasticity of demand for vegetable oils and margarine is constant and very low. The coefficients of income elasticity of demand for these products have ranged in recent years from -0.060 to 0.141[18].

6.2. Foreign trade in oils and margarine

In the period under consideration, the value of exports of oil-mill products (edible oils and margarine) nearly doubled from EUR 280 million to EUR 492 million, i.e. 11.9% per year. The value of imports was slightly higher, but grew at a slower rate (6.6%), thus a trade deficit in these products decreased by 1/4 from EUR 171 million to EUR 129 million, while in 2011-2012 – it temporarily worsened to over EUR 300 million (Table 6.2). The export-import coverage ratio increased to almost 80% in 2013, compared to about 52% in 2011-2012. The share of exports of oil-mill products in production amounted to about 25% and was twice lower than the share of imports in use, while the latter experienced larger fluctuations, which can be explained by, e.g., the EU act on "biofuels" regarding the minimum share of biocomponents in liquid fuels[19]. The share of the oil-mill industry in exports of food products is stable at 2.4-2.9%.

Table 6.2. Results of foreign trade in vegetable oils and margarine

Specification	2008	2009	2010	2011	2012	2013
Value (EUR million)						
exports[a]	280.0	237.8	294.6	330.3	355.3	492.3
imports[a]	451.1	318.9	403.6	630.9	687.8	621.1
balance	-171.1	-81.1	-109,0	-300.6	-332.5	-128.8
Volumes (thousand tonnes)						
exports[a]	271.5	298.9	365.5	310.5	343.1	538.8
imports[a]	470.0	408.2	450.9	593.6	653.8	633.5
balance	-198.5	-109.3	-85.4	-283.1	-310.7	-94.7
Indicators (%)						
– export-import coverage	62.1	74.6	73.0	52.4	51.7	79.3
– self-sufficiency[b, c]	84.9	90.0	73.2	71.2	93.3	99.0
– share of exports in production[b, c]	25.4	23.1	29.6	25.6	24.3	35.2
– share of imports in use[b, c]	61.4	47.0	56.9	66.6	51.3	46.5
– share of oils and margarine in exports of food products	2.9	2.5	2.6	2.5	2.4	2.9

[a] edible oils and margarine, [b] including esters, [c] in quantitative terms

Source: own calculations based on Report No. 46, entitled "Rynek rzepaku. Stan i perspektywy" (Oilseed Rape Market. Status and Prospects), Series "Analizy Rynkowe" (Market Analyses) of 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa.

[18] Cf. *Popyt na żywność*, [in:] *Analiza*..., op. cit., p. 248.

[19] In 2005, Poland set the share of biofuels in liquid fuel use at 0.5%, increasing in subsequent years to reach 3.45% in 2008, 6.65% in 2012 and 7.10% in 2013; however, fuel corporations are legally bound to implement it no sooner than as of 2008.

6.3. Supply of raw materials in the oil-mill industry and prices

Oilseed rape is the main oil plant grown in Poland. In 2008-2013, its cultivation area increased by about 1/5 (from 771 to 921 thousand ha), while its harvests rose to 2.7 million tonnes, i.e. by over 1/4 (Table 6.3). As regards the production of oilseed rape, the greatest variability was observed in relation to its prices and purchases, i.e. ±18-19%, as well as harvests (±11.9%). The domestic production of oils and margarine was supplemented by imports, which went up by over 1/3 from 470 thousand tonnes in 2008 to 634 thousand tonnes in 2013.

Table 6.3. Supply of raw materials in the oil-mill industry

Specification	2008	2009	2010	2011	2012	2013	Deviation from the six-year average[a] (±)
Cultivation area of oilseed rape (thousand ha)	771	810	946	830	720	921	67 (8.0%)
Oilseed rape harvests (thousand tonnes)	2,106	2,497	2,229	1,862	1,866	2,678	262 (11.9%)
Purchase of oilseed rape (thousand tonnes)	1,352	1,726	1,545	1,026	1,065	1,683	252 (18.0%)
Purchase prices of oilseed rape (PLN/tonne)	1,270	1,082	1,278	1,839	1,981	1,473	282 (19.0%)
Imports of oils and margarine (thousand tonnes)	470	408	451	594	654	634	92 (17.2%)

[a] deviation from the average in the units of measurement of the parameter concerned

Source: "Rynek rzepaku. Stan i perspektywy" (Oilseed Rape Market. Status and Prospects), No. 46, Series "Analizy Rynkowe" (Market Analyses) of 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa.

In the period under consideration, an increase in prices of vegetable and animal oils and fats at the level of producers was usually close to the rate of inflation or their prices fell slightly (Table 6.4). Only in two years of the analysed period, i.e. 2008 and 2011, sales prices of oil-mill products rose by over 17%, which was due to, e.g., growth in purchase prices of oilseed rape by over 30%. The share of material costs in sales prices of the sector is about 80%.

Table 6.4. Changes in market prices for vegetable oils and fats (in percent per year)

Specification	2008	2009	2010	2011	2012	2013
Inflation	4.2	3.5	2.6	4.3	3.7	0.9
Sales prices of oils and fats	17.5	-1.5	2.2	18.6	5.4	-2.6
Retail prices						
oils and other fats	10.5	1.8	5.5	9.7	0.0	2.1
rapeseed oil	25.1	-4.6	-2.3	25.1	4.0	-5.3
vegetable butter	7.6	6.4	-2.7	6.8	3.8	3.1
Purchase prices of oilseed rape	32.5	-14.6	18.0	43.9	7.7	-22.8

Source: own calculations based on the CSO data and Report No. 46, entitled "Rynek rzepaku. Stan i perspektywy" (Oilseed Rape Market. Status and Prospects), Series "Analizy Rynkowe" (Market Analyses) of 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa.

6.4. Production of the oil-mill industry

In 2008-2013, the industrial production of crude edible and technical oils went up by 1/5 to 1,002 thousand tonnes (Table 6.5). Oilseed rape processing remained at a similar level. The production of refined edible oils dropped by 8.5% to 519 thousand tonnes and that of margarine grew by 1/4 to 430 thousand tonnes. The production of technical oils grew the fastest (by 31.1% per year), which was due to the development of the biofuel market. The value of sold production in the oil-mill sector (at current prices) increased by 22%, i.e. by 4.3% per year, but at constant prices in 2013 it was at the level noted in 2008. The amount of GVA and ES was highly unstable. Their relative level dropped significantly: GVA from 20% to 18.1% and ES from 14.9% to 10.3% of the basic price.

Table 6.5. Production of the oil-mill industry

Specification	2008	2009	2010	2011	2012	2013
Oilseed rape processing[a] (thousand tonnes)	2,042	2,400	2,184	2,117	1,945	2,074
Production (thousand tonnes)						
– crude oils	713.0	882.6	817.5	695.6	831.8	1,002.4
– technical refined oils	73.7	99.5	142.7	101.1	193.9	232.1
– refined oils	567.1	565.8	488.7	509.5	470.1	519.2
– margarine	341.2	363.0	389.8	400.1	424.3	430.0
– oilseed rape cake and meal	1,163	1,363	1,393	1,155	1,238	1,325
– esters	167.1	364.7	370.6	363.8	592.0	648.0
Value of sold production (PLN billion)	4.33	4.70	4.27	4.66	5.56	5.29[b]
including: large and medium companies	3.82	3.87	3.13	3.00	4.20	4.00[b]
in accordance with F-01	4.31	4.69	4.06	4.44	5.36	5.09
Change in the value of sold production at constant prices[c] (%)	-3.8	10.2	-11.1	-8.1	13.4	-2.4
Gross value added (GVA) (PLN million)	861.0	858.4	496.4	480.2	753.7	923.6
Share of GVA in production value (%)	20.0	18.3	12.2	10.8	14.1	18.1
Economic surplus (ES) (PLN million)	640.5	650.2	284.8	269.4	373.1	525.9
Share of ES in production value (%)	14.9	13.9	7.0	6.1	7.0	10.3

[a] marketing years, [b] estimate based on F-01, [c] sales price index for vegetable and animal oils and fats as a deflator

Source: own calculations based on unpublished CSO data and Report No. 46, entitled "Rynek rzepaku. Stan i perspektywy" (Oilseed Rape Market. Status and Prospects), Series "Analizy Rynkowe" (Market Analyses) of 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa.

6.5. Resources of production factors

In the analysed period, employment in the oil-mill industry grew by over half (from 3.3 to 5.2 thousand people), with a surge[20] in this regard in 2012 (Table 6.6). However, the book value of gross fixed assets[21] increased threefold within five years, i.e. by about 22% per year – assets by 48% (8.2% per year) and resources by 52%

[20] This cannot be solely explained by increased processing of oilseed rape or production of oils and margarine. In 2012, the number of large companies grew from 2 to 3, so did their employment from 1.74 thousand people to 3.7 thousand people, which may be due to the resumption of activity by one large enterprise or a change in the classification of companies.

[21] Real growth in these resources is difficult to estimate, as there is no basis for converting book values into constant prices (i.e. at constant prices of "old" fixed assets increased by gains on investments at current prices).

(8.5% per year). Over the last two years of the analysed period, capital expenditure in this production sector has gone up to an average of PLN 268 million, thus being over 3.5-fold higher than in 2008-2010, but still significantly lower than gross fixed assets or fixed assets. The level of capital expenditure corresponds to up to 12% of the value of gross fixed assets.

Table 6.6. Resources of production factors in the oil-mill industry

Specification	2008	2009	2010	2011	2012	2013
Employment in industrial companies (thousand employees)	3.3	3.3	3.0	3.0	5.2	5.2
including: large and medium companies	3.2	2.9	2.6	2.6	4.7	4.7[a]
in accordance with F-01	3.1	3.1	2.9	2.9	5.0	4.9
Gross fixed assets of large and medium companies (PLN billion)	1.11	1.21	1.24	1.19	2.70	3.00[a]
Company assets in accordance with F-01 (PLN billion)	3.22	3.01	2.83	3.08	3.67	4.78
including: fixed assets	1.33	1.25	1.23	1.34	2.17	2.35
Labour cost (PLN million)	165.7	153.7	149.2	155.1	281.6	290.2
Total resources[b] in accordance with F-01 (PLN billion)	3.72	3.47	3.28	3.54	4.52	5.65
Investments (PLN million)	79.5	68.1	75.8	136.6	292.0	243.3
Capital-labour ratio[c] (PLN thousand per capita)	346.9	418.4	475.9	495.3	586.1	652.2[a]
Capital intensity of production[d] in accordance with F-01 (PLN/PLN)	0.70	0.64	0.70	0.69	0.69	0.94
Total resources/production (PLN/PLN)	0.812	0.739	0.807	0.798	0.844	1.110

[a] estimate, [b] fixed and current assets increased by the value of labour, defined as the equivalent of three times labour cost per year, [c] applies to large and medium enterprises, [d] the ratio of the value of fixed and current assets to the value of sold production at the basic prices

Source: own calculations based on published and unpublished CSO data.

The capital-labour ratio almost doubled, while the capital intensity of production grew by 1/3 (from 0.70 to 0.94 or from 0.81 to 1.11), both being quite stable for a number of years and growing significantly in the last year (2013).

6.6. Productivity and efficiency

Labour productivity measured by the value of sold production per employee in the oil-mill sector is one of the highest in the food industry. However, labour productivity in this industry branch fell by over 1/4 in 2008-2013 (from PLN 1.3 million to PLN 1.0 million per capita), while at constant prices – by 36.7% (Table 6.7). The decline in labour productivity was due to employment growth (by 58%), which was nearly three times higher than an increase in production value (by 22%). The sector is also characterised by a large drop in asset and resource productivity by 62% (from 3.40 to 1.28) and 27% (from 1.23 to 0.90), respectively.

The oil-mill industry also experienced a major drop – not observed in other sectors of the food industry – in the effectiveness of labour inputs, assets and resources measured by the gross value added and the economic surplus, because:

- efficiency of labour inputs fell, i.e. by 39% measured by GVA and by 54% measured by ES,
- efficiency of assets dropped at the micro level by 30%,

– efficiency of resources decreased, i.e. by 30% measured by GVA and by 46% measured by ES,
– while only the efficiency of assets at the macro level grew by 1/4 (measured by GVA).

The efficiency of asset use (measured by ES) in the oil-mill industry is even higher, i.e. by 12%, while that of resources (measured by GVA) – by 32%, than the average of the food industry, with doubled labour productivity.

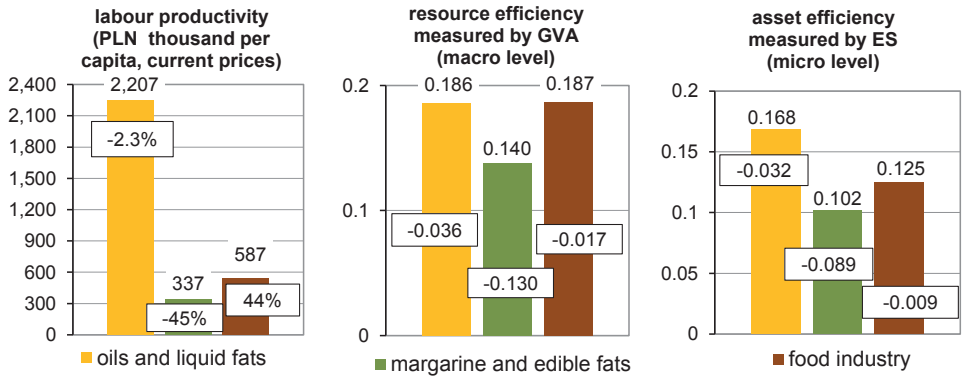
Table 6.7. Productivity and efficiency of the oil-mill industry

Specification	2008	2009	2010	2011	2012	2013
Labour productivity at current prices (PLN thousand)	1,312.1	1,424.2	1,423.3	1,553.3	1,069.2	1,017.3[a]
including: large and medium companies	1,192.9	1,335.6	1,204.7	1,251.8	912.6	837.0[a]
at constant prices[b]	1,608.2	1,772.2	1,733.0	1,594.6	1,041.4	1,017.3[a]
Productivity of fixed assets[c]	3.40	3.19	2.53	2.53	1.56	1.28[a]
Productivity of resources[d]	1.23	1.33	1.24	1.25	1.19	0.90
Efficiency measured by GVA[d] (macro) of:						
labour inputs	4.24	4.53	2.62	2.52	2.12	2.59
assets	0.199	0.286	0.175	0.156	0.201	0.246
resources	0.232	0.248	0.151	0.135	0.167	0.163
Efficiency measured by ES[d] (micro) of:						
labour inputs	3.20	3.43	1.50	1.42	1.05	1.47
assets	0.199	0.216	0.101	0.087	0.099	0.140
resources	0.172	0.188	0.087	0.076	0.083	0.093

[a] estimate based on F-01, [b] sales price index for vegetable and animal oils and fats as a deflator, [c] applies to large and medium companies, [d] in accordance with F-01

Source: own calculations based on unpublished CSO data.

Figure 6.1. Comparison of selected indicators for oil-mill and food industries (as on 2013 and the change after 2008)



Source: own calculations based on unpublished CSO data of the companies that submitted financial statements.

There are large differences in efficiency between the two classes of the oil-mill sector. Its indicators are higher in oil-producing companies, rather than in those producing margarine. Their labour productivity is almost seven times higher, while resource and asset efficiency is greater by 33% and 65%, respectively (Figure 6.1). In margarine-producing companies the efficiency indicators concerned declined by about 50%.

6.7. Financial performance and standing

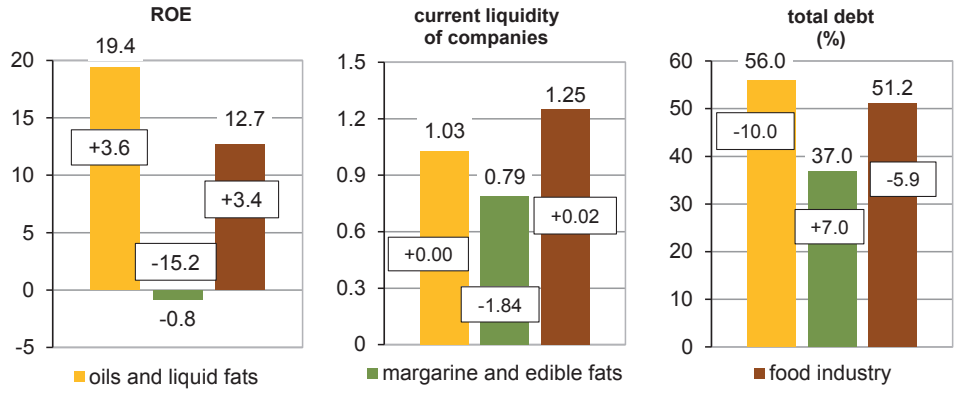
Financial performance of the sector was highly unstable. In the period under consideration, the oil-mill industry achieved positive financial performance in four years, three of which brought net returns at a satisfactory level of 3-4%, with return on equity at 9-17%. In 2011-2012, the sector suffered losses. In the period under consideration, equity increased by half, while own funds in the market – fourfold. Total liabilities, including short-term liabilities, decreased by 11%, while current liquidity fell below 1.0, thus meaning that oil companies probably encountered difficulties in settling current liabilities. Foreign capital finances about 35% of company assets and own funds in the market – about 40% of current assets (Table 6.8). Total debt in relation to total assets decreased by 13 pp and reached 48.0%. In recent years, the share of profitable companies in the sector has ranged from 65% to 75%, while their share in the sector's turnover – from 60% to 98%. These data indicate that the oil-mill industry has no sustained ability to generate profits and its financial standing is unstable, diverse and poses a threat not only to its development, but also to the continuation of its current activities.

Table 6.8. Net income, returns and financial standing of the oil-mill industry

Specification	2008	2009	2010	2011	2012	2013
Net profit (PLN million)	194.7	226.9	25.1	-23.7	-41.3	176.2
Return on sales (%)	3.69	3.89	0.53	-0.51	-0.65	2.84
ROE	15.40	16.67	1.85	-1.96	-2.78	9.04
Equity (PLN billion)	1.26	1.36	1.36	1.21	1.49	1.95
including: own funds in the market (PLN million)	238.2	445.1	446.3	109.0	-523.3	954.3
Total liabilities (PLN billion)	1.87	1.52	1.38	1.81	2.12	1.66
including: short-term liabilities	1.65	1.32	1.16	1.63	2.03	1.47
Current liquidity	1.14	1.34	1.38	1.07	0.74	0.95
Total debt (%)	61.0	55.0	52.0	61.0	60.0	48.0

Source: own calculations in accordance with unpublished CSO data (F-01 statements).

Figure 6.2. Financial indicators for oil-mill and food industries (as on 2013 and the change after 2008)



Source: own calculations in accordance with unpublished CSO data (F-01 statements).

6.8. Business breakdown structure

The oil-mill industry in Poland is an oligopolistic market. Although 2008-2013 brought an increase in the number of companies in this sector by over 2/5 (from 28 to 40 undertakings), the three largest companies in the sector strengthened their market position. Their share in employment is already about 70% and in production – almost 60% (Table 6.9). In accordance with Eurostat data, about 80 micro companies (employing less than 9 staff members) are still engaged in oil production in our country. The number of oil-mill companies is slightly higher in Germany (140) and France (180). Most enterprises operate in Mediterranean countries, i.e.: Italy (over 3,300), Spain (about 1,500), Greece (about 1,400) and Portugal (nearly 500), which are mostly small undertakings. This climate zone is dominated by olive oil production, which is characterised by a highly fragmented business structure.

Table 6.9. Industrial companies producing oils and margarine (PKD 10.4)

Specification	2008	2009	2010	2011	2012	2013
Number of industrial companies	28	24	27	34	37	40
including: large companies	3	2	3	2	3	3
Share of large companies in (%):						
– employment	57.6	54.5	65.8	43.3	71.7	69.2
– production	56.3	47.1	56.9	52.3	58.3	.

Source: unpublished CSO data and own calculations.

The share of large companies (with at least 250 employees) in the employment and sold production of the oil-mill industry is respectively 70% and 55%. In 2013, sales revenues of the largest producer of vegetable fats in Poland amounted to PLN 2.7 billion, representing half of the sector's revenues[22].

6.9. Strength of the Polish oil-mill industry against other EU Member States

Poland is the sixth largest producer of vegetable fats (oils and margarine) in the European Union with a share of 5.7%. Their production in Spain is five times higher, while that in Italy and Germany – 2.5-fold higher. Belgium and France are also ahead of us (Table 6.10). In Poland, the sector's production per capita at comparable prices is by about 1/4 lower than the EU-27 average and by 5-6 times lower than in Spain and Belgium, but by almost 1/3 higher than in France. Labour productivity in the Polish oil-mill industry is slightly (by 7.5%) higher than the EU average and the same as in Spain and Italy. The highest labour productivity is reported for the oil-mill industry in Belgium (EUR 3.1 million), as well as in Hungary and Germany (EUR 1.2-1.5 million per employee). As regards the degree of production concentration, we are one of the leading European oil producers. Among the countries listed in Table 6.10, our production concentration in this sector is almost four times higher than the EU-27 average,

[22] According to the "Lista 500" ranking of 2014, "Rzeczpospolita", 23 April 2014.

but seven times lower than in Belgium, over 2-fold lower than in Germany and by 1/6 lower than in the UK and Slovakia; however, it is by 10-25% higher than in France and Hungary.

Table 6.10. Vegetable oil and margarine producers in Poland and other EU Member States in 2012

Member States	Production[a] value (EUR billion)	Share in the EU-27 (%)	Production[a] per capita (EUR)	Labour[a] productivity (EUR thousand)	Turnover[a] per company (EUR million)
EU-27	**32.35**	**100.0**	**64.5**	**761.5**	**4.1**
EU-15	**28.82**	**89.1**	**72.0**	**860.8**	**3.9**
Spain	9.66	29.9	206.3	822.1	6.2
Italy	5.24	16.2	88.2	806.2	1.6
Germany	4.72	14.6	57.7	1,522.6	33.7
Belgium	3.45	10.7	311.1	3,108.1	111.3
France	2.40	7.4	36.8	1,000.0	13.3
UK	0.93	2.9	14.6	930.0	17.9
EU-12	**3.53**	**10.9**	**34.8**	**392.2**	**7.1**
Poland	1.85	5.7	48.0	818.6	15.0
Hungary	0.90	2.8	90.6	1,184.2	12.0
Bulgaria	0.53	1.6	72.3	240.9	7.6
Slovakia	0.18	0.6	33.3	257.1	18.0

[a] at comparable prices, i.e. current prices adjusted by the purchasing power parity

Source: own elaboration based on Eurostat data.

Poland was one of the EU Member States with the highest growth rate of production in this sector, which almost doubled in 2000-2012, just as in Spain. France witnessed a greater increase in this respect (almost threefold). In the EU-15, it grew by 1/3, while in Italy – by half, and in Germany – by 1/5. It means that we strengthened our position in the Community and the share of the Polish oil-mill industry rose to 5.7% (from 3.7% in 2000).

6.10. Conclusions

The oil-mill industry in Poland has an oligopolistic structure. The share of the three companies in employment and the value of sold production in the sector is over 50%. In 2008-2013, the oil-mill industry grew at a moderate rate. The production of crude vegetable oils increased by 3.7% per year, while the value of sold production (at current prices) grew slightly faster, i.e. by 4.1% per year. Although labour productivity dropped due to employment growth, which was not offset by production growth, it is one of the highest in the food industry.

The economic and financial situation of the oil-mill industry is unstable. Its current liquidity is low (below 1.0), thus meaning that oil companies probably encountered difficulties in settling current liabilities. Asset and resource efficiency declined, especially in enterprises producing margarine and edible fats. Total debt in relation to total assets fell below 50%. Equity increased by half and own funds in the market – quadrupled. Low returns force investments into retreat, thus limiting over-indebtedness. The sector is not self-sufficient, because resources are supplemented by imports.

7. Processing of fruit, vegetables and potatoes[23]

7.1. Domestic demand

The CSO data on the consumption of fruit, vegetable and potato products in 2008-2013 show a relative stabilisation in this regard (Table 7.1) at about 10 kg per capita annually (0.85 kg per month). The consumption of fruit products was very low, i.e. about 0.7 kg per capita annually (about 0.06 kg per month), while that of vegetable products was slightly higher (nearly 8 kg per year); however, the consumption of potato products amounted to about 1.3 kg per capita annually (0.1 kg per month).

Table 7.1. Domestic consumption and use of fruit and vegetable, and potato products

Specification	2008	2009	2010	2011	2012	2013
Household consumption of products prepared from (kg per capita monthly), including:	0.87	0.88	0.92	0.85	0.85	.
– fruit	0.07	0.07	0.07	0.07	0.06	0.05
– vegetable	0.69	0.69	0.71	0.65	0.66	.
– potato	0.11	0.12	0.14	0.13	0.13	0.10
Balance sheet consumption (kg per capita annually) of:						
– fruit	55.0	55.5	44.0	42.0	46.0	46.0
– vegetables	115.0	116.0	106.0	104.0	103.0	102.0
– potato products	15.5	16.2	16.2	16.0	16.0	.
Total domestic use[a] (thousand tonnes), including:	**1,636.1**	**1,798.5**	**1,788.5**	**2,047.5**	**1,934.4**	**1,925.6**
– frozen fruit and vegetables	342.8	262.2	253.7	393.9	318.0	380.6
– concentrated juice	98.7	269.7	109.5	194.0	264.0	225.9
– jam, marmalade, fruit paste	111.0	94.5	113.0	97.8	103.1	95.7
– canned vegetables and fruit	625.0	624.0	721.8	677.4	591.7	601.0
– starches and starch products	243.4	335.2	366.2	474.2	454.1	436.5
– French fries and chips	142.5	146.3	142.8	146.9	146.3	131.7

[a] domestic use = production + imports – exports

Source: own calculations based on the CSO Statistical Yearbooks of 2009-2013, "CSO Statistical Bulletins" of 2008-2014, data from the Ministry of Finance, Report No. 45, entitled "Rynek owoców i warzyw. Stan i perspektywy" (Fruit and Vegetable Market. Status and Prospects), Series "Analizy Rynkowe" (Market Analyses) of 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa, Report No. 41, entitled "Rynek ziemniaka. Stan i perspektywy" (Potato Market. Status and Prospects), Series "Analizy Rynkowe" (Market Analyses) of 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa.

High fluctuations in balance sheet consumption and domestic use of fruit, vegetables and potato products are mainly due to the variability of yielding. In the analysed period, the balance sheet consumption of fruit and vegetables dropped by 16% to 46 kg and by 11% to 102 kg per capita annually, respectively, while that of potato products remained at a comparable level of about 16 kg per year. In turn, the domestic use of fruit, vegetable and potato products together rose by 18% to 1,925.6 thousand tonnes.

[23] It covers the following PKD classes: 10.39 – processing of fruit and vegetables, 10.31 – processing of potatoes, and 10.62 – production of starch.

The largest increase was reported for the domestic use of concentrated juice (over two-fold), starch (by about 80%), frozen fruit and vegetables (by 11%). In contrast, the use of jam, marmalade, fruit paste decreased by about 14%, that of French fries and chips – by about 8%, while that of canned vegetables and fruit – by about 4%.

7.2. Foreign trade

For years, foreign trade in processed fruit and vegetable products[24] has had positive effects on the development of this sector. In 2013, the share of exports of processed fruit and vegetable products in the production value of the sector reached 65.5%, which is 5 pp more than in 2008 (Table 7.2). However, the share of processed fruit and vegetable products in food industry exports in 2013 declined by 3.7 pp to 9.9%. In 2008-2013, there was high volatility in foreign trade in processed fruit and vegetable products. During the period concerned, exports grew by nearly 5% per year. The fastest growth was observed in relation to concentrated apple juice (by 8.5% per year), frozen vegetables and canned vegetables, sauces and concentrates (by nearly 7%). In 2013, the export structure of fruit products was dominated by concentrated juice (47.2% of exports), whose export value has increased by 33% to EUR 525.7 million (including EUR 363 million – apple juice exports) over the last five years, being followed by frozen fruit (with a share of 37.4% of exports in this sector) – an increase of 15% to EUR 416.4 million. The balance of trade in fruit products has been positive for years, rising by 7.2% to almost EUR 0.6 billion over the last five years. In this period, proceeds from exports of vegetable products (including mushroom products) increased by 37% to EUR 549 million. Exports were dominated by frozen vegetables (47%) and canned vegetables (including mushrooms) (45%), whose exports grew by 38% during this period. In 2013, the balance of foreign trade in vegetable products amounted to EUR 337 million, thus exceeding the level of 2008 by 44%.

Over the last five years, the export-import coverage indicator for fruit and vegetable products has dropped by 20 pp (to 220.6%), the self-sufficiency of the sector has increased by 11.6 pp (to 163.8%), the share of exports in the sold production of the sector has grown by 4.9 pp to 65.5%, while the share of imports in domestic use has gone up by 3.6 pp to 43.6%.

Having analysed the export-import coverage indicator for fruit and vegetable products, it can be concluded that, among the products under examination, significant comparative advantages were observed for exports of frozen vegetables (692.7%), frozen fruit (571.2%), as well as concentrated apple juice (566.3%). Over the past five years, this rate for trade in apple juice has decreased by as much as 501 pp. Generally, the entire fruit and vegetable processing industry is highly competitive in terms of foreign trade, although the measures of the competitive position of Polish fruit and vegetable producers trend downwards.

[24] Fruit and vegetable products: frozen fruit, concentrated juice (including apple juice), jam, marmalade, fruit paste, puree, canned fruit, fruit provisionally preserved, dried fruit, frozen vegetables, dried vegetables, canned vegetables, sauces, concentrates, mushroom products.

Table 7.2. Results of foreign trade in fruit and vegetable products

Specification	2008	2009	2010	2011	2012	2013
Value (EUR million)						
exports	1,312.9	1,054.7	1,158.9	1,337.3	1,599.7	1,662.6
imports	545.7	484.3	635.4	689.4	708.1	753.6
balance	767.2	570.4	523.5	647.9	891.6	909.0
Volumes (thousand tonnes)						
exports	1,136.2	1,120.2	1,189.9	1,101.8	1,372.5	1,443.6
imports	492.5	436.3	543.6	531.5	532.3	586.0
Indicators (%)						
– export-import coverage	240.6	217.8	182.4	194.0	225.9	220.6
– self-sufficiency[a]	152.2	152.7	151.4	140.5	163.5	163.8
– share of exports in production[a]	60.6	56.5	62.5	55.7	63.4	65.5
– share of imports in use[a]	40.0	33.6	43.2	37.8	40.2	43.6
– share of exports in exports of food products	13.6	11.3	10.2	10.3	10.9	9.9

[a] in quantitative terms

Source: own calculations based on data from the CSO and the Ministry of Finance.

In 2008-2013, trade in processed potato products[25] trended upwards. In the period concerned, proceeds from exports of potato products increased by 73% to EUR 270.2 million (Table 7.3), while imports grew by 77% (to EUR 290 million). A foreign trade deficit amounted to EUR 19.5 million, as opposed to EUR 37 million a year earlier and EUR 7.8 million in 2008. The average annual growth rate of exports in this period was almost 12%.

Table 7.3. Results of foreign trade in potato products

Specification	2008	2009	2010	2011	2012	2013
Value (EUR million)						
exports	155.8	150.7	197.6	221.5	246.1	270.2
imports	163.6	176.0	201.3	299.4	283.1	289.7
balance	-7.8	-25.3	-3.7	-77.9	-37.0	-19.5
Volumes (thousand tonnes)						
exports	215.4	237.8	266.3	259.5	344.0	367.0
imports	282.4	385.6	458.4	534.7	516.8	529.5
Indicators (%)						
– export-import coverage	95.2	85.6	98.2	74.0	86.9	93.3
– self-sufficiency[a]	83.4	70.5	63.7	57.0	71.7	72.0
– share of exports in production[a]	64.0	67.4	78.8	71.1	78.5	87.8
– share of imports in use[a]	69.9	77.0	86.5	83.5	84.6	91.2
– share of exports in exports of food products	1.7	1.6	1.8	1.7	1.7	1.6

[a] in quantitative terms

Source: own calculations based on unpublished data from the CSO and the Ministry of Finance.

Over the last five years, the export-import coverage ratio for potato products has dropped by 1.9 pp (to 93.3%), the self-sufficiency of the sector has decreased by 11.4 pp (to 72%), the share of exports in the production of the sector has increased by 23.8 pp to 87.8%, while the share of imports in domestic use has grown by 21.3 pp to 91.2%.

[25] Potato products: starches and starch products, French fries, chips, other products of the potato industry.

7.3. Supply of raw materials and prices of processed fruit, vegetable and potato products

The supply of fruit, vegetables and potatoes for processing was characterised by an upward trend, except for specific periods, i.e. 2010 as regards fruit purchases, and 2009-2010 and 2013 in the case of potato processing (Table 7.4). Over the last five years, vegetable purchases have systematically grown by 6.4% per year on average, being by over 36% higher in 2013 than in 2008, while the purchase of fruit for processing has doubled, with the largest increases in 2009 and 2012, at an average growth rate of 16% per year in the period considered. The slowest growth was recorded in relation to potato processing, i.e. 2.6% per year. Compared to 2008, it was higher by just over 13% than in 2013.

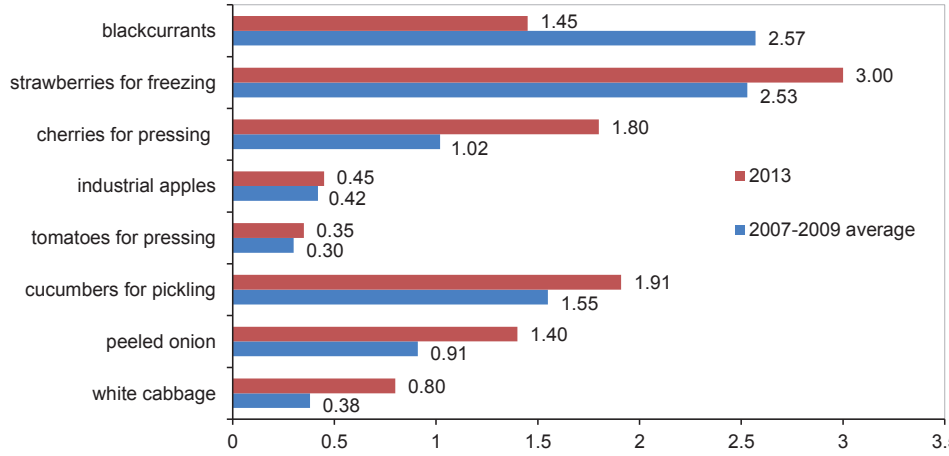
Table 7.4. Supply of raw materials and change in prices of processed fruit, vegetable and potato products

Specification	2008	2009	2010	2011	2012	2013
Purchase (thousand tonnes) of:						
vegetables	1,235.8	1,334.4	1,370.5	1,533.4	1,678.4	1,683.2
fruit	1,374.3	2,186.5	1,615.1	1,736.5	2,873.4	2,882.4
Potato processing	1,615.0	1,576.0	1,438.0	1,611.0	1,935.0	1,834.0
Changes in prices paid to producers (for processing) in % per year for:						
– white cabbage	-38.3	31.0	155.3	-73.2	46.2	110.5
– peeled onion	-6.0	42.3	13.5	55.6	28.6	94.4
– cucumbers for pickling	46.8	22.5	-26.0	-14.5	10.5	39.4
– tomatoes for pressing	80.0	-2.8	-5.7	6.1	-5.7	6.1
– industrial apples	-84.2	13.3	282.4	0.0	-38.5	12.5
– cherries for pressing	-60.0	-14.3	250.0	-9.5	52.6	-37.9
– strawberries for freezing	-17.6	-50.0	100.0	42.9	15.0	-34.8
– blackcurrants	-52.0	19.4	-11.6	115.8	-57.3	-17.1
– industrial potatoes	9.8	-5.7	-1.6	28.6	-1.1	18.0
Inflation	4.2	3.5	2.6	4.3	3.7	0.9
Food prices	6.2	4.1	2.8	5.6	4.3	2.2
Retail prices of:						
– fruit products	8.4	4.4	0.4	10.0	7.6	2.4
– vegetable products	8.1	3.7	3.2	4.0	-0.02	4.0
– potato products	5.7	3.6	3.0	4.4	0.8	1.8
Sales prices of fruit and vegetable products	0.5	-3.6	-3.2	9.7	3.6	-3.1

Source: own calculations based on published and unpublished CSO data and Report No. 45, entitled "Rynek owoców i warzyw. Stan i perspektywy" (Fruit and Vegetable Market. Status and Prospects), Series "Analizy Rynkowe" (Market Analyses) of 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa.

In the processing industry at issue, the supply of raw materials increased under the conditions of very high price volatility. Nevertheless, having compared the price paid to farmers in the last year with the 2007-2009 average, it can be concluded that there was an increase in prices of both main vegetables used in the processing industry and most fruit (Figure 7.1). The greatest growth was observed in prices of cabbage (over twofold), onions and cherries (over 1.5-fold). Prices of cucumbers, tomatoes and strawberries increased to a lesser extent, while those of blackcurrants dropped by half.

Figure 7.1. Comparison of prices paid to producers for fruit and vegetables for processing (PLN/kg)



Source: own elaboration based on data from Reports Nos. 42 and 45, entitled "Rynek owoców i warzyw. Stan i perspektywy" (Fruit and Vegetable Market. Status and Prospects), Series "Analizy Rynkowe" (Market Analyses) of 2013 and 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa.

Consumer prices of fruit, vegetable and potato products increased systematically. The fastest growth in this regard was observed in 2008-2009 and 2012. The highest growth was reported for fruit products, whose prices were by 37.7% higher in 2013 than in 2008, while prices of vegetable and potato products went up by almost 25% and 20.8%, respectively. Such a large increase in retail prices of the products concerned, with minimum growth in processor prices in this period (3.3%), suggests a large increase in trade margins. There was a relative rise in prices of fruit and vegetable products, because the increase in retail prices in 2008-2013 exceeded inflation, while growth in prices of potato products equaled it.

7.4. Production of the fruit, vegetable and potato industry

In 2008-2013, the fruit and vegetable processing industry (including potatoes and starch production) developed similarly to the entire food industry. During this period, the fastest growth was observed in the production of dried potatoes, concentrated juice, French fries, chips and frozen products (Table 7.5). In 2013, it was higher than in 2008 by 47%, 41%, 31%, 29% and 23%, respectively. At current prices, the production value of the processing industry increased by nearly 12% and slightly less in companies submitting financial statements, i.e. by 10%, as well as in large and medium enterprises – by about 8%. However, at constant prices, it went up in 2013 by 8.8%, 7.1% and 5.4%, respectively. The largest increase in these values occurred in 2010 and 2012 (by 7-8% at constant prices), while 2009 and 2011 brought decreases in this respect. This suggests that the development of this sector was quite unstable, which was largely due to very high volatility in prices of raw materials.

Table 7.5. Production of the fruit and vegetable processing industry (including potato processing and starch production)

Specification	2008	2009	2010	2011	2012	2013
Production (thousand tonnes) of:						
concentrated juice	251.1	420.4	219.3	282.2	418.7	354.4
frozen vegetables and fruit	872.7	807.9	849.3	912.9	987.9	1,074.1
canned products and marinades	278.0	270.0	285.4	281.0	283.0	271.5
jam	54.6	54.7	56.0	60.6	62.9	57.0
French fries	156.2	161.3	178.4	173.5	209.0	204.5
chips	60.1	75.5	67.8	66.5	77.5	77.5
isoglucose, glucose and syrups	272.4	282.6	272.6	282.0	300.1	301.9
dried potatoes	16.4	15.1	14.7	14.6	23.7	24.1
potato starch	104.1	100.9	76.9	110.5	127.8	112.3
Production value at current prices (PLN billion)	8.59	7.98	8.32	8.64	9.56	9.60[a]
Production change at constant prices (%)	-7.2	-3.6	7.7	-5.3	6.8	3.6[a]
Production value in accordance with F-01 (PLN billion)	8.97	9.42	8.06	8.92	9.42	9.43
Gross value added[b]						
– current prices (PLN billion)	2.16	2.49	2.09	2.13	2.16	2.06
– % of production	24.1	26.4	25.9	23.9	22.9	21.8
Economic surplus (PLN billion)	0.94	1.21	0.92	0.95	0.93	0.82
– % of production	10.5	12.8	11.4	10.7	9.9	8.7

[a] estimate, [b] applies to companies submitting financial statements

Source: own calculations based on published and unpublished CSO data.

The processing industry was characterised by reduced business performance, with both the gross value added (GVA) and the economic surplus (ES) as measures thereof. Their values varied. In 2013, following short-term ups and downs, they were lower than in 2008. Their share in the basic price dropped by a few percentage points, i.e. GVA decreased by 2.3 pp to 21.8%, while ES – by 1.8 pp to 8.7%.

7.5. Resources of production factors[26]

Over the last five years, the state of labour resources in the fruit and vegetable industry (including starch production) has followed a downward trend (Table 7.6). Employment in industrial companies decreased by 4% per year on average, being by 19% lower in 2013 than in 2008, and by 4.6% per year in large and medium enterprises. However, the sector developed slowly in the context of highly varied changes in the values of all production factors. The value of fixed assets in companies submitting financial statements has increased over the last three years. However, it was by only 7.8% higher in 2013 than in 2008. Following a temporary decline in 2010, labour cost started to grow. In 2013, it was by 3.6% higher than in 2008. The value of current assets was characterised by high volatility, being by 5.6% lower in the last year than in 2008. The total resources of production factors first (in 2008-2010) decreased by about 9% to increase later by 11%.

[26] Sections on the resources of production factors, productivity and efficiency, and financial performance and standing include the following classes: 10.31 (potato processing), 10.39 (fruit and vegetable processing) and 10.62 (starch production).

Table 7.6. Resources of production factors in the processing of fruit, vegetables and potatoes (including starch production)

Specification	2008	2009	2010	2011	2012	2013
Employment in industrial companies (thousand employees)	30.0	27.7	26.4	25.5	25.5	24.4[a]
including: large and medium companies	25.9	22.9	22.3	21.6	21.6	20.5[a]
in accordance with F-01	27.8	26.3	24.1	23.3	23.0	22.3
Gross fixed assets of large and medium companies (PLN billion)	4.25	4.14	4.25	4.17	4.64	5.00[a]
Company assets in accordance with F-01 (PLN billion)	8.88	8.37	7.85	8.28	8.58	8.88
including: fixed assets	3.70	3.66	3.24	3.45	3.54	3.99
Labour cost (PLN million)	3.35	3.53	3.25	3.28	3.44	3.47
Total resources[b] in accordance with F-01 (PLN billion)	12.23	11.90	11.10	11.56	12.02	12.35
Investments (PLN million)	439.0	359.0	314.0	368.0	385.0	367.0
Capital-labour ratio[c] (PLN thousand per capita)	164.0	180.7	190.5	193.0	214.8	243.9[a]
Capital intensity of production[d] in accordance with F-01 (PLN/PLN)	0.412	0.388	0.402	0.387	0.376	0.423
Total resources/production (PLN/PLN)	1.363	1.263	1.377	1.296	1.276	1.310

[a] estimate, [b] fixed and current assets increased by the value of labour, defined as the equivalent of three times labour cost per year, [c] applies to large and medium enterprises, [d] the ratio of the value of fixed assets to the value of sold production at the basic prices

Source: own calculations based on published and unpublished CSO data.

Such changes in production resources, with a relatively large decrease in employment, increased the capital-labour ratio and caused low volatility in the capital intensity of production. At the same time, investment activity of undertakings in the sector has been relatively stable (at around PLN 370-380 million) in the last three years – although slightly lower, i.e. by about 15%, than in 2008 – while the rate of investment has fallen to 7.3% of the value of fixed assets, compared to over 10% in 2008.

7.6. Productivity and efficiency

Labour productivity in the fruit, vegetable and potato processing industry showed a steady upward trend (Table 7.7) of 6.6% per year, including 4.8% in the production of fruit and vegetable products, 3.9% – potato products, and 11.2% – starch (Figure 7.2). The growth rate was by about 1/3 higher than that in the entire food industry, but with a lower (by about 38%) level of labour productivity, mainly in the production of starch and fruit and vegetable products. Labour productivity growth in the production of fruit and vegetable products was 1.5-fold higher than an increase in the average remuneration, more than twice higher in starch production, but by half lower in potato processing. At the same time, the productivity of fixed assets dropped; however, this decline (by about 1/10) was three times smaller than labour productivity growth.

The efficiency of labour inputs, assets and resources dropped both at the macro (measured by GVA) and micro (measured by ES) level. The decline in these rates at the macro level reached 4.5-7.5%, being two to three times higher at the micro level.

The level of these measures in fruit and vegetable processing and starch production was slightly lower than in the food industry, exceeding the average level of the food industry in potato processing. The substitution of human labour by objectified labour in this processing industry reduced the efficiency of total production resources.

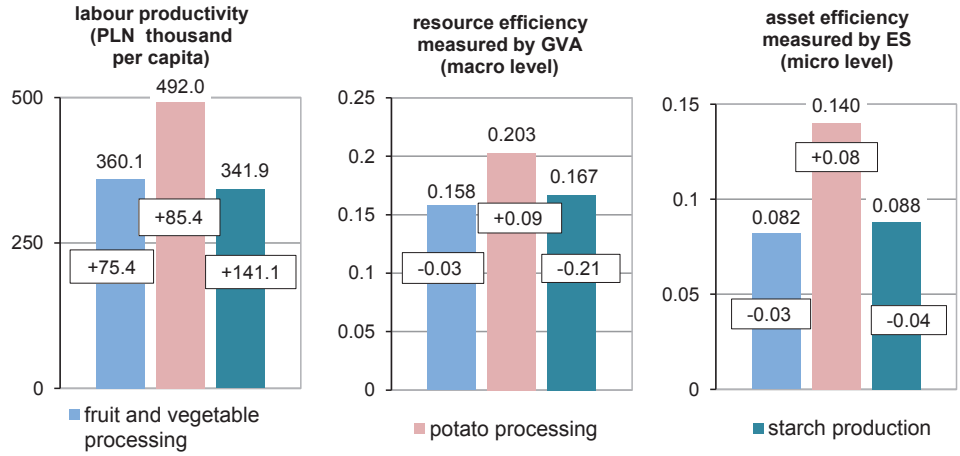
Table 7.7. Productivity and efficiency of the fruit, vegetable and potato processing industry (including starch production)

Specification	2008	2009	2010	2011	2012	2013
Labour productivity (PLN thousand)						
– at current prices	286.3	288.0	315.1	338.8	374.9	393.4[a]
including: large and medium companies	288.7	301.2	321.6	338.8	372.8	392.9[a]
– at constant prices	294.2	307.0	347.0	340.2	363.3	393.4[a]
Productivity of fixed assets[b]	1.759	1.666	1.687	1.755	1.736	1.611[a]
Productivity of resources[c]	0.733	0.792	0.726	0.772	0.784	0.764
Efficiency measured by GVA[c] (macro) of:						
– labour inputs	1.931	2.114	1.928	1.943	1.886	1.784
– assets	0.243	0.297	0.266	0.257	0.252	0.232
– resources	0.177	0.209	0.188	0.184	0.180	0.167
Efficiency measured by ES[c] (micro) of:						
– labour inputs	0.843	1.030	0.852	0.866	0.809	0.708
– assets	0.106	0.145	0.117	0.115	0.108	0.092
– resources	0.077	0.102	0.083	0.082	0.077	0.066

[a] estimate, [b] applies to large and medium companies, [c] in accordance with F-01

Source: own calculations based on published and unpublished CSO data.

Figure 7.2. Differences in labour productivity and efficiency[a] in the fruit and vegetable, and potato processing and in starch production



[a] labour productivity calculated for industrial companies in 2012 at current prices; efficiency applies to companies submitting F-01 statements in 2013

Source: own calculations based on the CSO data.

7.7. Financial performance and standing

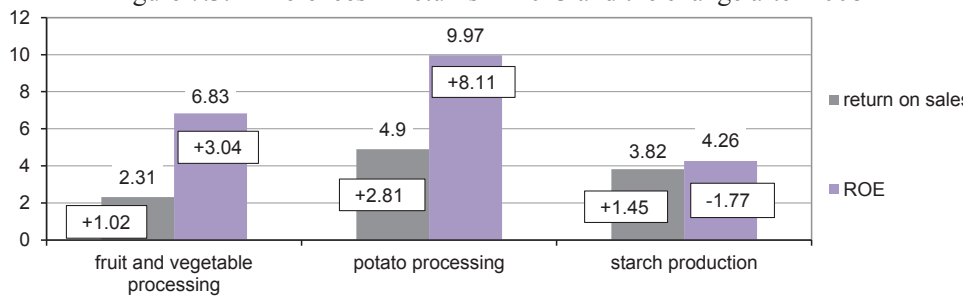
Producers of fruit and vegetable products (including potato products and starch production) enjoy a sustained ability to generate profits (Table 7.8). Their financial performance was relatively stable for four years (PLN 350-380 million). In 2013, it fell to PLN 300 million, but it was almost twice as high as in 2008. However, returns on both sales and equity remained lower than the average for the food industry, but exceeded returns on other safe capital investments (bonds or bank deposits). Producers of potato products achieved the best results and their rates exceeded returns secured by the food industry. Each branch of this processing industry saw an improvement in return on sales (Figure 7.3).

Table 7.8. Financial performance of producers in the fruit and vegetable, and potato industry (including starch production)

Specification	2008	2009	2010	2011	2012	2013
Net profit (PLN million)	168.0	368.5	360.7	358.7	384.2	305.1
Return on sales (%)	1.59	3.23	3.99	3.62	3.67	2.83
ROE (%)	3.84	8.61	9.16	9.93	9.32	7.36
Equity (PLN billion)	4.38	4.28	3.94	3.61	4.12	4.14
including: own funds in the market	1.82	1.72	1.67	1.66	1.86	1.59
Liabilities (PLN billion)	4.50	4.09	3.92	4.67	4.47	4.74
including: short-term liabilities	3.36	2.99	2.94	3.17	3.19	3.29
Current liquidity	1.54	1.57	1.57	1.53	1.58	1.48
Total debt (%)	50.7	48.9	49.9	56.4	52.0	53.4

Source: own calculations based on unpublished CSO data.

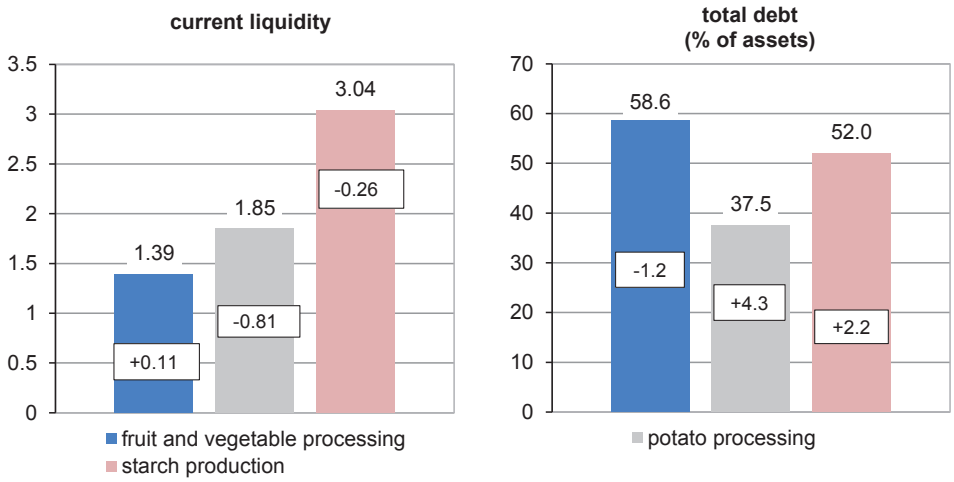
Figure 7.3. Differences in returns in 2013 and the change after 2008



Source: own calculations based on unpublished CSO data.

Furthermore, financial standing of all branches of this processing industry was safe. The current liquidity ratio decreased slightly, but remained above a level determined by banks as safe and adequate for meeting short-term bank liabilities in due time (Figure 7.4). Temporarily both equity and own funds in the market dropped in 2009-2010. Although recent years have witnessed an increase in this regard, the rates are still below their level of 2008. The total debt of companies in this processing industry rose slightly and was just above the average of the entire food industry. It reached the highest level in the fruit and vegetable processing industry, exceeding the average debt of the food industry by 7 pp.

Figure 7.4. Differences in financial standing in 2013 and the change after 2008



Source: own calculations based on unpublished CSO data.

7.8. Business breakdown structure

In recent years, the business breakdown structure of the fruit and vegetable, and potato processing industry has undergone frequent changes (Table 7.9). In 2013, there were 325 industrial companies (in 2008 – 351), of which 299 operated in the fruit and vegetable processing sector (31 companies less than in 2008), while 26 – in potato processing (5 companies less). Over the last five years, the number of large companies has dropped as well, i.e. to 16. What is more, their share in the sector's employment has decreased slightly to 32%. In turn, the share of large companies in the production value of the sector has been rather stable over the last five years amounting to about 40%.

The degree of concentration in the fruit, vegetable and potato processing sector is stable, but not very high. The share of large companies in employment and sales value does not exceed 40% and is lower than in the food industry by 7 and 14 pp, respectively.

Table 7.9. Structure of industrial companies in the fruit and vegetable, and potato sector (including starch production)

Specification	2008	2009	2010	2011	2012	2013
Number of industrial companies	351	305	314	311	306	325
of which:						
– fruit and vegetable processing	330	284	292	289	285	299
– potato processing	21	21	22	22	21	26
including: large companies	21	20	20	19	19	16
– fruit and vegetable processing	21	18	19	17	17	14
– potato processing	0	2	1	2	2	2
Share of large companies in the sector in (%):						
– employment	34.1	34.3	34.3	34.5	35.2	31.9
– sales value	40.0	41.2	42.0	40.7	39.9	.

Source: unpublished CSO data and own calculations.

7.9. Polish fruit and vegetable industry against other EU Member States[27]

Poland is the sixth largest producer of fruit and vegetables in the EU with a share of almost 9% of production in the sector (Table 7.10). This production is over twice higher in Italy, 65% higher in Spain, 47% – in France, 31% – in Germany, and 15% – in the United Kingdom. The production of this sector in Poland per capita (EUR 89.3) is lower than in Belgium (by 41%), Italy (by 31%) and Spain (by 26%), but slightly higher than the EU average and much higher than in Germany or the UK.

Table 7.10. Producers of fruit and vegetable products in Poland and other EU Member States in 2012

Member States	Production[a] value (EUR billion)	Share in the EU-27 (%)	Production[a] per capita (EUR)	Labour[a] productivity (EUR thousand)	Turnover[a] per company (EUR million)
EU-27	**38.72**	**100.00**	**77.17**	**223.75**	**4.91**
EU-15	**32.96**	**85.12**	**82.34**	**252.84**	**5.78**
Italy	7.74	19.99	130.32	336.52	4.69
Spain	5.68	14.67	121.32	236.27	4.88
France	5.07	13.09	77.65	241.43	5.34
Germany	4.52	11.67	55.23	267.30	16.56
UK	3.94	10.18	62.06	205.96	9.29
EU-12	**5.76**	**14.88**	**56.75**	**134.93**	**2.64**
Poland	3.44	8.88	89.26	155.37	4.05
Hungary	1.11	2.87	111.78	156.56	2.34
Bulgaria	0.51	1.32	69.58	77.86	1.68
Romania	0.33	0.85	16.43	105.43	1.60
Slovakia	0.12	0.31	22.22	122.45	1.11
Lithuania	0.07	0.18	23.33	87.50	2.80

[a] at comparable prices, i.e. current prices adjusted by the purchasing power parity

Source: own elaboration based on Eurostat data.

Labour productivity in the Polish fruit and vegetable processing industry (EUR 155.4 thousand per employee) is by almost 40% lower than in Germany and the EU-15 average, while that in Belgium (EUR 399) and Italy (EUR 336) is over twice larger than in Poland. The average turnover per company in the Polish fruit and vegetable processing industry is by 30% lower than the EU-15 average and several times lower than in Belgium, Germany, the Netherlands or the United Kingdom.

7.10. Conclusions

The fruit, vegetable and potato processing sector is one of the most important Polish food industry sectors. Its production developed due to, for instance, the development of foreign trade in fruit and vegetable products, and potato industry products. Over the last five years, the share of exports of these products in the production value of the sector has increased to 65.5% (60.6% in 2008). In the period under consider-

[27] The analysis of the sector addresses only the fruit and vegetable industry (PKD 10.39), as the Eurostat base lacked data on the potato industry (PKD 10.31) and starch production (PKD 10.62) for most of the EU Member States.

ation, proceeds from exports of fruit and vegetable products grew by 27% to EUR 1.7 billion. Imports rose by 38% to EUR 753 million. Thus, the sector enjoyed a high level of self-sufficiency, which increased to 164% (2013). Moreover, the potato processing sector followed an upward trend in relation to foreign trade (exports increased by 70% and imports – by 77%). However, the sector has witnessed a trade deficit and self--sufficiency below 100% for many years.

The fruit, vegetable and potato processing industry developed in the context of very high volatility in prices paid to agricultural producers, while prices of most fruit and vegetables in 2013 were higher than 2007-2009 averages. Processing margins shrank, as producer prices grew only in 2011-2012, compared to other years which brought declines in this respect.

Production growth was achieved when employment declined, but the value of fixed assets trended upwards, i.e. the capital-labour ratio increased. This enabled a major increase in labour productivity (by 1/3 at constant prices). At the same time, companies invested cautiously, as evidenced by a decrease in the rate of investment by about 3 pp to 7.3%. The rate of pay for labour productivity growth with average remuneration growth was only 1/3. An increase in resources and a decrease in the relative level of GVA and ES reduced their efficiency, but its level is similar to the average for the food industry.

Relatively good and stable economic and financial performance of the sector, with very large fluctuations in raw material prices, is indicative of the efficient use of all the means of production, thus creating a solid basis for maintaining the sector's highly competitive position and demonstrating the adaptability of undertakings to the changing market environment. The structure of the fruit and vegetable, and potato sector is dominated by small companies (95% of all industrial companies in the sector). The share of large companies in the sector's employment exceeds 30%, while in production value – 40%, which suggests a quite low level of concentration.

The fruit, vegetable and potato processing sector becomes less competitive in foreign trade and the food industry. This is due to declining efficiency of the sector.

8. Bakery industry

8.1. Domestic demand

In accordance with household budget surveys, the CSO data on the household consumption of bread indicate a steady decline in the consumption of fresh bread and a relative stabilisation in (fresh) pastry goods. Over the last five years, the consumption of bread has dropped by almost 20% to about 50 kg per capita. This is a continuation of a long-term decline, as the consumption of bread is currently by about 50% lower than in the late 1980s. However, the consumption of pastry goods has remained for several years at almost 8 kg per capita (0.65 kg per month) and about 300 thousand tonnes per year (Table 8.1). The income elasticity of demand for bread is negative and amounts to -0.03, while for pastry goods – remains quite high (+0.38)[28].

Table 8.1. Domestic consumption and use of bakery products

Specification	2008	2009	2010	2011	2012	2013
Household consumption (kg per capita monthly) of:						
bread	5.06	4.85	4.67	4.46	4.35	4.13
pastry goods	0.66	0.65	0.65	0.63	0.62	0.65[a]
Domestic use[b] (thousand tonnes) of:						
fresh bread	2,662.5	2,556.7	2,481.2	2,369.6	2,311.2	2,194.3
including: from industrial production	1,636.6	1,616.5	1,618.8	1,535.1	1,595.2	1,662.1
pastry goods	302.0	298.0	300.3	291.1	286.4	300.3

[a] estimate based on data on the consumption of other bakery products, [b] household consumption increased by 15% for mass consumption and losses

Source: the CSO data on the results of household budget surveys and own calculations.

The bakery market is further characterised by a relative stabilisation in the domestic use of bread from industrial production at about 1.6 million tonnes. This is indicative of a major structural change, i.e. the share of industrial producers in fresh bread supplies grew, while the supply of (and demand for) bread baked by local bakeries fell sharply.

8.2. Foreign trade

Fresh bread production is mainly oriented at the domestic market, as the share of exports in production is only 10%. Although it follows a rapid upward trend, as exports of all bakery products (Table 8.2) in 2008-2013 grew by about 50%, and that of fresh bread – by as much as 75%, but their share in agri-food exports is small and accounts for 3.8% and 1.5%, respectively. The sector achieved a significant positive trade balance (almost EUR 0.5 billion and EUR 150 million, respectively) which, however, is quite unstable.

[28] Cf. *Popyt na żywność*, [in:] *Analiza*..., op. cit., p. 248.

Table 8.2. Results of foreign trade in bread

Specification	2008	2009	2010	2011	2012	2013
Exports of bread[a] (thousand tonnes)	221.2	221.5	239.4	266.8	287.5	329.7
including: fresh bread	99.6	100.2	114.2	133.8	155.5	174.4
Imports of bread[a] (thousand tonnes)	82.3	90.6	98.3	105.5	120.1	143.1
including: fresh bread	52.4	53.7	58.1	68.0	75.7	91.9
Exports of bread[a] (EUR million)	560.2	474.2	520.0	580.2	639.0	763.6
including: fresh bread	247.6	173.4	199.0	236.9	275.3	305.9
Imports of bread[a] (EUR million)	174.5	177.9	192.9	210.5	240.8	289.8
including: fresh bread	91.3	89.8	95.8	116.7	127.3	161.5
Balance (EUR million)	358.7	296.3	327.1	369.7	398.2	473.8
including: fresh bread	156.3	83.4	103.2	120.2	148.0	144.4
Indicators of the bakery sector[b] (%)						
– export-import coverage	271.2	193.1	207.7	203.0	216.3	189.4
– self-sufficiency[c]	102.9	102.9	103.5	104.3	105.0	105.0
– share of exports in production[c]	5.9	6.0	6.8	8.4	9.3	10.0
– share of imports in domestic use[c]	3.2	3.3	3.4	4.5	4.7	5.5

[a] applies to fresh bread and durable pastries, [b] applies to the industrial branch of the sector, excluding pastries, [c] in quantitative terms

Source: data from the Ministry of Finance and own calculations.

The measures of the competitive position of Polish bread producers indicate a high, although decreasing, value of the export-import coverage ratio and growing surplus production over domestic use, and also to a growing share of exports in production and imports in domestic use. Their level is small and suggests that the internationalisation of the sector is poor. This could also indicate that the growing activity of bread producers fails to compensate for the effects of weakening domestic demand.

8.3. Supply of raw materials and prices of processed grain products

The supply of grain mill products (production and domestic use) has recently been very stable (Table 8.3), following a weak upward trend (less than 1% per year). The industrial production of flour and its domestic use increased from about 2.3 million tonnes to 2.4 million tonnes, while trade volumes (exports and imports) did not exceed 150 thousand tonnes per year. The supply of raw materials relatively stabilised in the context of high price fluctuations in the market of grain and processed grain products. The highest price fluctuations were observed for the purchase of grain (from -25.9% to +41.4% per year), being by 22% higher in 2013 than in 2008.

Volatility in sales prices of mill products was high as well (from -14.2% to 28.1% per year), but the prices increased by only 2.0% per year on average. Changes in retail prices of bread and pastry goods were smaller, but also significant; however, sales prices of bakery products were the most stable. At the same time, prices of bakery products witnessed a relatively steady upward trend, as an increase in their retail prices (by about 3.5-4.0% per year) has been in recent years by about 1/3 higher than inflation and at least twice that of prices of raw materials (flour). The slowest growth in sales prices of bread producers (by only 1.5% per year) is indicative of shrinking processing margins in the bakery industry, with a significant improvement in the position and margins of trading companies.

Table 8.3. Supply of raw materials and prices in the market of processed grain products

Specification	2008	2009	2010	2011	2012	2013
Supply (thousand tonnes)						
Production of flour	2,316.7	2,451.8	2,437.3	2,426.8	2,438.4	2,467.0
including: wheat flour	2,093.7	2,228.7	2,230.2	2,204.4	2,207.4	2,229.6
rye flour	218.0	217.6	200.9	215.9	218.5	220.6
Domestic use of flour	2,321.5	2,389.0	2,401.1	2,388.6	2,427.3	2,436.3
Price changes in % per year						
Inflation	4.2	3.5	2.6	4.3	3.7	0.9
Retail prices of:						
bread	12.9	3.1	3.5	12.0	2.3	0.5
pastry goods	8.3	4.4	2.9	5.9	3.6	1.7
Sales prices of: bakery products	.	-0.7	0.0	5.3	2.2	0.5
mill products	-0.3	-14.2	6.7	28.1	-2.6	-2.5
Purchase price of grain[a] (PLN/tonne)	-9.5	-25.9	24.4	41.1	6.8	-11.9

[a] average of 0.9 kg of wheat and 0.1 kg of rye

Source: the CSO data and own calculations.

8.4. Production of the bakery industry

A fall in domestic demand causes a steady decline in the total production of fresh bread, but its industrialisation leads to its relative stabilisation in industrial companies, which has remained at 1.6-1.7 million tonnes for several years (Table 8.4). The production of wheat bread is quite stable (slightly more than 0.5 million tonnes), with a slight drop in the production of rye bread and an increase in the production of mixed bread. In recent years, the production of pastry goods has grown, which was by about 29% higher in 2013 than in 2008. This is due to growing exports of these products.

Table 8.4. Production of the bakery industry

Specification	2008	2009	2010	2011	2012	2013
Total production of fresh bread[a] (thousand tonnes)	2,709.7	2,603.4	2,537.3	2,435.4	2,391.0	2,276.8
including: industrial production	1,683.8	1,663.0	1,674.9	1,600.9	1,675.0	1,744.6
including: rye bread	103.6	93.0	86.9	87.4	94.3	87.7
wheat bread	522.0	539.0	521.6	519.8	531.1	518.1
Industrial production of pastry goods (thousand tonnes)	192.3[b]	190.6	205.6	208.5	268.0	248.0
Value of sold production (PLN billion)	8.70	8.90	9.95	10.47	11.04	11.75[c]
including: large and medium companies	3.81	3.78	4.44	4.93	5.33	5.80[c]
in accordance with F-01	4.48	4.43	5.03	5.61	6.17	6.73
Change in the value of sold production at constant prices (%)	.	3.0	11.8[d]	-0.1	3.2	5.8
Gross value added[e] (GVA) (PLN billion)	1.77	1.84	1.98	2.00	2.22	2.60
Economic surplus[e] (ES) (PLN million)	739	744	812	787	885	1,176

[a] product of household consumption and the size of population increased by 15% in relation to mass consumption and losses, and by the balance of foreign trade, [b] 2007, [c] own estimate, [d] such a large increase in the production value of the sector in 2010 probably resulted from increasing the size of the sample studied by the CSO, because in the same year, the CSO data also indicate a significant increase in employment and the number of industrial companies, returning to their 2009 level in subsequent years (cf. Tables 8.5 and 8.8), [e] applies to companies submitting F-01 financial statement

Source: own elaboration based on the CSO data.

The production value of the industry grew faster in the industrial branch of the sector. At current prices, its value increased by 35%, while at constant prices – by 25%. Production value grew even faster in large and medium companies, as well as those submitting financial statements. These changes are much larger than those in production volumes, which may indicate significant changes in the range of bakery products, thus increasing its attractiveness.

The sector is further characterised by a large convergence of changes in the value of sold production, the gross value added (GVA) and the economic surplus (ES), and high and relatively stable share of these performance measures in the value of sold production. Throughout the period concerned, the share of GVA was nearly 40%, while that of ES – about 16% on average (from 14% to 17.5%). Such performance is rarely achieved in other sectors of the food industry; in 2013, GVA was higher only in the sugar industry, ES – in the spirit industry as well.

8.5. Labour and capital resources

Apart from a temporary increase in 2010, employment in the bakery industry as a whole remains at a level of about 80 thousand employees, growing by about 10% in large and medium companies and enterprises submitting financial statements (Table 8.5). The latter witnessed a significant increase in labour cost (by 39% since 2008). The value of fixed assets and company assets grew even faster; in large and medium companies, the initial value of fixed assets was by 50% higher in 2012 than in 2008, while company assets (according to F-01) have doubled over five years. In 2013, the total resources of production factors were by 63.5% higher than in 2008. In accordance with F-01, this sector experienced a significant increase not only in fixed assets (by 100%), but also in current assets (by 62.5%) and labour resources (according to F-01, labour cost grew by 39%). At the same time, companies in this sector invested cautiously for four years (2009-2012), thus the rate of investment was very high (over 15%) only in two years (2008 and 2013).

Table 8.5. Resources of production factors in the bakery industry

Specification	2008	2009	2010	2011	2012	2013
Employment in industrial companies (thousand employees)	77.2	80.9	86.2	80.0	78.0	77.9
including: large and medium companies	29.9	30.3	33.1	32.9	33.0	34.7
in accordance with F-01	33.4	33.0	33.2	33.9	34.7	36.3
Gross fixed assets[a] (PLN billion)	2.28	2.28	2.92	3.32	3.43	.
Assets in accordance with F-01 (PLN billion)	2.86	2.73	3.32	3.63	4.21	5.41
including: fixed assets	1.90	1.78	2.21	2.41	2.83	3.85
Labour cost in accordance with F-01 (PLN million)	988	1,057	1,122	1,158	1,293	1,374
Total assets[b] (PLN billion)	5.83	5.90	6.69	7.11	8.09	9.53
Investments – PLN million (in accordance with F-01)	399	316	332	282	346	584
– % of fixed assets[a]	17.5	13.9	11.4	8.5	10.1	15.8[c]
Capital-labour ratio[a] (PLN thousand)	76.2	75.2	88.2	100.9	103.9	.
Capital intensity of production[d] (PLN/PLN)	0.64	0.62	0.66	0.65	0.68	0.80
Resources/production (PLN/PLN)	1.30	1.33	1.33	1.27	1.31	1.42

[a] applies to large and medium enterprises, [b] assets increased by three times labour cost per year, [c] estimate, [d] the ratio of the value of fixed and current assets to the value of sold production at the basic prices

Source: own elaboration based on the CSO data.

The increasing involvement of production factors results not only in capital--labour ratio growth (by 8% per year), but also in increased capital intensity (by about 4.5%) or resources per unit of production (by 2% per year).

8.6. Productivity and efficiency of the sector

Bread production is a labour-intensive branch of the food industry, thus its productivity is low. It amounts to PLN 150 thousand (Table 8.6) and is more than three times lower than the average for the food industry. In recent years, it has grown by 4.5% per year (at constant prices), i.e. slightly slower than in the whole food industry. At the same time, there was a fall in asset and resource productivity, but slower than labour productivity growth. The average remuneration grew slower than labour productivity, but the rate of pay for labour productivity growth with average remuneration growth was high, i.e. 75%. Still, the average remuneration in the bakery industry is by 29% lower than in the whole food industry.

Table 8.6. Productivity and efficiency of the bakery industry

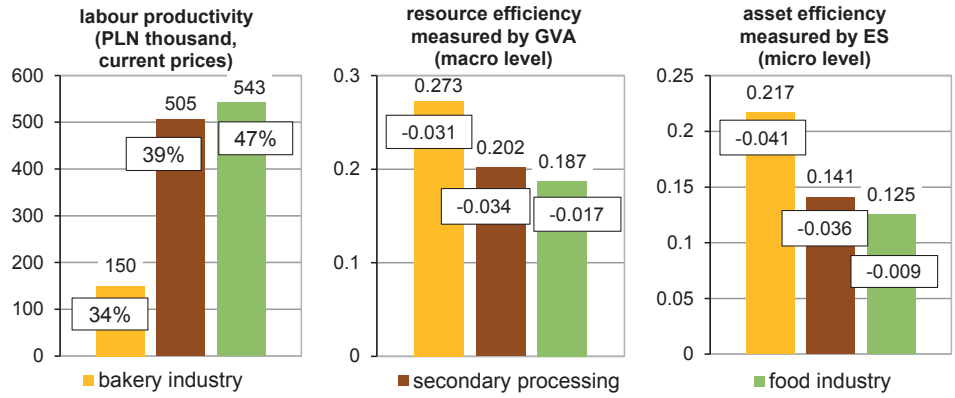
Specification	2008	2009	2010	2011	2012	2013
Labour productivity (PLN thousand)						
– at current prices[a]	112.7	110.0	115.4	130.9	141.5	150.8
– at constant prices	121.1	119.0	124.8	134.4	142.3	150.8
– in large and medium companies, current prices	127.4	124.8	134.1	149.8	161.5	167.1
Productivity (PLN/PLN) of:						
– fixed assets[b]	1.67	1.66	1.52	1.48	1.55	.
– resources[c]	0.77	0.75	0.75	0.79	0.76	0.71
Efficiency measured by GVA[c] (PLN/PLN) of:						
– labour inputs	1.79	1.74	1.76	1.73	1.72	1.89
– assets	0.619	0.673	0.596	0.551	0.527	0.481
– resources	0.304	0.312	0.296	0.281	0.274	0.273
Efficiency measured by ES[c] (PLN/PLN) of:						
– labour inputs	0.748	0.704	0.724	0.680	0.684	0.856
– assets	0.258	0.273	0.245	0.217	0.210	0.217
– resources	0.127	0.126	0.121	0.111	0.109	0.123

[a] applies to all industrial companies, [b] applies to large and medium companies, [c] in accordance with F-01

Source: own calculations based on unpublished CSO data.

The bakery industry witnessed labour efficiency growth, while asset and resource efficiency fell both at the macro (by GVA) and micro level (by ES). Asset efficiency decreased respectively by 22% and 16%, and resource efficiency – by 10% and 3%, but their level is still by about 75% (assets) or 46% higher than in the whole food industry. In contrast, the efficiency of labour inputs in the bakery industry is by only about 10-15% below the average of the food industry. Similar differences exist between the efficiency of the bakery industry and secondary processing (Figure 8.1).

Figure 8.1. Comparison of selected indicators for the bakery industry, secondary processing and the food industry (as on 2013 and the change after 2008)



Source: own calculations based on published and unpublished CSO data.

8.7. Financial performance and standing

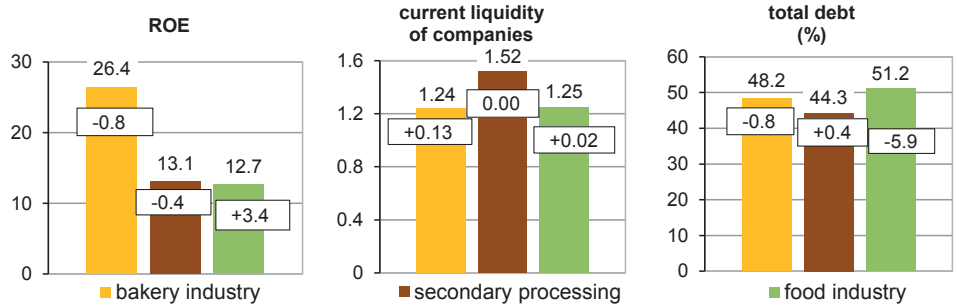
The bakery industry enjoys high returns, as well as stable and secure financial standing. The average (net) return on sales is over 7%, which is almost twice higher than the average for the food industry. This also applies to return on equity, which is about 25% on average in the bakery industry and, throughout the last five years, has been 4-5 times higher than profits from other safe capital investments (deposits or bonds). During this period, the amount of net profit and the value of equity almost doubled. Current liquidity remains at a fairly safe level, while total debt is relatively low. Foreign capital finances a little less than 50% of company assets and own funds in the market – about 20% of current assets. It is also important that over 85% of companies achieve good results and their share in the sector's turnover exceeds 90% (92.4% in 2013). Thus, high returns and secure financial standing are phenomena that do not pose a threat to the continuation and development of activities carried out by most industrial companies producing fresh bread and pastry goods.

Table 8.7. Net income, returns and financial standing of bread producers

Specification	2008	2009	2010	2011	2012	2013
Net profit (PLN million)	398	461	466	395	489	738
Return on sales (%)	7.21	8.66	7.91	5.98	6.74	9.25
ROE	27.2	29.2	25.7	20.9	23.7	26.4
Equity (PLN billion)	1.46	1.58	1.81	1.89	2.06	2.80
Liabilities (PLN billion)	1.40	1.15	1.51	1.75	2.15	2.61
Current liquidity	1.11	1.42	1.30	1.25	1.21	1.24
Total debt (%)	49.0	42.1	45.5	48.1	51.1	48.2

Source: own calculations in accordance with unpublished CSO data.

Figure 8.2. Financial indicators for the bakery industry, secondary processing and the food industry (as on 2013 and changes after 2008)



Source: own calculations in accordance with unpublished CSO data.

8.8. Business breakdown structure

The bakery industry is one of the branches of the food industry with the lowest concentration. The sector includes almost 6 thousand bakeries and 3,150 cake shops in operation[29] and about 3 thousand active industrial companies (Table 8.8). Furthermore, Eurostat data show almost 3 thousand micro companies engaged in bakery production. This represents 50% of all industrial companies and micro companies operating in the food industry. The situation is similar in many other EU Member States, such as Italy, France and Germany. The number of industrial companies producing bread is quite stable, but the number of large companies (with at least 250 employees) doubled, while that of micro companies continues to fall (from about 4,150 in 2000 to 2,600 in 2008 and 2,950 in 2012).

Table 8.8. Industrial companies producing fresh bread (PKD 10.71)

Specification	2008	2009	2010	2011	2012	2013
Number of industrial companies	3,183	2,954	3,262	2,925	2,806	3,081
including: large companies	13	18	20	19	19	26
Share of large companies in (%):						
– employment	6.5	8.0	8.9	9.2	9.5	12.4
– production	11.1	13.6	15.2	17.5	19.5	.

Source: unpublished CSO data and own calculations.

Production concentration in the bakery industry is low, as evidenced by the share of large companies in the sector's employment reaching 12.4%, while in the sector's production – still not exceeding 20%. These concentration ratios doubled (since 2008), but their level is more than three times lower than the average for the entire food industry. In 2013, the largest bakery company, listed 975 in the "Lista 2000" ranking of the "Rzeczpospolita" daily[30], achieved sales profit of PLN 278 million, which constitutes only about 2.5% of sold production in the sector.

[29] In accordance with the *Statistical Yearbook of Agriculture 2013*, CSO, Warszawa 2013, p. 340.
[30] Lista 2000 polskich przedsiębiorstw i eksporterów ("Lista 2000" ranking of Polish enterprises and exporters) drawn up by the "Rzeczpospolita" daily, "Rzeczpospolita", 28 October 2014.

8.9. State of the Polish bakery industry against other EU Member States

Poland is the fifth largest bread producer in the European Union with a share of 7.4%. Production of this type of food is at least twice higher in Germany and France and similar in the UK, Italy and Spain. The production of this sector in Poland per capita is by about 30% lower than in Germany and France, slightly lower than in the Netherlands and the EU average, and much higher than in most of the other countries. Furthermore, we are one of the leading European bread producers in terms of labour productivity and the degree of production concentration. Among the countries listed in Table 8.9, only the bakery industry in the UK, Spain and Italy enjoys by about 30% higher labour productivity, which is also high, but to a lesser extent, in the Netherlands and France. Higher turnover per average company was noted only in the UK, Germany and the Netherlands.

Table 8.9. Bakery industry in Poland against other EU Member States in 2012

Member States	Production[a] value (EUR billion)	Share in the EU production (%)	Production[a] value per		
			capita (EUR)	employee (EUR thousand)	company (EUR million)
EU-27	**77.70**	**100.0**	**155.6**	**67.2**	**0.56**
EU-15	**65.14**	**83.8**	**163.6**	**70.7**	**0.54**
Germany	18.26	23.5	224.0	51.1	1.35
France	14.33	18.4	225.1	77.5	0.35
UK	6.88	8.9	108.6	98.8	3.27
Italy	6.79	8.7	113.8	92.1	0.23
Spain	5.22	6.7	110.2	88.9	0.52
Netherlands	2.73[b]	3.5	162.8	78.8	1.15
EU-12	**12.56**	**16.2**	**124.6**	**54.9**	**0.74**
Poland	5.74	7.4	149.1	72.6	0.99
Romania	2.06	2.7	109.2	33.7	0.51
Czech Republic	1.14[b]	1.5	107.5	.	.
Hungary	0.92	1.2	92.3	40.0	0.65
Bulgaria	0.80	1.0	109.7	36.1	0.31
Slovakia	0.59	0.8	109.3	49.7	0.61

[a] at comparable prices, i.e. current prices adjusted by the purchasing power parity, [b] estimate based on 2010 data

Source: calculations by M. Tereszczuk based on Eurostat data.

Poland was one of the EU Member States with the highest growth rate of production in this sector: in 2000-2012, it increased in the EU-15 by 30%, including in France – by 50%, and in Poland – by more than twice. This means that the Polish bakery industry strengthened its position in the European Union.

8.10. Conclusions

The bakery industry operates under the conditions of decreasing demand for fresh bread, slowly growing bread producer prices, large fluctuations in raw material prices, as well as shrinking processing margins and growing trade margins. This sector

is oriented towards domestic consumers, though demand of exporters is rapidly increasing, but the measures of the competitive position and the internationalisation of businesses are very low in the sector.

Adaptation processes of bread producers to difficult market conditions consisted in increasing the share of industrial companies in bread production. This required focusing the efforts of these companies on competing with local bakeries and retail chains, mainly by means of product range and prices.

The bakery industry achieved good economic performance. Despite shrinking processing margins, high returns of the sector were maintained, just as a large and stable share of the value added and the operating surplus in producer prices. This required making cost-effective use of production instruments (materials, raw materials, energy, services and labour). There was a further increase in labour productivity, however, accompanied by increased remunerations and capital-labour ratio growth.

9. Confectionery industry[31]

9.1. Domestic demand

In accordance with research by M. Kwasek, the income elasticity of demand for confectionery is still relatively high, as average rates are as follows: pastry goods – 0.383, confectionery – 0.349, and in the lowest income group – 1.177 and 1.072[32], respectively. This means that a 1% increase in the average income boosts demand by almost 0.4%, and in the lowest income groups – by over 1%. This relationship is evidenced by the calculation of domestic use (Table 9.1), indicating that total domestic demand for pastries and sweets (with and without cocoa) was by about 16% higher in 2013 than in 2008. However, the domestic use of cocoa-free confectionery showed a steady upward trend (by almost 50%), while the use of pastries and chocolate products, following temporary declines in 2009-2011, increased by about 11-14% at that time.

Table 9.1. Domestic consumption and use of confectionery

Specification	2008	2009	2010	2011	2012	2013
Domestic use[a] (thousand tonnes)						
– pastries	477.1	537.1	516.9	503.5	581.8	546.1
– chocolate and other products	288.7	272.5	228.7	275.3	289.5	321.2
– cocoa-free products	65.8	69.6	85.6	93.2	93.0	97.4
Household use[b] (kg per capita monthly)						
– pastry goods	0.66	0.65	0.65	0.63	0.62	.
– chocolate	0.09	0.09	0.09	0.09	0.09	0.15
– other confectionery	0.25	0.25	0.25	0.25	0.23	0.23
Supplies to the market[c] (thousand tonnes)						
– chocolate and chocolate products	238	214	184	188	215	213
– candies	23.3	18.7	35.0	35.0	29.6	26.0

[a] calculation: production + imports – exports, [b] in accordance with the CSO household budget surveys, [c] in accordance with the CSO data published in: *Internal Market* and "Statistical Bulletins"

Source: the CSO data and own calculations.

Upward trends in demand for these products are proven neither by surveys on the household consumption of confectionery, nor information on supplies to the domestic market. These data indicate that only demand for chocolate has increased in recent years, while demand for other confectionery has been stable or even decreasing. However, the CSO data unfortunately do not take account of many new ranges of confectionery that changed the structure of supply and demand for these products.

[31] It was assumed that this industry includes the production of rusks and biscuits (10.72) and the production of cocoa, chocolate and sugar confectionary (10.82).
[32] Cf. *Popyt na żywność*, [in:] *Analiza*..., op. cit., p. 248.

Nielsen[33] takes a similar view of demand for confectionery, noting that the sweets market is growing by 3-5% per year and its value exceeds PLN 6 billion; chocolate, pralines and jelly products take the greatest share in the structure of demand. The consumption of sweets in Poland is still more than twice lower than in Germany, the UK and Switzerland, which indicates the great development potential of this market.

9.2. Foreign trade

Despite increasing domestic demand, exports were the main driver of the sector's growth. Over the last five years, exports of all products in the sector have grown in volume from 300 to about 500 thousand tonnes (by 67%) and in value – from less than EUR 1 billion to over EUR 1.8 billion (i.e. by 90%), while net exports – from EUR 330 million to EUR 859 million, i.e. by 160% (cf. Table 9.2). Exports of chocolate products grew particularly rapidly. Their volume was more than twice higher in 2013 than in 2008, while value saw a 2.5-fold increase. The trade balance increased from EUR 185 million to over EUR 600 million. Exports of pastries grew much slower, while the lowest growth rate was reported for exports of other sweets. Their volumes increased respectively by 43% and 11%, while export values – by 46% and 26%. At the same time, the balance of trade in bread rose from EUR 230 million to EUR 330 million, while in other sweets – reached a relatively stable level, i.e. about EUR 100 million. Thus, the period concerned witnessed mainly growth in exports of confectionery based on imported cocoa beans, whose purchase increased by only about 10%, i.e. 23.5% in terms of value. Much faster growth in exports of these products indicates that it was achieved thanks to the efficient use of imported raw materials and their effective use in products together with domestic raw materials (sugar and flour).

Differences in the foreign trade development of three confectionery groups are evidenced by the measures of the competitive position and internationalisation. Over the past five years, all these measures have significantly improved in the branch of the sector dealing with the production of and trade in cocoa products. The ratio of the value of exports to imports and production to domestic use increased by 2/3 and 1/5, the share of exports in production – from 35% to 57%, while imports in domestic use – from 26% to 40%. The measures of the competitive position of producers of pastries and cocoa-free confectionery remain very high, the export value of pastries is still more than three times higher than their import value, while self-sufficiency rates fluctuated from 115% to 120%. However, the share of their exports in production is still relatively low, while the share of their imports in use – very low. However, the branch dealing with other sweets witnessed a decline in most of these measures, but they are still high, as over 50% of production is intended for foreign markets and the ratio of imports to domestic use is at a similar level.

[33] K. Kucharczyk, *Słodycze mały wzrost (Sweets: Slight Growth)*, "Rzeczpospolita", 22 February 2012; K. Kucharczyk, *Ostra walka na rynku słodyczy (Fierce Fight in the Sweet Market)*, "Rzeczpospolita", 14 October 2013; K. Kucharczyk, *Firmy cukiernicze walczą o klientów (Confectionery Companies Fighting for Customers)*, "Rzeczpospolita", 14 April 2014.

Table 9.2. Foreign trade in confectionery

Specification	2008	2009	2010	2011	2012	2013
Exports (thousand tonnes)						
– pastries	121.6	121.3	125.2	133.0	155.5	174.4
– chocolate and cocoa products	118.6	128.5	163.5	195.4	221.7	258.6
– other confectionery	55.3	54.3	50.7	51.5	54.9	61.5
Imports (thousand tonnes)						
– pastries	29.9	36.9	40.2	37.5	44.4	51.2
– chocolate and cocoa products	74.2	76.4	91.9	103.2	110.5	127.3
– other confectionery	32.3	35.6	40.5	45.8	45.5	46.0
– cocoa[a]	87.0	86.9	98.8	98.4	95.0	96.9
Export value[a] (EUR million)	958.7	1,014.5	1,192.1	1,352.7	1,491.4	1,818.3
including:						
– pastries	312.6	300.8	321.0	343.3	363.7	457.7
– chocolate and cocoa products	431.7	512.4	673.1	788.9	872.3	1,067.0
– other confectionery	182.6	170.3	161.8	162.9	196.3	230.2
Import value[a] (EUR million)	628.1	621.7	797.2	864.0	868.5	959.2
– pastries	83.2	88.1	97.1	93.8	113.5	127.3
– chocolate and cocoa products	246.5	234.8	299.6	339.8	364.7	433.9
– other confectionery	89.2	93.6	106.9	121.2	127.2	139.9
– cocoa[a]	209.2	205.2	293.6	309.2	263.1	258.1
Trade balance (EUR million)	330.6	392.8	394.9	488.7	622.9	859.1
including: except for bread	101.2	180.1	171.0	239.2	372.7	528.7
Export-import coverage indicator (%)	152.6	163.2	149.5	156.6	171.7	189.6
including:	375.7	341.4	330.9	366.9	320.4	359.5
– pastries						
– chocolate and cocoa products	101.7	123.5	119.8	130.4	148.4	163.4
– other confectionery	204.7	181.8	151.4	134.4	154.3	164.5
Self-sufficiency indicator[b] (%)						
– pastries	119.2	115.7	116.2	118.5	114.9	118.8
– chocolate and cocoa products	115.4	119.1	131.3	133.5	138.4	140.9
– other confectionery	134.9	126.8	111.9	106.2	110.1	115.9
Share of exports in production[b] (%)						
– pastries	21.4	19.5	20.8	22.3	23.3	26.9
– chocolate and cocoa products	35.0	39.6	54.4	53.2	55.3	57.1
– other confectionery	62.3	61.5	52.9	52.0	53.6	54.5
Share of imports in domestic use[b]						
– pastries	6.3	6.9	7.8	7.4	7.6	9.4
– chocolate and cocoa products	25.7	28.0	40.2	37.5	38.6	39.6
– other confectionery	58.4	51.1	47.3	49.1	48.9	47.2

[a] including the value of trade in cocoa beans, [b] in quantitative terms

Source: data from the Ministry of Finance and the CSO and own calculations.

9.3. Supply of raw materials and prices

The supply of raw materials used in confectionery production (Table 9.3) trends slightly upwards. Hence, flour production was by about 6.5% higher in 2013 than in 2008, while cocoa imports increased by just over 10% at that time. Sugar production grew significantly, following a temporary decline in this regard in 2008-2010. However, its level has been stable for the last three years at about 1.9-2.0 million tonnes. It can, therefore, be said that opportunities for purchasing raw materials were not a barrier to the development of the confectionery industry, but price conditions highly varied.

Prices of sugar and cocoa beans ranged from -18% to +48% throughout the period at issue and remained at a relatively high level: cocoa imports – over EUR 2.5 thousand per tonne, and sugar imports – over EUR 500 per tonne.

Table 9.3. Resources of raw materials used in confectionery production (thousand tonnes)

Specification	2008	2009	2010	2011	2012	2013
Flour production	2,316.7	2,401.8	2,437.3	2,426.8	2,438.4	2,467.0
Sugar production	1,397.4	1,514.7	1,578.7	1,943.2	1,996.2	1,952.1
Cocoa imports[a]	86.6	79.4	88.1	94.5	93.4	96.6

[a] in the form of beans, paste, butter and powder, without shells and waste

Source: own elaboration based on data from the CSO and the Ministry of Finance.

The effects of volatile and high raw material prices were offset by a constant and significant increase in confectionery prices. Over the last five years, producer prices of other food products, whose main element was confectionery (besides food concentrates), have grown by 19%, i.e. more than inflation, while prices of confectionery have gone relatively higher, growing more at the level of producers than retail prices (Table 9.4), thus being one of a few food groups witnessing an increase in processing margins and a relative drop in trade margins.

Table 9.4. Prices of confectionery (changes in %)

Specification	2008	2009	2010	2011	2012	2013
Inflation	9.2	3.5	2.6	4.3	3.7	0.9
Retail prices of sugar and confectionery	0.1	6.5	-1.0	14.3	3.0	-1.7
including: – confectionery	5.3	3.0	2.5	3.4	4.4	0.7
– sugar	-9.3	14.9	-10.7	48.2	-1.6	-8.3
Sales prices of sugar	-11.5	15.8	-13.1	45.8	4.0	-10.1
FAO sugar price index	27.0	41.7	17.4	22.2	-17.3	-17.9
Prices of imported cocoa beans	18.5	6.8	20.8	4.2	-10.6	-4.1
Sales prices of other food products[a]	3.5	4.5	2.0	4.1	4.3	2.9

[a] except for sugar, but including processed coffee and tea products and food concentrates

Source: own elaboration based on data from the CSO, the FAO and the Ministry of Finance.

Increased domestic demand and exports, no raw material barriers and producer price rises were a combination of factors promoting the development of confectionery production. Market conditions for carrying out this activity were not as hard as in our economy as a whole and most of other food production branches.

9.4. Production of the confectionery industry

Over the past five years, the confectionery processing industry has continued to rapidly trend upwards. The period brought the fastest growth in the production of chocolate and chocolate products, which was by about 28% higher in 2013 than in 2008. There was a 27% increase in the production of candies and other sweets, and

a 14% increase in the production of pastries, including durable pastries – only by 6% (Table 9.5). The production value of the confectionery industry (PKD 10.72 and 10.82) increased by about 60% at current prices; however, it grew slower in large and medium companies (by 52.5%) or those submitting financial statements (by 51%). At constant prices, the sold production of the sector was by 37% higher in 2013 than in 2008, with the largest increase in 2011 (by 29% at constant prices) and falls in 2010 and 2013. Thus, the sector grew fast, but its development was quite unstable, which was largely due to high volatility in raw material prices.

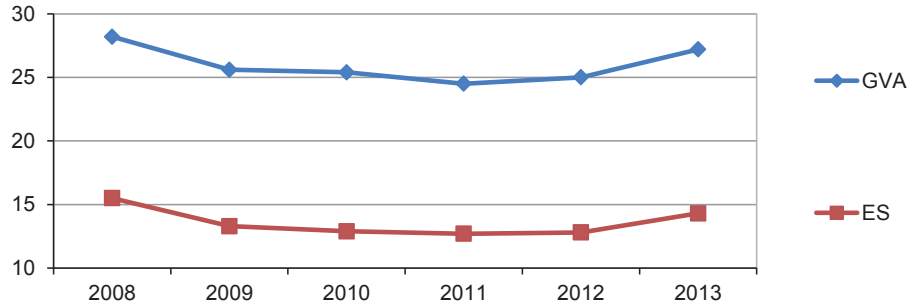
Table 9.5. Production of confectionery

Specification	2008	2009	2010	2011	2012	2013
Pastries (thousand tonnes)	568.8	621.5	600.5	596.5	668.5	648.8
including: durable pastries	378.3	430.9	394.9	388.0	400.5	400.8
Chocolate and other sweets	464.0	458.3	461.6	528.2	571.5	639.9
including: – chocolate and other products[a]	333.1	311.2	300.3	367.5	400.7	425.5
– candies and other products[a]	88.8	88.3	95.0	98.9	102.4	112.9
Value of sold production (PLN billion)	7.65	8.62	8.38	11.25	12.58	12.50[b]
including: large and medium companies	7.87	8.17	7.94	10.82	12.10	12.00[b]
in accordance with F-01	8.84	8.85	8.69	12.03	13.42	13.36
Changes in production value at constant prices[c] (%)	-0.7	7.9	-4.8	29.1	7.2	-3.5
Gross value added[d] (GVA) (PLN billion)	2.49	2.27	2.21	2.95	3.36	3.63
Economic surplus[d] (ES) (PLN million)	1,307	1,175	1,120	1,525	1,721	1,914

[a] except for semi-finished products, [b] estimate based on F-01, [c] calculated according to processor sales price indices in group 10.8, [d] in accordance with F-01

Source: unpublished CSO data and own calculations.

Figure 9.1. Share of the gross value added (GVA) and the economic surplus (ES) in the basic price (%)



Source: own calculations based on the CSO data (F-01).

The development of the sector is also characterised by an increase in business performance, with both the gross value added (GVA) and the economic surplus (ES) as measures thereof. Their value at current prices grew by almost 50% each. In 2013, the share of this performance in the basic price (sold production), following a temporary decline by 1/4, was similar to that of 2008 (Figure 9.1).

9.5. Resources of production factors

The state of labour resources in the confectionery industry is quite stable, while the sector grows as a result of an increase in fixed assets, which is almost twice faster than production growth (Table 9.6). In 2013, the value of fixed assets of confectionery companies was two times higher than in 2008 which, given the increasing value of current assets and labour cost (by about 44% each), led to an increase in the value of the total resources of production factors by almost 70%. Subsequently, there was a rapid increase in the capital-labour ratio and the capital intensity of production, which rose significantly (by 2-3% per year).

At the same time, investment activity of undertakings in the sector dropped. Investments in the confectionery industry decreased by almost 1/3 and, for a few years, have remained at about PLN 550 million per year, while the rate of investment fell to a very low level, i.e. about 6% of the value of fixed assets. The sector is characterised by increases in the value of fixed assets exceeding capital expenditure (since 2011), which may mean that renovations or takeovers were also an important source of growth in fixed assets.

Table 9.6. Resources of production factors in the confectionery industry

Specification	2008	2009	2010	2011	2012	2013
Employment (thousand employees)	28.73	28.16	26.30	28.71	30.37	28.76
including: large and medium companies	26.3	24.9	23.2	25.9	27.6	26.8[a]
in accordance with F-01	27.11	25.45	23.59	26.63	28.56	27.77
Initial value of fixed assets[b] (PLN billion)	5.04	5.13	5.48	7.13	8.54	.
Value of assets[c] (PLN billion)	8.29	8.27	8.33	13.01	13.88	14.76
including: fixed assets	4.93	4.69	4.80	8.34	8.87	9.92
Labour cost[c] (PLN million)	1,116	1,044	1,045	1,372	1,568	1,593
Total resources[c] (PLN billion)	11.64	11.40	11.45	17.13	18.58	19.54
Investments[c] (PLN million)	722	789	553	531	566	545
% of fixed assets	14.3	15.4	10.1	7.4	6.6	6.0[a]
Capital-labour ratio[b] (PLN thousand)	192.0	206.0	236.2	275.3	309.4	360.0[a]
Capital intensity of production[c d] (PLN/PLN)	0.94	0.93	0.96	1.08	1.03	1.10
Resources/production[c] (PLN/PLN)	1.32	1.29	1.32	1.42	1.38	1.46

[a] estimate, [b] large and medium companies, [c] in accordance with F-01, [d] the ratio of the value of fixed and current assets to the value of sold production at the basic prices

Source: own elaboration based on the CSO data.

These phenomena indicate that the confectionery industry is a sector, in which the substitution of human labour by objectified labour progressed quickly, suggesting a high level of innovation of the sector, thus strengthening its competitive position in foreign markets. This results in a rapid increase in exports of confectionery.

9.6. Productivity and efficiency of the sector

Labour productivity in the confectionery industry continues to increase steadily (Table 9.7) by almost 7% per year, including by 5.1% in the production of durable pastries and by 7.5% per year in the production of sweets. This growth rate was about 1/3

higher than in the entire food industry, as opposed to labour productivity remaining at a lower level. However, this refers mainly to the production of pastries (Figure 9.2). Labour productivity growth was twice higher than an increase in the average remuneration, thus the rate of pay for labour productivity growth with average remuneration growth was relatively high (50%). At the same time, there was a drop in asset and resource productivity (by 10-15%), which was several times smaller than labour productivity growth.

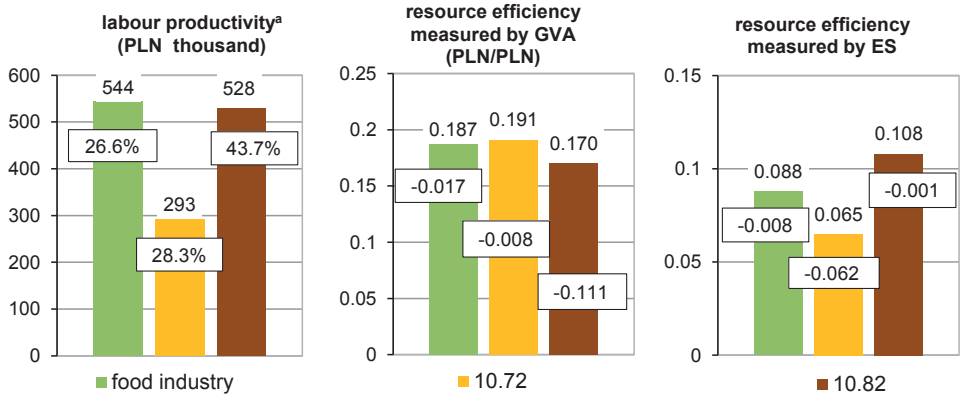
Table 9.7. Productivity and efficiency of the confectionery industry

Specification	2008	2009	2010	2011	2012	2013
Labour productivity (PLN thousand per capita)						
– at current prices[a]	266.3	306.1	318.6	391.8	414.2	440.8
– at constant prices[a]	317.1	349.1	355.9	420.8	426.4	440.8
– in large and medium companies, current prices[b]	299.2	304.7	342.2	418.8	438.4	.
Productivity (PLN/PLN) of:						
– fixed assets[b]	1.56	1.59	1.45	1.52	1.42	.
– assets[c]	1.07	1.07	1.04	0.92	0.97	0.91
– resources[c]	0.76	0.78	0.76	0.70	0.72	0.68
Efficiency measured by GVA[c] (PLN/PLN) of:						
– labour cost	2.230	2.174	2.115	2.150	2.143	2.279
– assets	0.300	0.274	0.265	0.227	0.242	0.246
– resources	0.214	0.199	0.193	0.172	0.181	0.186
Efficiency measured by ES[c] (PLN/PLN) of:						
– labour cost	1.171	1.125	1.072	1.112	1.098	1.202
– assets	0.158	0.142	0.134	0.117	0.124	0.130
– resources	0.112	0.103	0.098	0.089	0.093	0.098

[a] applies to all industrial companies, [b] applies to large and medium enterprises, [c] in accordance with F-01

Source: own calculations based on the CSO data.

Figure 9.2. Comparison of labour productivity and the efficiency of production of pastries (PKD 10.72) and other confectionery (PKD 10.82) with the results of the food industry as a whole (as on 2013 and changes after 2008)



[a] change in labour productivity at constant prices

Source: own calculations based on published and unpublished CSO data.

The efficiency of labour inputs was fairly stable both at the macro (by GVA) and micro level (ES), but asset and resource efficiency decreased significantly, i.e. by about 20% and 15%, respectively. Nevertheless, their level in the confectionery industry is close to the average for the whole food industry; however, efficiency measured by GVA is slightly higher in the production of pastries and, at the micro level, in the production of chocolate products. It can, therefore, be concluded that the substitution of human labour by objectified labour ongoing in this sector leads to a reduction in the efficiency of the total resources of production factors, but their level is still relatively high, close to the average rates for the whole food industry.

9.7. Financial performance and standing of enterprises

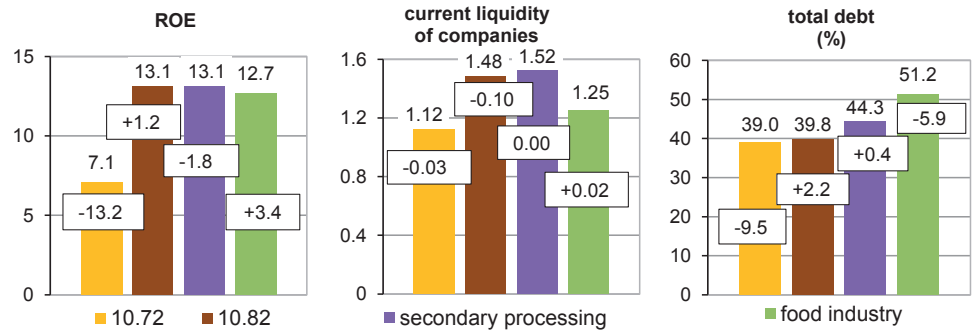
Confectionery producers show a sustained ability to generate profits (Table 9.8). Although their financial performance amounted to about PLN 550 million per year in 2009-2011, it was by over 40% higher in 2013 than in 2008. Return on sales is higher than the average for the food industry, ROE – lower than the level achieved by many other food production branches, but 2-3 times higher than returns on other safe capital investments (bonds or deposits). Confectionery producers (PKD 10.82) achieve better performance than durable pastry producers (PKD 10.72, Figure 9.3).

Table 9.8. Financial performance and standing of confectionery enterprises

Specification	2008	2009	2010	2011	2012	2013
Net profit (PLN million)	649	534	594	558	690	918
Net return on sales (%)	6.67	5.56	6.36	4.09	4.56	6.02
ROE (%)	12.8	6.6	11.2	7.5	8.2	10.3
Equity (PLN billion)	5.05	6.23	5.28	7.43	8.37	8.92
Liabilities (PLN billion)	3.24	4.53	3.05	5.57	5.51	5.84
Total debt (%)	39.1	42.1	36.6	42.8	39.7	39.6
Current liquidity	1.50	1.69	1.66	1.68	1.66	1.40

Source: own calculations based on the CSO data (F-01).

Figure 9.3. Financial indicators of companies producing durable pastries (PKD 10.72) and chocolate products and other sweets (PKD 10.82) against secondary processing (as on 2013 and changes in 2008-2013)



Source: own calculations in accordance with unpublished CSO data.

Furthermore, the financial condition of the sector is also safe. Its current liquidity exceeds the level required by financial institutions, although its measure dropped significantly in 2013 (from 1.66 to 1.40). This is mainly due to the low liquidity of pastry producers (1.12). The total debt of companies remains at a low level, as it does not exceed 40% in the confectionery industry and is lower than in the whole food industry and in other secondary processing branches.

9.8. Business breakdown structure

Recently, the number of industrial companies in the confectionery industry has been fairly stable. Although the number of industrial enterprises producing durable pastries dropped (Table 9.9), the number of large and medium companies in both these branches remained the same. In the confectionery sector, there was a rapid decrease in the number of micro companies and small industrial companies (from about 1,100 in 2000 to 780 in 2008 and less than 500 in 2012).

Table 9.9. Industrial enterprises producing confectionery (PKD 10.72 and 10.82)

Specification	2008	2009	2010	2011	2012	2013
1. Number of industrial companies producing:						
durable pastry (10.72)	135	132	126	117	112	102
including: large companies	.	9	9	8	8	9
chocolate and other sweets (10.82)	123	118	114	117	118	121
including: large companies	18	20	19	19	18	18
2. Share of large companies in employment in the sector (%)						
producing durable pastry	.	44.1	45.2	43.2	51.0	55.0
producing chocolate and other sweets	64.6	65.6	67.4	69.9	68.5	68.1
3. Share of large companies in the production (%) of:						
durable pastry	64.6	67.5	65.6	67.5	74.6	.
chocolate and other sweets	76.8	76.2	77.4	81.6	78.0	.

Source: unpublished CSO data.

The degree of concentration is stable in the group of sweet producers, as the share of large companies in employment in this branch of the sector has been below 70% for several years, while in turnover – almost 80%. The production of durable pastries is less concentrated, but the level of both concentration ratios in this branch of the sector has increased steadily over five years by about 10 pp each.

The confectionery industry is much more concentrated than most other food industry sectors. Only sugar, tobacco, brewing and oil-mill industries are better in this regard. The share of the three largest companies in the sector's turnover in these branches usually exceeds 70-80%, while in the confectionery industry – only 37% (Ferrero, Colian and Wawel together).

9.9. Polish confectionery industry against other EU Member States

Poland is the sixth largest producer of confectionery in the EU with a share of 8.8%. The production value of this sector is almost twice lower than in the countries of the two largest producers in this field, but the gap is not so great between Poland and

the third – fifth largest producer in the EU, as it amounts to 10-24%. The advantage over subsequent producers is already significant (Table 9.10). Confectionery production per capita in Poland is higher than the EU average and much lower than the level achieved only in Belgium and Italy. It is important that Poland strengthens its position among confectionery producers in the EU, as the nominal value of their production in Poland in 2000-2012 increased more than twice (136%) and doubled in Bulgaria, Romania and Spain. In the EU as a whole, it rose by 26% on average, while in the EU-15 – by 21%.

Table 9.10. Confectionery industry in Poland and the European Union

Specification	Production[a] value			Labour[a] productivity (EUR thousand)	Turnover[a] per company (EUR million)
	EUR billion	EU share = 100	EUR per capita		
EU-27	**65.19**	**100.0**	**130.4**	**207.7**	**5.64**
EU-15	**54.97**	**84.3**	**138.1**	**223.5**	**6.12**
Germany	11.26	17.3	138.0	227.5	22.30
Italy	10.03	15.4	168.1	285.8	0.34
France	7.52	11.5	118.1	230.0	0.19
UK	6.89	10.6	108.8	146.0	12.28
Spain	6.33	9.7	133.7	231.9	0.64
Belgium	4.85	7.4	421.7	412.8	9.57
EU-12	**10.22**	**15.7**	**101.4**	**150.4**	**3.97**
Poland	5.71	8.8	148.3	182.0	9.71
Bulgaria	0.98	1.5	134.4	122.0	3.67
Czech Republic	0.85	1.3	80.2	.	.
Romania	0.84	1.3	44.5	80.5	1.69
Hungary	0.73	1.1	81.4	113.0	1.74

[a] at comparable prices, i.e. at current prices adjusted by the purchasing power parity

Source: Eurostat data and own calculations.

The efficiency of the sector with labour productivity as a measure thereof is still nearly by about 20% lower in Poland than the average for the "old" EU. In particular, confectionery producers from Belgium and Italy have greater advantage in this respect. In terms of turnover per company, the level of concentration of the sector in Poland is higher than in most of the EU Member States and the EU-15 average, similar to the level in Belgium and smaller only than the one in Germany and the UK.

9.10. Conclusions

Also in recent years, the confectionery industry has been one of the fastest growing branches of the Polish food industry. Its growth was driven not only by rapidly increasing exports, but also an increase in demand in the domestic market, which is likely to further follow a rapid upwards trend.

The measures of competitive positions indicate that the sector continues to strengthen its position and develop links with foreign markets and the degree of internationalisation of businesses. The production of chocolate and confectionery containing

cocoa is distinctive in this respect, which is another example of the development of food production based on imported raw materials, whose exports more than cover expenditure on imports of raw materials.

Production growth was achieved in the context of the rapidly increasing value of fixed assets and the capital-labour ratio, which enabled a large increase in labour productivity. At the same time, companies in the sector invested cautiously and used labour cost efficiently. The rate of pay for labour productivity growth with average remuneration growth was only 50%. An increase in resources contributed to a reduction in their efficiency, but its level is still high, similar to the one in the entire food industry. Financial performance is higher than the average, as return on sales and equity in the sector was higher (by 1/2 on average) than the average of the food industry.

The sector developed under the conditions of high volatility and high prices of the main raw materials (sugar and cocoa beans). In this situation, maintaining efficiency and returns at a stable and high level proves the concentrated efforts of companies to efficiently use not only labour and capital, but also other means of production. This forms a solid basis for maintaining the high competitiveness of the sector, its further development and demonstrates the ability to adapt own activity to the changing market environment.

10. Feed industry[34]

10.1. Domestic demand

This branch of the food industry is fundamentally different from the others, as its final products include complete feed, concentrates, premixes, etc., which are not consumed directly by humans, but rather used indirectly in feeding of animals, in order to obtain raw materials and products to meet food needs of humans. The agricultural sector is the main recipient of industrial feed, specifically its livestock production branch. Demand for ready-made industrial feed is primarily due to the direction, scale and intensity of livestock production. Domestic demand for industrial feed was estimated based on its use, applying the following formula: production + imports – exports. In this manner, the use of industrial feed was estimated for two animal groups, i.e. livestock (farm animals) and pet animals. The results thereof are presented in Table 10.1.

Table 10.1. Domestic use of industrial feed

Specification	2008	2009	2010	2011	2012	2013
Use of industrial feed (thousand tonnes)	7,519.9	7,665.5	8,305.1	8,200.3	8,884.3	9,027.9
including: livestock feed	7,230.2	7,326.2	7,989.1	7,874.9	8,529.3	8,683.3
pet food	289.7	339.3	316.0	325.4	355.0	344.6

Source: own calculations based on unpublished CSO data on industrial production and data from the Ministry of Finance on foreign trade results.

In the period concerned, the use of industrial feed, i.e. feed for farm animals (PKD 10.91) and pet food (PKD 10.92) increased by 1/5 (from 7.5 to 9.0 million tonnes). Demand of the feed industry for these two products grew similarly, i.e. at 3.7% per year. The increase in the use of industrial feed for livestock is due to the intensive development of livestock production, especially poultry, while that in demand for pet food can mean good prospects for the development of this market segment for its producers.

10.2. Foreign trade in feed

In the analysed period, the value of exports of industrial feed for farm animals and pet food more than doubled from EUR 278 million to EUR 650 million, i.e. 18.5% per year. Imports of feed, mainly feed ingredients (raw materials) grew from EUR 875 million to EUR 1,307 million, i.e. 8.4% per year. A feed trade deficit rose by 1/10 to EUR 658 million. The sector is not self-sufficient, since the production-use ratio is below 100% and ranged from 97.6% to 99.5% in the period under consideration. On the other hand, such a high self-sufficiency ratio, being the feed production-use ratio, results from the fact that we import large volumes of raw materials for feed production, rather than ready-made industrial feed. Having taken account of imports of oilseed meal, the self-sufficiency ratio of the sector falls to 75-80%. In 2008-2013, imports of high-protein oilseed meal ranged from 2.0 million tonnes to 3.5 million tonnes. Without these imports, feed companies would find it difficult to produce the

[34] This industry includes class 10.91 – manufacture of prepared feeds for farm animals, and 10.92 – manufacture of prepared pet foods.

volume of feed, which almost covers domestic demand, as evidenced by a high share of imports in feed use exceeding 40%, while the share of exports in feed production being from two to three times smaller. Furthermore, the strong dependence of the sector on imported feed is confirmed by the export-import coverage ratio of about 40% (in terms of value). The share of the feed industry in exports of food products remains stable at 3-4% (Table 10.2).

Table 10.2. Results of foreign trade in feed

Specification	2008	2009	2010	2011	2012	2013
Value[a] (EUR million)						
exports	278.1	294.6	392.5	433.7	522.2	649.9
imports	875.3	841.6	1,006.5	1,101.9	1,398.5	1,307.4
balance	-597.2	-547.0	-614.0	-668.2	-876.3	-657.5
Volumes[a] (thousand tonnes)						
exports	887.9	1,023.1	1,231.1	1,103.6	1,299.0	1,545.1
imports	2,634.4	2,935.1	3,418.6	3,767.6	4,384.9	3,527.8
balance	-1,746.5	-1,912.0	-2,187.5	-2,664.0	-3,085.9	-1,982.7
Indicators (%)						
– export-import coverage	31.8	35.0	39.0	39.4	37.3	49.7
– self-sufficiency[b]	97.6	99.2	99.5	98.8	99.1	99.3
– self-sufficiency[b, c]	80.8	79.9	79.1	75.3	73.2	81.2
– share of exports in production[b]	12.1	13.4	14.9	13.6	14.8	17.2
– share of imports in use[b]	35.0	38.3	41.2	45.9	49.4	39.1
– share of exports in exports of food products	2.9	3.2	3.5	3.3	3.5	3.9

[a] including cake, bran, meal, by-products of starch production, [b] in quantitative terms, [c] including imported meal

Source: unpublished data from the Ministry of Finance on foreign trade results and own calculations.

10.3. Production of industrial feed

In 2008-2013, the industrial production of feed increased by nearly 1/4, i.e. 7.3-9.0 million tonnes (Table 10.3). Similarly, the production of feed for farm animals grew, while that of pet food rose by half (from 268.6 thousand tonnes to 403.1 thousand tonnes). In this branch, production value grew fastest which, at basic prices, increased from PLN 9.5 billion to PLN 15.2 billion, i.e. by 60%, while at constant prices – by 23% (5.3% per year). The economic surplus (ES) doubled and the gross value added (GVA) rose by 2/3.

Table 10.3. Domestic production of industrial feed

Specification	2008	2009	2010	2011	2012	2013
Industrial production of feed (thousand tonnes)	7,338.3	7,607.1	8,260.4	8,100.5	8,802.0	8,968.9
including: livestock feed	7,069.7	7,287.3	7,906.0	7,738.4	8,408.6	8,565.8
pet food	268.6	319.8	354.4	362.1	393.4	403.1
Value of sold production (PLN billion)	9.5	7.9[a]	10.2	12.3	14.5	15.2[b]
including: large and medium companies	7.7	6.4[a]	8.5	10.1	11.4	12.5[b]
in accordance with F-01	8.8	7.8[a]	10.0	12.0	14.0	14.5
Change in the value of sold production at constant prices[c] (%)	-1.2	-16.1	28.8	3.7	6.5	2.7
Gross value added (GVA)[d] (PLN billion)	1.23	1.25	1.57	1.73	1.78	2.04
Economic surplus (ES)[d] (PLN billion)	0.61	0.70	0.89	1.01	1.03	1.24

[a] decline in production value in 2009 compared to 2008 was due to the smaller study sample, [b] estimate based on F-01, [c] sales price index for industrial feed as a deflator, [d] applies to companies submitting financial statements

Source: own calculations based on the CSO Statistical Yearbooks of Industry 2008-2013 and unpublished CSO data.

10.4. Resources and prices in the feed market

Feed grain and oilseed meal are basic raw materials used in the feed industry. The former comes mainly from domestic harvests, supplemented by imports in the period of poorer grain yields, while high-protein meal (mainly soybean meal) is imported. In the period at issue, the purchase of feed grains rose 2.5-fold from 1.9 to 4.7 million tonnes, while imports of feed, including oilseed meal, increased by 1/3 to 3.5 and 2.7 million tonnes, respectively (Table 10.4). The share of meal in imported feed is at a stable and high level reaching almost 80%. Imported high-protein feed raw materials are supplemented by domestic rapeseed meal (by-product of oil pressing), bran from grain milling and, to a small extent, legume seeds. Pet food is produced using, e.g., animal meal, which must not be used for livestock feeding.

Table 10.4. Supply of raw materials in the feed industry (million tonnes)

Specification	2008	2009	2010	2011	2012	2013
Purchase of feed grain (basic grains including maize)	1.93	2.77	3.90	4.40	5.39	4.73
Imports of feed	2.63	2.94	3.42	3.77	4.38	3.53
including: high-protein feed raw materials (oilseed meal, etc.)	2.01	2.27	2.65	2.95	3.57	2.72
In total	4.56	5.71	7.32	8.17	9.77	8.26

Source: own calculations based on data from the CSO and the Ministry of Finance.

In the period concerned, purchase prices of feed grains and imported soybean meal were highly unstable, changing even by almost 60% year-to-year (Table 10.5). Prices of meal were driven by the world market and the USD exchange rate. Volatility of prices of feed raw materials affected sales prices of ready-made feed and their retail prices which, for most of this period, trended upwards at a faster rate than inflation. The increase in prices of industrial feed was also a result of growing demand of producers of slaughter livestock, especially poultry.

Table 10.5. Changes in feed prices and selected feed raw materials
(% per year)

Specification	2008	2009	2010	2011	2012	2013
Inflation	4.2	3.5	2.6	4.3	3.7	0.9
Sales prices of industrial feed	7.1	-1.2	0.0	16.5	10.3	2.5
including: complete feed mixture for pigs	9.2	-18.2	29.7	33.1	8.7	1.7
complete feed mixture for broilers	14.1	-6.4	-3.4	24.2	7.9	1.2
Retail prices of industrial feed	14.5	-6.0	0.4	22.0	7.6	.
feed for pigs (T-2)	16.4	-11.3	-2.7	35.1	10.0	5.8
feed for broilers (DKA-Starter)	17.2	-4.8	-0.2	21.5	9.5	1.9
Purchase prices of:						
feed wheat	0.0	-30.3	18.7	48.5	6.5	-4.0
feed barley	-6.3	-28.7	15.9	56.7	9.5	6.4
Prices of imported soybean meal[a]	36.0	20.1	-2.8	6.9	6.4	32.0

[a] in marketing years

Source: own calculations and "Rynek pasz. Stan i perspektywy" (Feed Market. Status and Prospects), Nos. 26, 31 and 35, Series "Analizy Rynkowe" (Market Analyses) of 2009, 2012, and 2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa and the CSO Statistical Yearbooks of Agriculture 2011, 2013.

10.5. Resources of production factors

In the analysed period, employment in the feed industry followed an upward trend increasing by 3.1% per year (Table 10.6). However, the book value of fixed assets and company assets grew even faster (fixed assets by 49.4% over 5 years, i.e. by 8.4% per year, while company assets – by 83.5%, i.e. by 12.9% per year). Real growth in these resources is difficult to estimate, as there is no basis for converting book values into constant prices (i.e. at constant prices of "old" fixed assets increased by gains on investments at current prices). In the period under consideration, capital expenditure was between 8.8% and 12.2% of the value of gross fixed assets, which would mean that regenerating the assets takes about 10 years on average.

Table 10.6. Resources of production factors in the feed industry

Specification	2008	2009[a]	2010	2011	2012	2013
Employment (thousand employees)						
industrial companies	9.0	8.2	9.4	9.6	9.7	10.5[b]
including: large and medium companies	6.4	6.0	7.2	7.3	7.4	8.3[b]
in accordance with F-01	8.2	7.7	8.7	9.1	9.0	9.5
Gross fixed assets of large and medium companies (PLN billion)	2.41	1.91	2.84	2.99	3.28	3.60[b]
Company assets in accordance with F-01 (PLN billion)	4.06	4.13	5.66	6.14	7.19	7.45
including: fixed assets	1.79	1.82	2.47	2.65	2.69	3.14
Labour cost (PLN million)	491.5	430.2	526.4	565.8	585.0	617.3
Total resources[c] in accordance with F-01 (PLN billion)	5.53	5.42	7.23	7.84	8.95	9.30
Investments (PLN million)	212.3	214.0	226.3	328.6	400.2	360.8
Capital-labour ratio[d] (PLN thousand per capita)	376.6	318.3	394.4	409.6	443.2	433.7
Capital intensity of production[e] in accordance with F-01 (PLN/PLN)	0.46	0.53	0.54	0.51	0.51	0.51
Total resources/production (PLN/PLN)	0.63	0.69	0.70	0.65	0.64	0.64

[a] lower employment, lower value of fixed assets, company assets or labour cost result from reducing the sample of feed enterprises studied in 2009, as opposed to 2008, [b] estimate, [c] fixed and current assets increased by the value of labour, defined as the equivalent of three times labour cost per year, [d] applies to large and medium enterprises, [e] the ratio of the value of fixed and current assets to the value of sold production at the basic prices

Source: own calculations based on published and unpublished CSO data.

In 2008-2013, capital expenditure in the feed industry rose by 70%, i.e. by 11.2% per year. The capital-labour ratio grew by 15%, which increased the capital intensity of production by 11% (from 0.46 to 0.51). The value of the resources of production factors grew by 68.2%, remaining unchanged per unit of production.

10.6. Productivity and efficiency

Labour productivity in the feed sector is one of the highest ones in the food industry. In 2008-2013, labour productivity in this industry sector increased by 37% (from PLN 1.05 million to PLN 1.45 million per capita), while at constant prices – by 6.7% (Table 10.7). Asset and resource productivity dropped by 6.3% (from 4.93 to 4.62) and by 1.9% (from 1.59 to 1.56), respectively. In 2013, the average monthly remuneration in the feed industry was about PLN 5.2 thousand gross, which is one of the higher in the food industry.

Table 10.7. Productivity and efficiency of industrial feed production

Specification	2008	2009	2010	2011	2012	2013
Labour productivity (PLN thousand)						
– at current prices	1,047.5	957.1	1,093.0	1,289.1	1,489.1	1,454.1[a]
including: large and medium companies	1,207.7	1,058.5	1,181.4	1,384.0	1,537.4	1,494.0
– at constant prices[b]	1,362.8	1,260.5	1,439.5	1,456.7	1,524.8	1,454.1
Productivity of fixed assets[c]	4.93	4.30	4.21	4.54	5.20	4.62
Productivity of resources[d]	1.59	1.45	1.43	1.54	1.56	1.56
Efficiency measured by GVA[d] (macro) of:						
labour inputs	2.10	2.43	2.46	2.54	2.505	2.69
assets	0.304	0.302	0.277	0.282	0.238	0.274
resources	0.223	0.230	0.217	0.221	0.199	0.220
Efficiency measured by ES[d] (micro) of:						
labour inputs	1.04	1.36	1.40	1.48	1.44	1.62
assets	0.150	0.169	0.157	0.164	0.137	0.166
resources	0.110	0.129	0.123	0.129	0.115	0.133

[a] estimate based on F-01, [b] sales price index for industrial feed as a deflator, [c] applies to large and medium companies, [d] in accordance with F-01

Source: own calculations based on published and unpublished CSO data.

In the feed industry, changes in the efficiency of labour inputs, assets and resources measured by the gross value added (GVA) and the economic surplus (ES) followed different patterns, because:

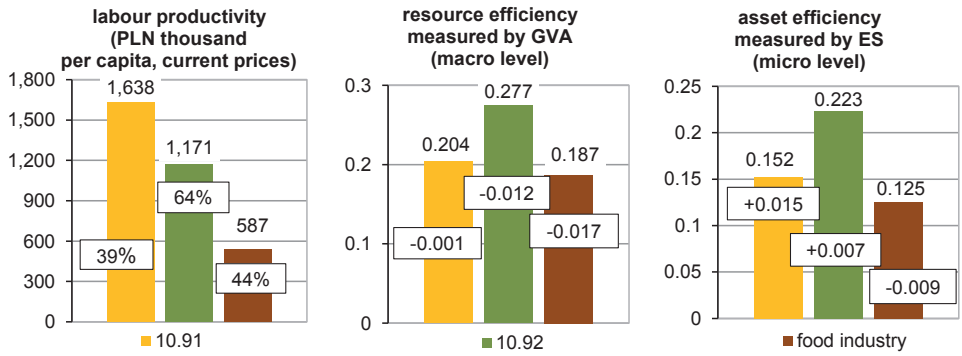
– efficiency of labour inputs rose, i.e. by 28% measured by GVA and by 56% measured by ES,

– efficiency of assets dropped at the macro level and grew at the micro level,

– efficiency of resources remained unchanged measured by GVA and increased by 1/5 measured by ES (from 0.110 to 0.133).

The efficiency of using assets (measured by ES) in the feed industry is higher by 33%, and the resources (measured by GVA) by 18% than the average in the food industry, with more than 2.5 times higher labour productivity.

Figure 10.1. Comparison of selected measures of enterprises producing feed for farm animals (10.91) and producers of pet food (10.92) (as on 2013 and the change after 2008)



Source: own calculations based on unpublished CSO data of the companies that submitted financial statements.

The efficiency indicators analysed differ significantly between both branches of the feed sector. Enterprises producing feed for farm animals enjoy higher labour productivity (by 2/5), while companies producing pet food have higher asset and resource efficiency (by 1/3 and by almost half, respectively) – Figure 10.1.

10.7. Financial performance and standing

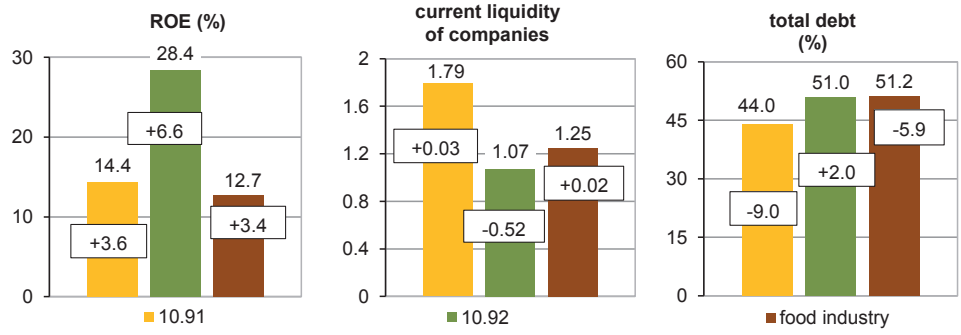
The feed industry is one of the branches of the food industry with average return on sales, i.e. 3-4%, but high return on equity (13-16%), which is 3-4 times higher than profit from safe bank deposits or bonds. In the analysed period, net profit almost tripled, while the value of equity doubled. Current liquidity is at a stable and safe level (1.4-1.7), while own funds in the market almost doubled to PLN 1.6 billion. Total debt decreased by 8 pp to 46% of the total value of assets. Foreign capital finances about 45% of company assets and own funds in the market – about 40% of current assets (Table 10.8). The share of long-term debt in total debt decreased by half (from 40.4% to 21.5%), while short-term debt doubled. It is also important that about 85% of companies perform well and their share in the sector's turnover exceeds 90%. The financial situation of the feed industry is stable and safe, which indicates good prospects for the development of this branch of the food industry, provided that livestock production, especially live poultry and egg production, continues to grow at the same rate.

Table 10.8. Net income, returns and financial standing of industrial feed producers

Specification	2008	2009	2010	2011	2012	2013
Net profit (PLN million)	239.2	312.4	445.5	503.0	509.0	681.7
Return on sales (%)	2.40	3.54	3.63	3.48	2.99	3.82
ROE (%)	12.9	15.7	16.0	16.2	13.1	16.9
Equity (PLN billion)	1.86	2.00	2.79	3.10	3.89	4.04
including: own funds in the market (PLN billion)	0.96	0.94	1.11	1.03	1.65	1.64
Total liabilities (PLN billion)	2.20	2.13	2.86	3.04	3.61	3.40
including: short-term liabilities (PLN billion)	1.31	1.36	2.08	2.46	2.86	2.67
Current liquidity	1.73	1.69	1.53	1.42	1.57	1.62
Total debt (%)	54.0	52.0	51.0	49.0	48.0	46.0

Source: own calculations in accordance with unpublished CSO data.

Figure 10.2. Financial indicators for enterprises producing feed for farm animals (10.91) and producers of pet food (10.92) (as on 2013 and the change after 2008)



Source: own calculations in accordance with unpublished CSO data.

10.8. Business breakdown structure

Polish feed industry is one of the branches of the food industry, whose production is slightly less concentrated than the EU average. Since 2009, the number of industrial companies in Poland has trended upwards and there are currently about 160 feed companies engaged in production (Table 10.9). What is more, Eurostat data show about 240 micro companies involved in feed production. The number of feed companies is similar in the Czech Republic and the UK. Most companies in this sector can be observed in Spain (about 800), as well as in France, Germany and Italy (from 450 to 530).

Table 10.9. Industrial companies producing feed (PKD 10.9)

Specification	2008	2009	2010	2011	2012	2013
Number of industrial companies	152	132	137	141	145	156
including: large companies	5	4	6	6	5	4
Share of large companies in (%):						
– employment	39.4	41.2	45.5	44.5	45.3	43.1
– production	51.4	48.1	66.7	53.4	47.3	.

Source: unpublished CSO data and own calculations.

The share of large companies (with at least 250 employees) in the employment and sold production of the feed industry amounts respectively to about 45% and 50%. In 2013, sales revenues of the largest feed producer in Poland amounted to PLN 4.4 billion, representing about 30% of the sector's revenues[35]. Medium and small enterprises hold half of industrial feed production.

10.9. Strength of Polish industrial feed producers against other EU Member States

Poland is the sixth largest industrial feed producer in the European Union with a share of 8.5%. French and Spanish production is nearly two times higher, that of Germany – by 2.5-fold higher, while the Netherlands and the UK are just ahead of us (Table 10.10). In Poland, the sector's production per capita at comparable prices is one of the highest in the European Union. Only the Netherlands, Spain, France, the Czech Republic and Hungary are better in this respect. As regards labour productivity and the degree of production concentration, we are one of the leading European feed producers. Among the countries listed in Table 10.10, the Netherlands, Spain and Italy enjoy higher labour productivity in the feed industry (from 24% to 60%), while that of France and Germany is similar to ours and to the EU average. Our feed production concentration is 2.5 times and almost two times lower than in the Netherlands and France, respectively, slightly lower than in Germany and the UK and a bit higher than the EU average.

[35] According to the "Lista 500" ranking of 2014, "Rzeczpospolita", 23 April 2014.

Table 10.10. Feed producers in Poland and other EU Member States in 2012

Member States	Production[a] value (EUR billion)	Share in the EU-27 (%)	Production[a] per capita (EUR)	Labour[a] productivity (EUR thousand)	Turnover[a] per company (EUR million)
EU-27	**70.19**	**100.0**	**139.9**	**586.8**	**13.9**
EU-15	**58.49**	**83.3**	**146.1**	**634.9**	**16.0**
France	11.42	16.3	174.9	623.4	25.2
Spain	10.73	15.3	229.2	827.3	13.5
Germany	8.43	12.0	103.0	524.3	17.0
Netherlands	6.69	9.5	399.9	924.0	38.2
UK	6.35	9.0	100.0	467.6	16.3
Italy	5.13	7.3	86.4	716.5	9.7
EU-12	**11.7**	**16.7**	**115.3**	**425.8**	**8.3**
Poland	5.95	8.5	154.4	578.2	14.9
Czech Republic	1.82	2.6	173.3	376.0	4.5
Hungary	1.65	2.4	166.2	358.7	8.9
Romania	0.74	1.1	36.8	316.2	6.1
Bulgaria	0.40	0.6	54.6	239.5	3.6

[a] at comparable prices, i.e. current prices adjusted by the purchasing power parity

Source: own elaboration based on Eurostat data.

Poland was one of the EU Member States with the highest growth rate of production in this sector. In 2000-2012, it grew by 57% in the EU-15, including in the Netherlands – by 45%, France – by 85%, while in Poland and Germany – it more than doubled. Our position in the Community strengthened. The share of Polish feed industry increased to 8.5%, i.e. by 1.9 pp.

10.10. Conclusions

The livestock production branch is the main receiver of industrial feed. An increase in the production of ready-made feed was determined primarily by the rapidly growing production of live poultry in our country. The sector is not self-sufficient, as the feed production-use ratio has reached about 80% in recent years. The feed industry is forced to import 3-3.5 million tonnes of high-protein oilseed meal. The sector also struggles with high volatility in raw material prices (grain, meal prices) and, what is important in the case of imports, with exchange rate fluctuations (USD). In recent years, large fluctuations in raw material prices have made volatility in final prices of products in the sector one of the highest in the food industry.

In the period under consideration, the growth rate of this sector was maintained at a high level. There was a significant improvement in labour productivity, with growing employment and a slight increase in remuneration (slower than inflation). Companies' profit and equity increased systematically. Current liquidity remains at a safe level and total debt fell below 50% of the total value of assets. Resource and asset efficiency remained the same both at the macro and micro level. The financial situation of the feed industry is stable and safe, which indicates good prospects for the development of this branch of the food industry in the years to come. Feed producers strengthened their position in the European market.

11. Production of other food products[36]

11.1. Domestic demand

Domestic demand for these products can be assessed only on the basis of data on domestic use, which is estimated according to the following formula: production + imports – exports. This is how total demand and intermediate use are estimated. The results thereof are presented in Table 11.1.

Table 11.1. Domestic use of other food products

Specification	2008	2009	2010	2011	2012	2013
Value of domestic use (PLN billion) at current basic prices of processors	11.54	12.45	12.79	13.33	13.77	13.43
Changes in use at constant prices (%)	11.1	2.6	1.0	-0.2	-2.1	-4.1
Direct use (thousand tonnes)	1,605.1	1,640.8	1,678.0	1,681.9	1,652.5	1,664.8
of which: ice cream	181.7	219.3	213.9	214.5	182.1	188.5
macaroni and noodles	277.5	265.3	259.0	262.9	263.4	277.6
sauces, broths and soups	306.3	316.6	307.7	288.6	289.2	292.2
coffee, tea, essences	205.3	258.5	271.0	290.1	274.6	258.5
other products	634.3	581.1	626.4	625.8	643.2	648.0
Supplies to the domestic market (thousand tonnes)						
coffee and tea	105.9	139.3	147.1	145.8	130.9	113.3
macaroni	161.0	167.0	175.0	174.0	177.0	189.0

Source: own calculations based on unpublished CSO data on industrial production and data from the Ministry of Finance on foreign trade results and "CSO Statistical Bulletins" of 2009-2014.

The calculation above indicates that demand for the food products assessed was relatively stable, with major declines only in the last two years, especially in ice cream, coffee and tea markets. In the period under consideration, there was a drop in a multiannual upward trend in demand for highly processed food. This may be a result of not only an economic slowdown and high food prices, but also progress in the rationalisation of nutrition, as some of the products under analysis are considered to be highly processed and harmful to health.

11.2. Foreign trade

The effects of the declining upward trend in domestic demand are largely offset by a rapid increase in exports of other food products (Table 11.2). In 2008-2013, exports of these products almost doubled, while their imports rose by 30-40%, which turned a slight negative trade balance into a significant positive one. Their share in Polish exports of food products increased by over 1 pp (to 10.5%), while the self-sufficiency ratio in this branch of the food industry improved by 8.5 pp (to 105.8%).

[36] Including the following secondary processing types: PKD 10.52 – manufacture of ice cream, 10.73 – manufacture of macaroni, noodles, couscous and similar farinaceous products, 10.83 – processing of coffee and tea, 10.84 – manufacture of condiments and seasonings, 10.85 – manufacture of prepared meals and dishes, 10.86 – manufacture of homogenised food preparations and dietetic food, and 10.89 – manufacture of other food products not elsewhere classified. Classes from 10.83 are included into the food concentrates industry; however, many plants in the industry used to produce macaroni.

Other indicators of the competitive position and the degree of internationalisation of the sector grew even more, often by half, but after 2010, the share of exports in production was higher than the share of imports in domestic use.

Table 11.2. Results of foreign trade in other food products

Specification	2008	2009	2010	2011	2012	2013
Value (EUR million)						
exports	892.5	996.5	1,178.5	1,402.1	1,571.8	1,748.7
imports	956.2	1,035.0	1,145.0	1,327.5	1,322.8	1,344.6
balance	-63.7	-38.5	33.5	74.6	249.0	404.1
Volumes (thousand tonnes)						
exports	341.2	384.4	450.6	493.6	559.7	610.5
imports	384.3	453.0	459.8	485.8	503.0	513.2
Indicators (%)						
– export-import coverage	93.3	96.3	102.9	105.6	118.9	130.1
– self-sufficiency[a]	97.3	95.7	99.4	100.5	103.4	105.8
– share of exports in production[a]	21.8	25.1	27.1	29.2	32.7	34.7
– share of imports in use[a]	23.9	28.3	27.5	28.9	30.4	30.8
– share in exports of food products	9.3	10.7	10.3	10.8	10.7	10.5

[a] in quantitative terms

Source: unpublished data from the Ministry of Finance on foreign trade results and own calculations.

Table 11.3. Results of foreign trade in other food products from the groups studied

Specification	Year	Ice cream	Macaroni and noodles	Coffee and tea	Sauces, soups and broths	Other food products
Export value (EUR million)	2008	84.0	13.3	221.6	200.3	373.3
	2013	68.4	33.9	567.3	369.1	710.0
Balance (EUR million)	2008	62.1	-41.2	-176.9	110.0	-18.0
	2013	39.9	-35.1	-36.7	232.5	380.5
Export-import coverage (%)	2008	383.6	24.4	55.6	221.8	95.7
	2013	240.0	49.1	89.5	157.4	123.2
Self-sufficiency[a] (%)	2008	117.3	80.9	58.5	122.3	99.3
	2013	112.0	84.4	67.7	152.1	108.1
Share of exports in production[a] (%)	2008	19.7	4.9	44.4	29.7	21.8
	2013	18.1	11.7	62.8	48.4	33.5
Share of imports in domestic use[a] (%)	2008	5.8	23.1	67.5	14.0	22.5
	2013	8.2	25.5	75.8	21.5	28.1

[a] in quantitative terms

Source: unpublished data from the Ministry of Finance on foreign trade results and own calculations.

The results of trade in other food products divided into 5 product groups indicate (Table 11.3):

- very high and increasing competitive position of producers of sauces, soups, broths and other food products, as well as tea and coffee processors[37],
- declining position of ice cream producers, and
- poor position of macaroni and noodle producers.

[37] Trade in coffee, tea and extracts thereof is still characterised by a negative balance, which was almost 5 times smaller in 2013 than in 2008, and close to a negative balance of trade in macaroni and noodles, with the export-import coverage rate at a much higher level. This indicates how important is processing and re-export of products manufactured exclusively of imported raw materials.

11.3. Production of other food products

The production of other food products is characterised by a declining upward trend (Table 11.4). Over the last five years, it has reached only about 2% per year, while the production of ice cream, macaroni and noodles has been relatively stable; coffee and tea processing has increased, though, so did the production of sauces, soups and preparations for infants and homogenised food. In 2013, production value in this branch of the food industry (at constant prices) was by 10.5% higher than in 2008, and close to the level of 2012. For five years, the value added generated by producers of other food products has been relatively stable and its share in the production value fell to 24.4% in 2013 (from 27.2% in 2008). This was due to demand constraints, which resulted in increased sales prices of processors (about 3.5% per year), growing slower than inflation and raw material prices.

Table 11.4. Production of other food products

Specification	2008	2009	2010	2011	2012	2013
Production value at current prices (PLN billion)	11.39	12.28	12.93	13.64	14.82	15.00[a]
Production growth at constant prices (%)	11.2	2.5	3.9	1.4	2.9	-0.5
Production (thousand tonnes)	1,562.6	1,573.2	1,662.8	1,690.2	1,709.2	1,761.9
including: ice cream	213.1	235.7	232.3	233.2	201.0	211.2
macaroni and noodles	224.4	223.4	225.4	227.7	228.7	234.3
coffee, tea, extracts	120.0	129.4	140.8	169.5	175.7	174.9
sauces, soups	374.6	402.2	426.7	421.0	432.0	444.3
Production value in accordance with F-01 (PLN billion)	10.6	12.5	13.5	14.0	15.0	15.2
Gross value added[b]						
PLN billion, current prices	2.88	3.54	3.68	3.60	3.41	3.71
% of production	27.2	28.4	27.3	25.7	22.7	24.4

[a] estimate, [b] applies to companies submitting financial statements

Source: unpublished CSO data and own calculations.

11.4. Resources of production factors

The labour resources (employment) of industrial companies producing other food products (Table 11.5) show a slow downward trend (except for 2011) of about 1.2% per year. However, the book value of fixed assets and company assets grew steadily (except for 2012) at a relatively high rate (by almost 50% over 5 years, i.e. about 8% per year). Real growth in these resources is difficult to estimate, as there is no basis for converting book values into constant prices (i.e. at constant prices of "old" fixed assets increased by gains on investments at current prices). Any such conversion is risky, but there is no doubt that the resources of fixed assets continue to grow, while the value of new investments[38], and the rate of investment, decreased at

[38] It is also necessary to emphasise that changes in the book value of fixed assets were often not related to the value of investments, e.g. the value of these assets in large and medium companies in 2009 grew by PLN 2.6 billion, while capital expenditures were 2-3 times lower.

the same time (from 11% to 8% of the initial value of fixed assets). This leads to rapid capital-labour ratio growth, which was by 48% higher in 2013 than in 2008. Nevertheless, this does not mean an increase in the capital intensity of production, since the value of assets (fixed and current) per unit of production in 2013 was similar to that in 2008. This also applies to the total resources of production factors, whose value in the period concerned grew by nearly 40%, being slightly lower per unit of production.

Table 11.5. Resources of production factors

Specification	2008	2009	2010	2011	2012	2013
Employment (thousand employees)						
industrial companies	35.2	34.2	34.5	36.8	33.8	33.1
including: large and medium companies	26.8	28.9	28.8	30.7	27.9	27.8[a]
in accordance with F-01	28.0	31.3	31.8	32.9	30.0	29.9
Gross fixed assets of large and medium companies (PLN billion)	4.79	6.42	7.41	7.62	6.95	7.35[a]
Company assets in accordance with F-01 (PLN billion)	7.87	10.21	11.12[a]	11.43	10.81	11.21
including: fixed assets	3.95	5.65	5.92	5.97	5.27	5.64
Total resources[b] in accordance with F-01 (PLN billion)	12.09	15.08	16.40	17.09	16.15	16.73
Investments (PLN billion)	0.53	0.75	0.75	0.74	0.59	0.61
Capital-labour ratio[c] (PLN thousand per capita)	178.7	222.1	257.3	248.2	249.1	264.4
Capital intensity of production[d] in accordance with F-01 (PLN/PLN)	0.74	0.82	0.83	0.82	0.72	0.76
Total resources/production (PLN/PLN)	1.14	1.21	1.22	1.22	1.08	1.10

[a] estimate, [b] fixed and current assets increased by the value of labour, defined as the equivalent of three times labour cost per year, [c] applies to large and medium enterprises, [d] the ratio of the value of fixed and current assets to the value of sold production at the basic prices

Source: own calculations based on published and unpublished CSO data.

11.5. Productivity and efficiency

Relatively fast growing labour productivity (Table 11.6), which has increased by more than 3% per year (at constant prices) over five years, with a relatively low rate of pay for labour productivity growth with average remuneration growth, is a permanent feature of producers of other food products. In large and medium companies of this branch of the food industry, the average gross remuneration was by 15% higher in 2012 than in 2008, which is only less than 1/3 of productivity growth at current prices. Labour productivity growth was accompanied by a slight increase in asset and resource productivity (from 1.66 to 1.83 PLN/PLN and from 0.88 to 0.91 PLN/PLN, respectively), but following a temporary decline in this regard in 2010 and 2011.

A slightly different trend was observed for changes in the efficiency measures of the sector. Due to a decline in the share of the gross value added (GVA) and the economic surplus (ES) in basic producer prices, there was a slight drop in the efficiency of the sector, both at the macro and micro level; however, the efficiency of labour inputs fell less than the efficiency of total assets or resources. Nevertheless, both of

these measures are still relatively high, as one unit of labour inputs rises GVA by 2 units and ES by 1 unit, and one unit of resources results in increasing GVA and ES by 0.2 units and 0.1 units, respectively.

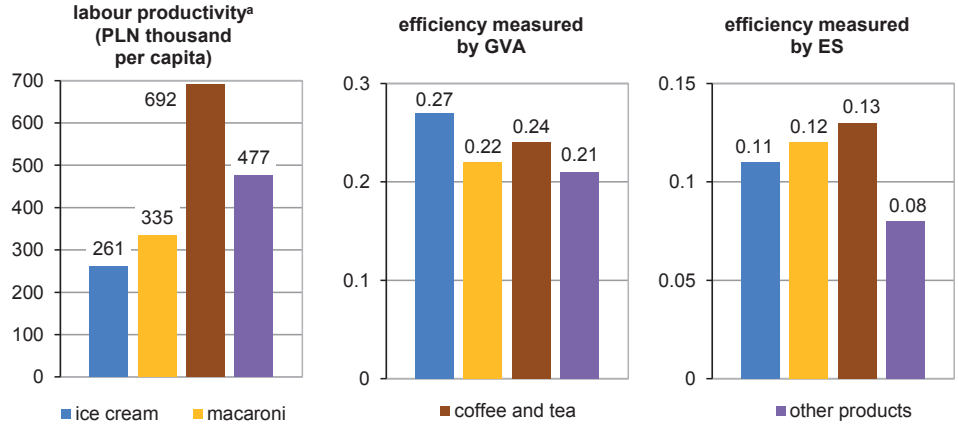
Table 11.6. Productivity and efficiency of production of other food products

Specification	2008	2009	2010	2011	2012	2013
Labour productivity – at current prices (PLN thousand)	321.8	359.2	375.0	374.8	438.5	454.5[a]
including: large and medium companies	308.8	378.1	408.3	395.0	462.7	474.6[a]
– at constant prices	385.1	406.5	418.8	402.5	446.2	454.5[a]
Productivity of fixed assets[b]	1.66	1.70	1.56	1.59	1.89	1.83[a]
Productivity of resources[c]	0.88	0.83	0.82	0.82	0.93	0.91
Efficiency measured by GVA[c] (macro) of:						
labour inputs	2.07	2.18	2.07	1.91	1.92	2.02
assets	0.366	0.347	0.325	0.315	0.316	0.331
resources	0.239	0.235	0.221	0.211	0.211	0.222
Efficiency measured by ES[c] (micro) of:						
labour inputs	1.02	1.13	1.18	0.89	0.88	0.97
assets	0.179	0.179	0.186	0.148	0.142	0.158
resources	0.117	0.122	0.113	0.099	0.095	0.106

[a] estimate based on F-01, [b] applies to large and medium companies, [c] in accordance with F-01

Source: own calculations based on published and unpublished CSO data.

Figure 11.1. Differences in labour productivity and resource efficiency in the production of other food products in 2013



[a] at current prices; in 2012, in large and medium companies based on the *Statistical Yearbook of Industry of 2013*

Source: own calculations based on published and unpublished CSO data (in accordance with F-01).

The sector under analysis is highly diversified in terms of labour productivity and slightly – in terms of efficiency measures (Figure 11.1). The highest labour productivity and resource efficiency at the micro level is reported for the coffee and tea processing industry. Efficiency at the macro level is very little diversified, while at the micro level – only the efficiency of production of other food products is poor.

11.6. Financial performance and standing

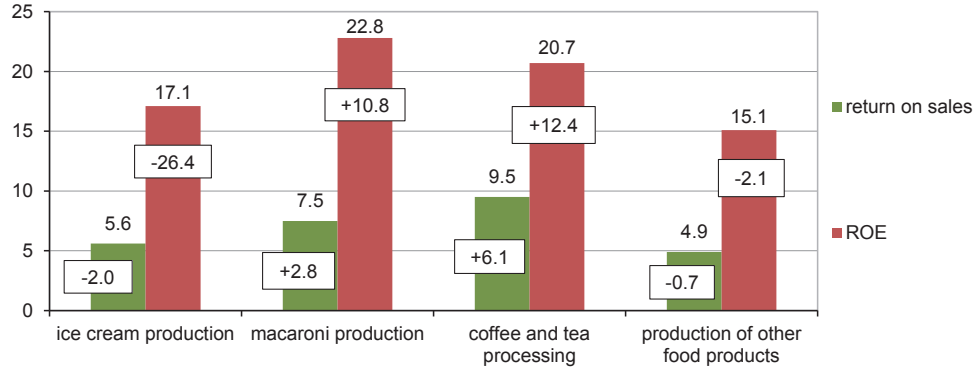
The production of other food products, like secondary processing as a whole, is one of the branches of the food industry with high returns. In this branch of the sector, the amount of net profit – following a temporary decline in 2011-2012 – is already over 50% higher than in 2008 (Table 11.7), return ratios remain clearly higher than the average of the food industry: return on sales – by 1-2 pp, ROE – by 3-5 pp, while return on equity is 3-4 times higher than on other safe capital investments (deposits or bonds). High returns are typical of the production of each of the four separated product groups; they are the lowest (but still high) in the production of other food products and ice cream, which are branches whose level of returns dropped, as opposed to that in macaroni production and coffee and tea processing, which significantly rose (Figure 11.2).

Table 11.7. Financial performance of producers of other food products

Specification	2008	2009	2010	2011	2012	2013
Net profit (PLN million)	649	935	1,001	719	746	1,029
Returns on sales (%)	5.41	6.62	6.70	4.56	4.41	5.95
ROE (%)	16.3	16.8	15.6	11.9	13.1	17.0

Source: own calculations based on unpublished CSO data.

Figure 11.2. Differences in returns in 2013 and the change after 2008



Source: own calculations based on unpublished CSO data.

The production of assessed products is also characterised by stable and secure financial standing. This branch of the food industry witnessed a major, i.e. 50%, increase in the value of equity, its current liquidity continuously exceeds a level considered adequate for discharging financial liabilities (over 1.3), while liabilities finance less than 50% of company assets (Table 11.8). Among the companies surveyed, worse financial standing measures are reported only for macaroni producers (Figure 11.3), whose liquidity is safe, but debt – high (58% of assets). These are mainly short-term liabilities, which are covered – with a large surplus – by the value of current assets. This means that financial standing of enterprises poses no threat to the continuation and development of activities in any of the four distinguished groups of production of other food products.

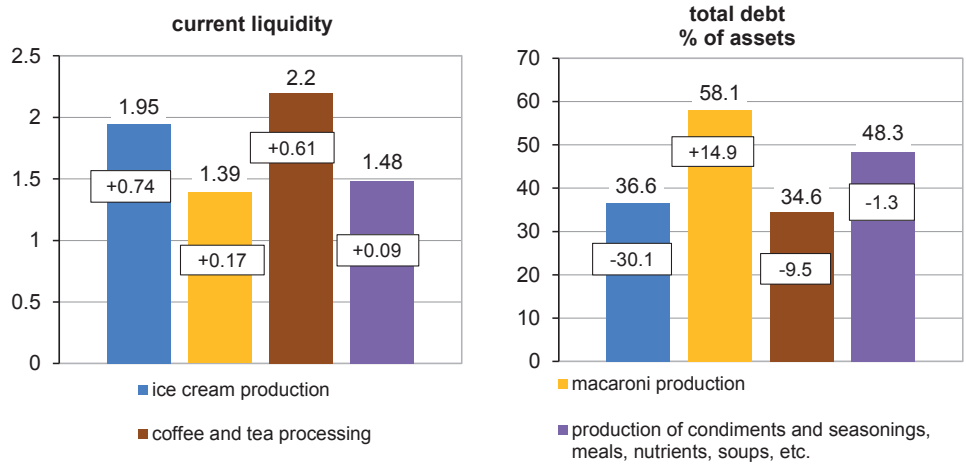
Table 11.8. Financial standing of enterprises

Specification	2008	2009	2010	2011	2012	2013
Equity (PLN billion)	3.99	5.57	6.42	6.03	5.71	6.05
including: own funds in the market	1.11	1.46	1.26	1.42	1.95	2.08
Liabilities (PLN billion)	3.89	4.63	4.70[a]	5.41	5.10	5.16
including: short-term liabilities	2.81	3.11	3.95	4.04	3.60	3.49
Current liquidity	1.40	1.47	1.32	1.35	1.54	1.60
Total debt (%)	49.4	45.4	42.3	47.3	47.2	46.0

[a] adjusted data

Source: own calculations based on unpublished CSO data.

Figure 11.3. Differences in financial standing in 2013 and the change after 2008



Source: own calculations based on unpublished CSO data.

11.7. Business breakdown structure

In recent years, the business breakdown structure of the industry producing other food products has been relatively stable (Table 11.9) because, despite an increase in the number of industrial companies:

– the number of large companies with over 249 employees is stable,

– the share of these large enterprises in production is maintained at about 60% (while in employment – at slightly more than 50%).

Table 11.9. Structure of industrial companies producing other food products

Specification	2008	2009	2010	2011	2012	2013
Number of industrial companies	404	365	400	416	426	437
including: large companies	29	30	29	30	30	29
Share of large companies in the sector in (%):						
– employment	54.0	53.6	53.8	54.1	51.9	51.8
– sales value	61.0	58.8	61.7	57.4	59.9	.

Source: unpublished CSO data and own calculations.

The production of other food products belongs to that branch of the food industry, whose production concentration is relatively high. Small industrial companies in the branch achieve poor performance (about 12% of production), while medium ones are close to the average in this regard (about 28% of production).

The sector concerned is more concentrated than many major food production branches, such as meat, fish, fruit and vegetable, milling and bakery industries, but less than sugar, oil-mill, brewing, tobacco, confectionery or soft beverage industries, where global corporations dominate, shaping the oligopolistic structure of the sector.

11.8. Strength of Polish producers of other food products against other EU Member States

The position of Polish producers of other food products is a bit stronger than that of our food industry as a whole. We are the sixth largest producer in this regard, with the five largest EU Member States ahead of us (Table 11.10). The strength of Polish producers of other food products, measured by production value per capita, labour productivity or the degree of production concentration, is not much different from the EU average and much higher than in the EU-12. Hence, in terms of production value per capita or labour productivity, producers of these food products from Germany, France and Italy are ahead of us, as opposed to those from the UK or Spain. Our producers of sauces and other condiments and seasonings (second place behind Germany) hold a particularly strong position; their position is also significant as regards the production of ice cream, soups and broths.

Table 11.10. Producers of other food products in Poland and other EU Member States in 2012

Member States	Production[a] value (EUR billion)	Share in the EU-27 (%)	Production[a] per capita (EUR)	Labour[a] productivity (EUR thousand)	Turnover[a] per company (EUR million)
EU-27	**85.01**	**100.0**	**170.6**	**202.7**	**3.32**
EU-15	**74.57**	**87.7**	**187.6**	**215.2**	**3.53**
Germany	18.36	21.6	225.0	253.6	11.45
France	13.63	16.0	214.1	233.1	4.17
UK	8.15	9.6	128.7	119.1	7.47
Italy	18.26	21.5	306.1	338.9	1.94
Spain	7.91	9.3	167.1	241.7	3.56
EU-12	**10.44**	**12.3**	**115.7**	**143.6**	**2.30**
Poland	6.96	8.2	180.6	191.4	3.90
Hungary	1.56	1.8	156.5	182.7	2.60
Romania	1.12	1.3	59.4	109.7	2.08
Bulgaria	0.48	0.6	65.8	76.3	0.87
Slovakia	0.48	0.6	88.8	128.7	0.94

[a] at comparable prices, i.e. current prices adjusted by the purchasing power parity

Source: own elaboration based on Eurostat data.

11.9. Conclusions

The production of other food products, as a significant component of secondary processing, is no longer the fastest growing branch of the food industry. This is due to weakening domestic demand. Producers were forced to seek foreign export markets, thus leading to a rapid increase in exports of all groups of other food products, excluding ice cream. There was a significant improvement in the competitive position of coffee and tea processors, producers of sauces, soups and broths, as well as other food products, while the position of ice cream producers is poor.

Recent years have brought a slowdown in the development of the sector, but also a significant improvement in resource productivity, especially labour productivity. At the same time, resource efficiency remaining at a high level decreased slightly, which is mainly due to a drop in the share of the value added and the economic surplus in producer prices. This branch of the food industry still enjoys high returns and low debt (except for macaroni producers). Therefore, other food producers – despite strong constraints – strengthened their position in the Polish and European food industry, while adaptation processes to difficult and changing external conditions involved the development of exports and the cost-effective use of production factors (labour and capital).

12. Production of alcoholic beverages[39]

12.1. Domestic demand

In 2008-2012, domestic demand for alcoholic beverages (in terms of 100º spirit) showed a downward trend. The total consumption of alcoholic beverages dropped by 5% (to 9.35 litres in 2012). In accordance with the CSO, 2013 brought a large increase in the consumption of vodka (Table 12.1), thus increasing total demand for alcoholic beverages to the level noted in 2008. However, we estimate that the consumption of vodka in 2013 did not exceed 3.2 litres[40], so total demand for alcoholic beverages was by 4% lower in 2013 than in 2008, while for spirituous beverages was the same as in 2009-2011 and by 5.9% lower than in 2008. Spirituous beverages accounted for 1/3 of the total consumption of alcoholic beverages (in terms of 100º spirit).

Table 12.1. Domestic use of alcoholic beverages

Specification	2008	2009	2010	2011	2012	2013
Domestic use[a] of (million litres):						
– spirituous beverages (100º)	132.1	124.4	113.4	128.8	123.2	138.1
– grape wine and vermouth	111.7	105.3	112.2	113.9	112.8	123.6
– fermented beverages	202.7	164.5	156.6	138.7	118.0	105.8
– beer	3,599.6	3,496.4	3,520.4	3,649.4	3,796.8	3,797.5
Consumption of (balance sheet):						
– vodka, liqueurs and other spirituous beverages (litre 100º per capita annually)	3.4	3.2	3.2	3.2	3.0	3.6[b]
– wine and mead (litre per capita annually)	8.3	7.0	6.9	6.4	5.9	5.8
– beer (litre per capita annually)	94.4	91.2	90.2	94.3	99.2	97.7
Total consumption of alcoholic beverages in terms of 100º spirit[c]	9.84	9.27	9.20	9.35	9.35	9.84[b]
Supplies to the domestic market of (in accordance with the CSO data):						
– spirituous beverages (million litres; 100º)	131.8	123.8	124.5	122.2	123.6	143.3
– grape wine and vermouth (million litres)	113.9	104.8	110.7	111.6	112.3	122.4
– fermented beverages (million litres)	205.3	169.1	153.6	137.1	121.2	104.8
– beer (million litres)	3,602.0	3,468.7	3,501.0	3,619.4	3,826.9	3,775.1

[a] production + imports – exports, [b] in accordance with IERiGŻ-PIB estimates, the real consumption of spirituous beverages amounted to 3.2 litres and that of alcoholic beverages – to 9.44 litres per capita, [c] assuming the following alcohol content: 15% for wine, 5.5% for beer

Source: own calculations based on unpublished data from the CSO and the Ministry of Finance and the CSO data from the Internal Market of 2008-2013, CSO, Warszawa 2009-2014.

[39] PKD 11.01 – distilling, rectifying and blending of spirit, 11.02 – manufacture of wine from grape, 11.03 – manufacture of cider and other fruit wines, 11.04 – manufacture of other non-distilled fermented beverages, as well as 11.05 – manufacture of beer, and 11.06 – manufacture of malt.

[40] Consumption did not grow, but rather supplies and production increased prior to pre-announced excise duty growth, as evidenced by other market observations, e.g. increased revenues from excise duty on ethyl alcohol in 2013 by 8.3%, increase in household expenditure on spirit products in the period at issue by 2-3%, with a slight increase in retail prices by 0.3%.

In 2008-2013, domestic demand for wine and mead systematically decreased by 6.9% per year on average, falling by about 1/3, while the share of wine in the consumption structure of alcoholic beverages dropped by about 3 pp. However, data on both their supplies and domestic use show growing demand for grape wine and vermouth, as well as decreasing demand for fruit wine. The domestic use of grape wine and vermouth rose by 1/10, while their supplies – by 7.5%. In contrast, both the use and supplies of fruit wine in 2013 nearly halved, compared to 2008. Since 2013, demand for grape wine and vermouth has been larger than for fruit wine.

Domestic demand for beer achieved its peak in 2012, when its consumption exceeded 99 litres per capita. In 2013, it decreased by 1.5%, but it was still higher than in 2008. For three years, the share of beer in the consumption structure of alcoholic beverages has been over 55%, as opposed to about 50% at the beginning of the last decade.

12.2. Foreign trade

The demand of exporters drove the development of the alcoholic beverage sector, particularly in certain segments of the market. Exports of all alcoholic beverages increased in volume by 93%, while in value – by 76%, but the balance of trade in these products was still negative and the share of food products in exports was marginal and amounted to about 2% (Table 12.2). Smaller changes took place in imports of these beverages, whose both volume and value increased, but only by about 1/3. In 2008--2013, the rate of growth in exports was over twice the rate of changes in imports. In 2008-2010, a trade deficit in alcoholic beverages worsened by 37% to reach nearly EUR 200 million in subsequent years.

Table 12.2. Results of foreign trade in alcoholic beverages

Specification	2008	2009	2010	2011	2012	2013
Value (EUR million)						
exports	181.6	189.1	272.9	295.1	275.2	320.9
imports	389.2	345.8	403.8	461.2	464.7	518.1
balance	-207.6	-156.7	-130.9	-166.1	-189.5	-197.2
Volumes (thousand tonnes of product weight)						
exports	204.1	247.5	349.7	365.0	334.6	394.7
imports	238.5	269.3	292.7	311.0	322.6	319.5
Indicators (%)						
– export-import coverage	46.7	54.7	67.6	64.0	59.2	61.9
– self-sufficiency[a]	100.4	101.5	102.1	102.1	102.2	103.1
– share of exports in production[a]	4.7	5.4	6.3	6.5	7.1	8.0
– share of imports in use[a]	4.3	4.0	4.3	4.5	5.1	5.1
– share of alcoholic beverages in exports of food products	1.9	2.0	2.4	2.3	1.9	1.9

[a] in quantitative terms

Source: own calculations based on unpublished data from the CSO and the Ministry of Finance.

Trade in wine is still characterised by a large deficit (Table 12.3) amounting to about EUR 200 million in 2013, which is by about 15% higher than in 2008 and results from large and growing imports of grape wine. Exports of beer also followed a rapid upward trend (in value – 12.1% per year on average), while the balance of trade in beer doubled. Despite a high growth rate of exports of spirituous beverages (increase by about 8% per year on average), there is a constant deficit in trade in these beverages, but it was by about 1/3 lower in 2013 than in 2008. The balance of trade in spirit is negative as well, exceeding EUR 50 million in 2013.

Table 12.3. Results of foreign trade in alcoholic beverages from the groups studied

Specification	Year	Beer	Grape wine and vermouth	Fermented beverages	Spirituous beverages
Export value (EUR million)	2008	66.8	2.6	6.5	101.2
	2013	118.5	10.0	13.7	151.4
Balance (EUR million)	2008	45.5	-174.6	3.9	-42.8
	2013	83.8	-211.1	11.8	-29.0
Export-import coverage (%)	2008	313.4	1.5	245.8	70.3
	2013	341.9	4.5	703.7	83.9
Self-sufficiency[a] (%)	2008	103.1	11.8	105.7	97.5
	2013	105.3	12.9	131.6	101.9
Share of exports in production[a] (%)	2008	3.9	9.1	6.4	12.3
	2013	6.4	31.9	25.3	17.9
Share of imports in domestic use[a] (%)	2008	1.0	89.3	1.0	14.4
	2013	1.5	91.2	1.8	16.3

[a] in quantitative terms

Source: own calculations based on unpublished data from the CSO and the Ministry of Finance.

Over the last five years, all measures of the competitive position of individual alcoholic beverage groups have improved. The ratio of the value of exports to imports and production to domestic use increased; in the case of certain beverages – by even several percentage points. We are self-sufficient in terms of all alcoholic beverages, except for wine and vermouth, as their domestic production covers only about 1/10 of domestic use. The share of exports in the production of various alcoholic beverages rose by a few percentage points; in certain cases – even by over a dozen or so percentage points, with a smaller increase in the share of imports in domestic use. All these indicators remain low in major branches, i.e. in the beer and spirit sector.

12.3. Supply of raw materials

Grain processing for industrial purposes (spirit and malt) showed an upward trend, excluding 2011-2012, when it fell by about 80 thousand tonnes (Table 12.4). In 2013, there was a sharp increase in grain processing for these purposes (to 2.75 million tonnes, as opposed to 1.62 million tonnes in 2008). In 2008-2013, the total use of grain in the spirit industry doubled, while that of barley in the brewing industry increased by 1/4.

Table 12.4. Raw materials used for the production of alcoholic beverages (thousand tonnes)

Specification	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Total grain processing[a]	1,620	2,390	2,405	2,350	2,325	2,745
including: rye	660	750	760	680	650	680
maize	180	250	320	330	420	660
barley	690	790	820	830	840	855
Potato processing[b]	83.2	41.2	37.0	50.4	80.2	36.0
Malt production[c]	332.7	321.7	336.7	382.0	352.8	361.2
Malt imports[c]	252.4	214.4	219.9	207.5	211.6	122.8
Malt exports[c]	28.2	44.6	46.7	57.2	49.8	28.0

[a] excluding wheat used in the starch industry, [b] for spirit, [c] calendar years

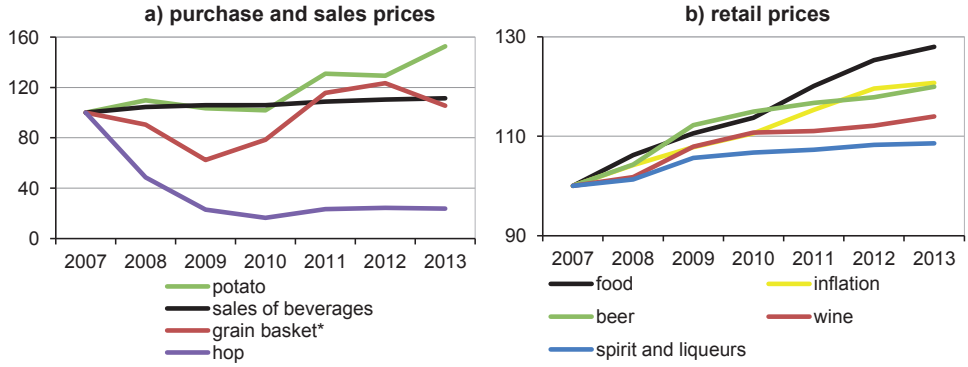
Source: own elaboration based on unpublished data from the Ministry of Finance, data from the CSO Statistical Yearbooks of 2010 and 2013 and "Rynek zbóż. Stan i perspektywy" (Grain Market. Status and Prospects), Nos. 36-47, Series "Analizy Rynkowe" (Market Analyses) of 2009-2014, IERiGŻ-PIB, ARR, MRiRW, Warszawa.

Rye was the basic raw material used in the spirit industry. In recent years, maize processing has increased significantly. Potato processing in the distilling industry was small (36-83 thousand tonnes) and trended downwards. In the brewing industry, the share of malt in domestic production grew, accounting for almost 3/4 of its use. However, malt imports fell from 250 thousand tonnes in 2008 to 200 thousand tonnes in 2009-2012, being about half lower in the last year.

12.4. Prices

Pricing conditions for the purchase of grain as a raw material for the production of alcoholic beverages varied. In 2008-2009, grain prices declined to sharply increase later (Figure 12.1). This increase was halted at the end of 2012. In 2011-2012, grain prices grew faster than sales prices of beverages. Processing margins followed a downward trend. In 2013, the grain basket price decreased by nearly 15%, with a slight increase in sales prices of beverages (by 1%). As a consequence, beverage prices rose by 11.5% in 2008-2013, while grain basket prices – by 5.5%.

Figure 12.1. Growth rate of prices at different levels (%, 2007 = 100)



* grain basket (0.25 kg of rye, 0.35 kg of barley, 0.2 kg of maize and 0.1 kg of wheat and triticale)
Source: own calculations based on published and unpublished CSO data.

The rate of changes in retail prices of all alcoholic beverages was lower than inflation, which means that these products went relatively cheaper. In 2008-2013, prices of spirituous beverages went up by 8.6%, wine – by 14%, beer – by 19.9%, with inflation at 20.7% and an increase in food prices by 28%. The rate of changes in retail prices of wine, especially beer, was greater than that in sales prices of spirituous beverages, which means an increase in trade margins in the production of these products. This situation did not occur in the spirit industry, where the growth rate of consumer prices was slightly lower than that of producer prices.

12.5. Production of alcoholic beverages

In 2008-2013, the production value of alcoholic beverages (PKD 11.01, 11.02, 11.03, 11.04, 11.05 and 11.06) increased by only 9.5% at current prices, decreasing significantly in 2010 and, to a lesser extent, in 2013. At constant prices, production value grew by only 2.7%.

In the period concerned, the production of dehydrated spirit (3.5-fold growth) and other spirituous beverages (21% growth) grew the fastest (Table 12.5). Beer production grew slower, albeit steadily, exceeding 4 billion litres in 2013. There was a steady drop in the production of fermented beverages, vermouth and wine (up to 2013). The production of methylated and rectified spirit was relatively stable. In contrast, the share of raw spirit from industrial production rose (from 54% in 2007 to about 75% in 2011-2012). In 2013, raw spirit produced in agricultural distilleries remained at 60% of domestic production.

Table 12.5. Production of alcoholic beverages

Specification	2008	2009	2010	2011	2012	2013
Production value at current prices (PLN billion)	11.47	12.88	11.58	12.00	12.82	12.56[a]
Change in the value of production at constant prices (%)	+4.4	+10.9	-10.1	+0.8	+5.4	-3.0
Production (million litres)						
Pure vodka (100%)	108.1	104.3	107.0	103.6	103.2	115.7
Other spirituous beverages (100%)	20.7	21.3	22.5	26.4	25.0	25.1
Raw spirit	226.6	277.8	239.0	188.9	226.3	368.6
including: industrial spirit	103.9	166.0	150.6	142.8	168.0	153.3
Rectified spirit	137.8	145.1	135.9	133.3	165.5	146.5
Dehydrated spirit	64.9	103.0	158.3	170.8	209.2	221.7
Methylated spirit	58.4	70.5	72.3	50.3	45.1	65.3
Grape wine	8.2	7.9	7.3	7.5	5.9	12.9
Vermouth	5.0	4.0	5.2	4.8	3.3	3.1
Fermented beverages	214.3	179.5	173.3	158.1	141.6	139.2
Beer	3,711	3,624	3,680	3,807	3,961	4,000
Production value in accordance with F-01 (PLN billion) at current basic prices	12.89	12.82	11.72	12.33	13.53	13.32
Gross value added[b]						
PLN billion, current prices	3.96	3.83	3.71	3.34	3.63	3.87
% of production	30.7	29.9	31.7	27.1	26.8	29.1
Economic surplus[b]						
PLN billion, current prices	2.78	2.62	2.50	2.09	2.31	2.49
% of production	21.6	20.4	21.3	17.0	17.1	18.7

[a] estimate, [b] applies to companies submitting financial statements

Source: unpublished CSO data and own calculations.

The development of the sector was characterised by a drop in business performance, with both the gross value added and the economic surplus as measures thereof. At current prices, their value declined by 2.3% and 10.4%, respectively. Their share in basic producer prices dropped as well. Only in 2013, the share of this performance in basic prices rose, but the level of 2008 has not been achieved so far.

12.6. Resources of production factors

Since 2010, labour resources in the production of alcoholic beverages have declined steadily. However, some segments of this sector grew slowly in the context of an increase in the value of assets. In 2013, employment was by 10.5% lower than in 2008 (Table 12.6), declining less in the group of large companies, i.e. by 5.6%.

In 2013, the value of fixed assets of producers of alcoholic beverages was by half higher than in 2008 which, with higher labour cost by 6.4%, increased the total resources of production factors by 38.8%. The capital-labour ratio and the capital intensity of production grew by 9% per year on average.

Table 12.6. Resources of production factors in the production of alcoholic beverages

Specification	2008	2009	2010	2011	2012	2013
Employment (thousand employees)						
industrial companies	14.60	15.08	13.44	13.26	13.17	13.06[a]
including: large and medium companies	12.5	13.5	11.8	11.9	11.9	11.8[a]
in accordance with F-01	15.33	14.43	12.49	12.51	12.69	12.78
Gross fixed assets of large and medium companies (PLN billion)	8.65	9.42	8.96	9.10	9.31	12.8[a]
Company assets in accordance with F-01 (PLN billion)	15.23	14.72	12.18	17.01	16.22	22.15
including: fixed assets	8.95	8.35	6.76	11.56	10.71	14.84
Total resources[b] in accordance with F-01 (PLN billion)	18.37	17.86	15.03	19.95	19.37	25.49
Investments in accordance with F-01 (PLN million)	952	491	415	454	609	899
% of fixed assets	11.0	5.2	4.6	5.0	6.5	7.0
Capital-labour ratio[c] (PLN thousand per capita)	692.0	697.7	752.9	764.7	782.3	1,084.7
Capital intensity of production[d] in accordance with F-01 (PLN/PLN)	0.695	0.651	0.577	0.938	0.791	1.114
Total resources/production	1.43	1.39	1.28	1.62	1.43	1.91

[a] estimate, [b] fixed and current assets increased by the value of labour, defined as the equivalent of three times labour cost per year, [c] applies to large and medium enterprises, [d] the ratio of the value of fixed assets to the value of sold production at the basic prices

Source: own calculations based on published and unpublished CSO data.

In 2009-2011, investment activity of producers of alcoholic beverages trended downwards and the value of investments decreased by half. Later, capital expenditure grew, however, not returning to its level of 2008. The rate of investment dropped significantly from 11% in 2008 to a very low level of 7% of the value of fixed assets, falling even below 5% in certain years.

12.7. Productivity and efficiency

Labour productivity in the production of alcoholic beverages increased by about 4% per year on average (at current prices), including spirit, wine and brewing industries – by 8.4%, 8.3% and 2%, respectively (Table 12.7). At constant prices, this growth was small and amounted to 2.8% per year in industrial companies and 1.5% per year in large enterprises. Labour productivity growth was twice the average remuneration only in the spirit industry. In contrast, productivity growth in wine and brewing industries lagged behind average remuneration growth. At the same time, asset and resource productivity dropped by about 1/4, i.e. more than labour productivity growth.

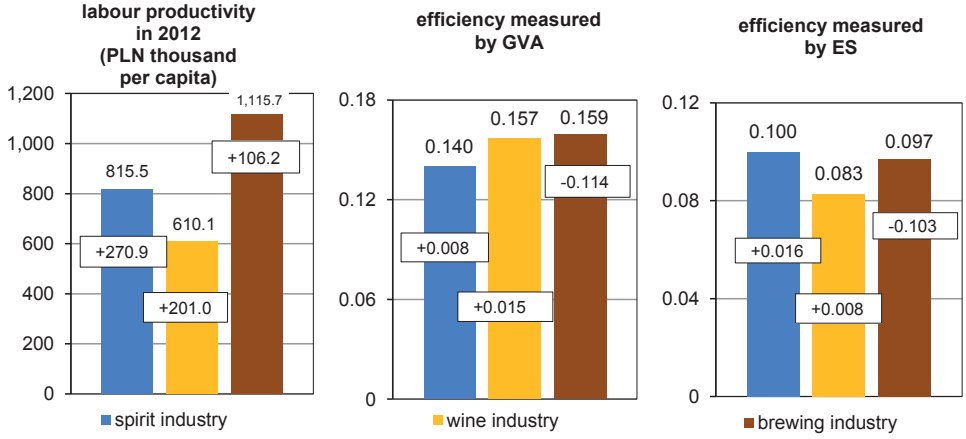
Table 12.7. Productivity and efficiency of production of alcoholic beverages

Specification	2008	2009	2010	2011	2012	2013
Labour productivity at current prices (PLN thousand)	785.2	853.9	861.3	904.8	973.7	961.7[a]
including: large and medium companies	838.3	870.9	937.2	918.7	979.7	967.5[a]
Labour productivity at constant prices (PLN thousand)	837.5	899.0	906.8	926.7	983.4	961.7[a]
Productivity of fixed assets[b]	1.220	1.242	1.194	1.199	1.245	0.887[a]
Productivity of resources[c]	0.702	0.718	0.778	0.618	0.699	0.523
Efficiency measured by GVA[c] (macro) of:						
labour inputs	3.780	3.657	3.901	3.407	3.458	3.480
assets	0.260	0.260	0.305	0.197	0.224	0.175
resources	0.215	0.214	0.247	0.167	0.187	0.152
Efficiency measured by ES[c] (micro) of:						
labour inputs	2.658	2.499	2.628	2.132	2.200	2.241
assets	0.183	0.178	0.205	0.123	0.142	0.113
resources	0.151	0.147	0.166	0.105	0.119	0.098

[a] estimate based on F-01, [b] applies to large and medium companies, [c] in accordance with F-01

Source: own calculations based on published and unpublished CSO data.

Figure 12.2. Differences in labour productivity and resource efficiency[a] in the production of alcoholic beverages



[a] labour productivity calculated for all industrial companies at current prices; efficiency applies to companies submitting F-01 financial statements in 2013

Source: own calculations based on unpublished and published CSO data.

The efficiency of labour inputs, as well as assets and resources in the production of alcoholic beverages decreased both at the macro and micro level, but labour efficiency dropped less (by 8% at the macro level and 16% at the micro level). Asset efficiency declined respectively by 33% and 39%, while that of resources in total – by 30% and 35%. Resource efficiency grew slightly both at the macro and micro level only in wine and spirit industries (Figure 12.2).

12.8. Financial performance and standing

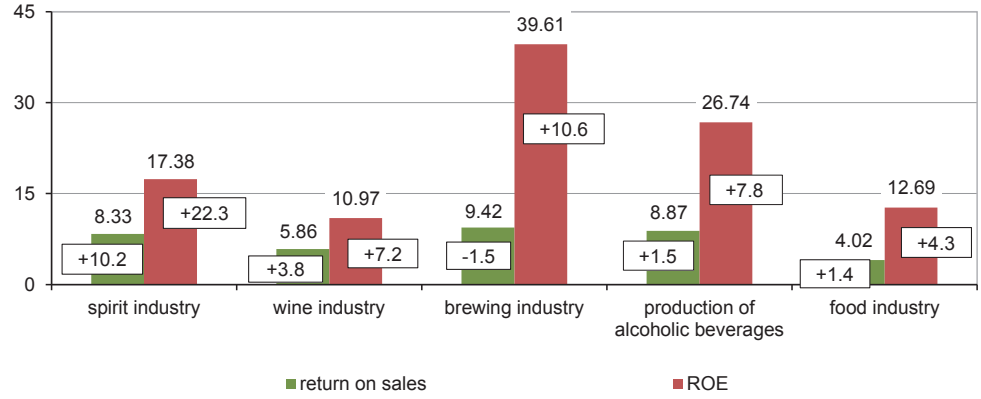
Producers of alcoholic beverages enjoy a sustained ability to generate profits (Table 12.8), except for the spirit industry (in 2008 and 2011). Return on sales and equity in the alcoholic beverage sector was higher than the average for the food industry. Returns in the brewing industry were particularly high and those of wine producers – similar to the average of the food industry (Figure 12.3). However, spirit companies were characterised by highly diversified performance.

Table 12.8. Financial performance of producers of alcoholic beverages

Specification	2008	2009	2010	2011	2012	2013
Net profit (PLN million)	1,017	1,332	1,402	635	1,090	1,336
Return on sales (%)	7.38	8.20	10.59	4.64	7.32	8.87
ROE (%)	18.99	23.35	32.62	11.53	28.38	26.74

Source: own calculations based on unpublished CSO data.

Figure 12.3. Differences in returns in 2013 and the change after 2008



Source: own calculations based on unpublished CSO data.

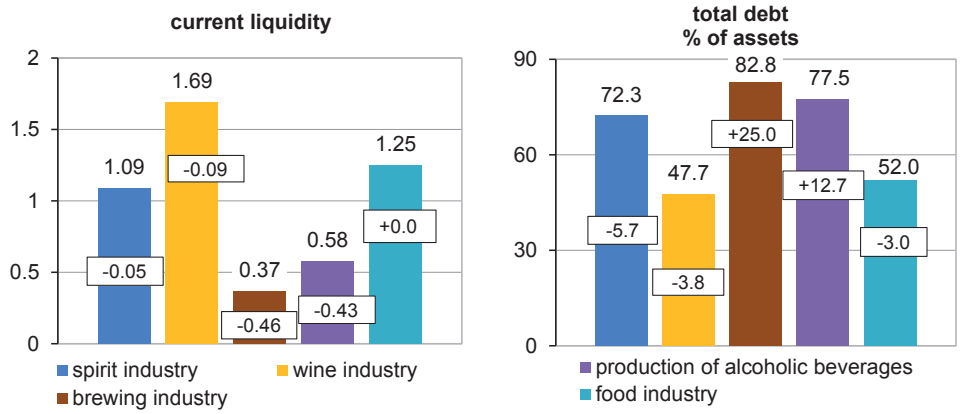
The financial standing of producers of alcoholic beverages, including spirit, wine and brewing industries is safe (Table 12.9). The low current liquidity ratio of the brewing industry stems from internal accounting settlements between affiliates and does not prove inability to repay short-term bank liabilities in due time.

Table 12.9. Financial standing of enterprises producing alcoholic beverages

Specification	2008	2009	2010	2011	2012	2013
Equity (PLN billion)	5.35	5.71	4.30	5.51	3.84	5.00
including: own funds in the market (PLN million)	79.6	608.0	-26.2	-60.6	-1,761.1	-5,217.3
Liabilities (PLN billion)	9.88	9.01	7.88	11.50	12.38	17.16
including: short-term liabilities	6.20	5.77	5.45	5.50	7.28	12.53
Current liquidity	1.01	1.11	1.00	0.99	0.76	0.58
Total debt (to assets)	64.8	61.2	64.7	67.6	76.3	77.5

Source: own calculations based on unpublished CSO data.

Figure 12.4. Differences in financial standing in 2013 and the change after 2008



Source: own calculations based on unpublished CSO data.

However, the total debt of producers of alcoholic beverages exceeds the average of the food industry. It is particularly high in brewing and spirit industries, exceeding the debt ratio of the food industry. Only in the wine industry it is smaller than the average in food industry (in 2013 it was lower by 4.3 pp).

12.9. Business breakdown structure

In the period under analysis, the number of industrial spirit companies decreased by half, which was primarily due to a decline in the number of small companies. Medium and large companies decreased in number as well (Table 12.10). For three years, the number of spirit companies has been more stable, especially in the group of large and medium undertakings. In the wine industry, the number of industrial companies decreased by 1/4; the largest fall in number was reported for medium companies (over half), with minor changes in the number of large and small companies. In contrast, the number of industrial breweries was relatively stable, although that of small and medium enterprises has recently grown. All three branches of production of alcoholic beverages witnessed a drop in the number of micro companies; in the spirit industry – from 124 companies in 2008 to 72 in 2012, in the wine industry – from 64 to 43, and in the brewing industry – from 42 to 38 undertakings; by about 33% in total.

Table 12.10. Structure of industrial producers of alcoholic beverages

Specification	2008	2009	2010	2011	2012	2013
Number of industrial companies:						
spirit companies	80	53	47	44	39	42
including: large companies	6	6	6	4	4	4
wine companies	27	33	24	21	23	20
including: medium companies	10	12	11	7	6	4
breweries	35	34	34	34	36	38
including: large companies	6	7	6	6	6	5
Share of large companies in employment in:						
spirit sector	38.2	43.7	34.0	48.1	48.8	45.9
wine sector[a]	68.1	76.6	82.0	68.7	52.8	41.8
brewing sector	80.5	82.5	79.5	77.5	76.9	75.1
Share of large companies in production in:						
spirit sector	57.2	62.8	70.7	65.5	63.5	.
wine sector[a]	30.6	60.3	52.4	12.9	55.7	.
brewing sector	90.3	90.6	90.3	87.5	85.9	.

[a] applies to medium companies, as there were no large companies except for 2012

Source: unpublished CSO data and own calculations.

The highest production concentration is observed in the brewing industry, as the share of large companies in employment has been at about 80% for many years, while in production – at about 90%, although decreasing in recent years, as a result of the small expansion of medium companies. A slightly smaller level of concentration is reported for the spirit industry, where the share of large companies in employment came close to 50%, while in production – exceeded 60%. The lowest concentration is observed in the wine industry, where no large companies operated (except for 2012). Medium companies employed half of the staff working in the industry and their share in production was even smaller.

The high level of concentration, especially of the brewing industry, is also evidenced by the share of the three largest companies in the sector's turnover, which amounted to about 75% in 2013 (Kompania Piwowarska, Grupa Żywiec and Carlsberg together).

12.10. Strength of Polish producers of alcoholic beverages against other EU Member States

Poland is the third largest producer of spirit and beer in the European Union with a share of 16.3% and 11.5%, respectively (Table 12.11). In Poland, the production value of spirit is by 1/4 lower than in the UK, but only by 5% lower than in France and the largest one among the EU-12. In contrast, it is much higher than that of other EU-15 producers, as it is by about 1/3 higher than in Germany and more than half higher than in Italy. Spirit production per capita in Poland is twice that of the EU and higher than in the countries of major producers (the UK and France). In Poland, the production value of beer (at comparable prices) in 2012 was by about 1/3 lower than that of two major producers (Germany and the UK), but at the same time by about 2/3

higher than that of the next producer and the highest throughout the EU-12. In Poland, the production value of beer per capita was by half higher than in the EU, but lower than in Belgium, which is the sixth largest producer of this beverage in the Community. However, Polish producers hold a small share in the EU production of wine (less than 2%), as opposed to France, Italy and Spain being giants in this respect with a share of about 80% in total. The production value of wine per capita in Poland is several times lower than in the EU and over ten times lower than in countries being major producers.

Table 12.11. Producers of alcoholic beverages in Poland and other EU Member States in 2012

Member States	Production[a] value (EUR billion)	Share in the EU-27 (%)	Production[a] per capita (EUR)	Labour[a] productivity (EUR thousand per employee)	Turnover[a] per company (EUR million)
Production of spirituous beverages					
EU-27	**23.6**	**100.0**	**47.3**	**469.7**	**5.45**
EU-15	**18.2**	**77.3**	**45.8**	**494.3**	**6.01**
UK	5.1	21.7	80.8	511.6	47.37
France	4.0	17.0	63.1	489.6	5.99
Germany	2.9	12.3	35.4	561.8	4.62
Italy	2.5	10.6	42.1	588.5	4.89
Spain	1.3	5.7	28.2	423.3	4.08
EU-12	**5.4**	**22.7**	**53.2**	**401.8**	**4.15**
Poland	3.8	16.3	99.7	915.9	34.6
Hungary	0.4	1.5	36.4	215.0	0.67
Production of wine					
EU-27	**32.3**	**100.0**	**64.7**	**339.2**	**2.64**
EU-15	**29.8**	**92.3**	**74.8**	**384.9**	**3.14**
France	9.1	28.1	142.3	410.2	5.25
Italy	7.8	24.3	131.2	525.3	4.16
Spain	7.3	22.7	154.4	310.6	1.89
Germany	2.2	6.8	26.7	427.3	6.24
EU-12	2.5	7.7	24.8	140.4	0.91
Poland	0.5	1.5	12.6	345.3	7.35
Hungary	0.5	1.7	54.6	141.3	0.59
Production of beer (malt-free)					
EU-27	**42.6**	**100.0**	**85.5**	**366.4**	**14.13**
EU-15	**31.0**	**72.8**	**78.0**	**364.8**	**11.70**
Germany	7.5	17.5	91.6	246.6	10.20
UK	7.2	16.9	113.5	417.4	10.33
Spain	3.0	7.1	64.0	533.1	37.42
EU-12	**11.6**	**27.2**	**115.1**	**370.8**	**31.85**
Poland	4.9	11.5	126.8	625.4	72.93
Romania	1.7	5.0	91.2	336.7	107.51

[a] at comparable prices, i.e. at current prices adjusted by the purchasing power parity

Source: own calculations based on Eurostat data.

Labour productivity in spirit and brewing industries in Poland was almost twice higher than the EU average and that of countries being major producers of spirituous beverages and beer. Relatively high labour productivity in Poland results not only from

the modernity and concentration of production, but also from its diverse structure. In Poland, it is dominated by pure vodka and beer produced by major companies, while in the countries of other large producers – the range of spirituous beverages is more diverse and the share of local brands and micro breweries is more significant.

In Poland, both production branches of alcoholic beverages, i.e. spirituous beverages and beer, are highly concentrated with turnover per average company as a measure thereof, being several times higher in 2012 than the EU average. In terms of turnover per spirit company, only the UK was ahead of Poland.

In Poland, the efficiency of the wine sector with labour productivity as a measure thereof is similar to that of the EU. Producers from Italy, France and Germany are leaders in this regard. However, the level of concentration measured by turnover per company in Poland is higher than in most countries and almost three times higher than the EU average.

12.11. Conclusions

In recent years, the production of alcoholic beverages has followed a slight upward trend, but only in certain segments of the market. This development was boosted by growing export demand with a slightly increased interest amongst domestic consumers in certain types of beverages, such as low-alcohol flavoured vodka, or flavoured or regional beer. There was a slight increase in the internationalisation of the sector with self-sufficiency, the share of production in exports or imports in domestic consumption as measures thereof. However, it is still small, which means that opportunities created by the European integration and the development of globalisation processes are underexploited by the sector. Furthermore, the development of the biofuel sector did not create greater opportunities, as the production of dehydrated spirit has been fairly stable for three years, although twice higher than that in the middle of the last decade.

The production of this sector grew slightly in the context of the rapidly increasing value of fixed assets, the capital-labour ratio and the capital intensity of production. At the same time, companies reduced their investment activity and used labour cost economically. However, the increase in resources of all production factors decreased efficiency, which is still comparable to other industries and the average for the food industry. Return on sales and equity is above the average, but unstable in the spirit industry.

The sector developed under the conditions of high volatility in prices of raw materials (grain), especially in the context of their large growth in 2010-2012, when purchase prices rose faster than sales prices. At the same time, prices of alcoholic beverages went relatively lower, as consumer prices grew slower than inflation, especially in the group of spirituous beverages.

13. Tobacco industry

13.1. Domestic demand

Domestic demand for tobacco products shows a rapid downward trend. Cigarette consumption declined by 5.5% per year and was by about 1/4 lower in 2013 than in 2008, while supplies of these goods to the market fell by 1/3 (Table 13.1). This major drop is due to intensive health-oriented consumer education, indicating the harmfulness of smoking, continuously supported by state fiscal policy, which routinely increases excise duty rates, thus leading to growth in retail prices of cigarettes by 10.5% per year on average, being more than three times higher than inflation.

Table 13.1. Domestic demand for tobacco products

Specification	2008	2009	2010	2011	2012	2013
Cigarette consumption (number of cigarettes per capita)	2,091	1,749	1,805	1,795	1,728	1,564
Supplies to the market (billion pieces)	89.2	58.2	67.2	71.8	64.5	59.0
Retail sales (PLN billion)	16.5	18.2	20.2	19.5	21.3	21.0[a]
Changes in retail prices (%)	13.4	15.7	11.9	9.0	8.8	7.5
Inflation (%)	4.2	3.5	2.6	4.3	3.7	0.9

[a] non-final data

Source: the CSO Statistical Yearbooks of 2009-2013, Concise Statistical Yearbook of Poland 2014, CSO, Warszawa 2014, "CSO Statistical Bulletin" of 2014, No. 7 and own calculations.

Large price increases mean that, despite lower demand, the value of retail sales of cigarettes increases. At current prices, it grew by about 5% per year, but the share of cigarettes in retail sales of consumer goods remains at almost 4%. In contrast, the share of domestic use in cigarette production steadily decreases from 68.5% in 2008 to 39% in 2012 (cf. Tables 13.1 and 13.4). These trends may continue in the future, especially as cigarette prices in Poland are still below the EU average by about 40%[41], and therefore state fiscal policy will continue to support health-oriented consumer education. This means that the domestic tobacco market continues to shrink, which is a growing threat to the Polish tobacco industry, forcing producers to seek foreign export markets.

13.2. Foreign trade

The effects of declining domestic demand are more than compensated by rapid growth in exports of tobacco products (Table 13.2). Their exports increased in volume by 24%, while in value – more than doubled, reaching almost 9% of the export value of products in the food industry as a whole. Over five years, the positive balance of trade in tobacco products has grown to nearly EUR 1.4 billion, which is over 1/5 of the balance of trade in agri-food products. It is also important that a significant increase in the average price of exported tobacco products from 7.2 to 13 EUR per 1 kg is one of the reasons for the major increase in the value of exports and the trade balance.

[41] Cf. I. Szczepaniak, *Ceny konsumenta żywności w Polsce i Unii Europejskiej (Food Consumer Prices in Poland and the European Union)*, "Przemysł Spożywczy" (Food Industry) of 2014, No. 10.

Table 13.2. Demand of exporters of tobacco products

Specification	2008	2009	2010	2011	2012	2013
Exports of tobacco products						
thousand tonnes in total	92.1	101.3	104.5	109.1	117.0	114.2
in EUR million	662.5	1,027.7	1,144.6	1,255.1	1,414.0	1,473.6
Balance (EUR million)	568.2	948.4	1,019.6	1,116.5	1,292.1	1,356.1
Indicators (%)						
export-import coverage	705.5	1,296.0	915.7	905.6	1,160.0	1,254.1
self-sufficiency[a]	228.5	300.5	291.5	271.0	252.5	396.7
share of exports in production[a]	68.1	84.3	82.4	78.9	67.7	88.6
share of imports in use[a]	27.0	52.8	48.7	42.9	30.9	54.3

[a] in accordance with quantitative data, based on which domestic consumption was determined using the following formula: production + imports – exports

Source: own calculations based on data from the Ministry of Finance.

All the rates given in Table 13.2 indicate a very strong competitive position of our producers of tobacco products in foreign markets, mainly in other EU Member States. Their export value is 12.5-fold higher than their import value and the self-sufficiency ratio reaches almost 400%, i.e. the production of tobacco products is 4 times higher than domestic use. The export orientation ratio is very high, i.e. almost 90%, and was by almost 1/3 higher in 2013 than in 2008. The share of imports in domestic use grew as well, but it is lower than the share of exports in production by 34 pp.

13.3. Supply of raw materials to the tobacco industry

Imports of industrial tobacco are the main source of raw materials in the production of tobacco products, which constitutes slightly more than 70% of resources and up to 7/8 of domestic use. Tobacco production in Poland stabilised at about 35 thousand tonnes per year, which is by 15% less than in 2008. However, imports increased to almost 90 thousand tonnes and were by 30% higher than in 2008, while their value doubled (Table 13.3). The balance of trade in tobacco is negative (almost EUR 300 million) being over twice higher than in 2008, but more than 4 times smaller than a positive balance of trade in tobacco products. Therefore, the balance of the entire sector is positive and exceeds EUR 1 billion.

All measures of the competitive position suggest that Polish tobacco producers are not competitive in foreign markets and their position continues to weaken. However, a very strong position of producers of tobacco products means that the development of processing based mainly on imported raw materials can make the whole sector competitive and strong in foreign markets. The fact that the sector takes benefit of fast rising prices of both raw materials[42] and tobacco products (cf. Tables 13.1 and 13.2) facilitates strengthening its position.

[42] Additionally, tobacco producers received direct payments, which amounted to: PLN 300 million in 2008, PLN 471 million in 2010 and PLN 180.5 million in 2012.

Table 13.3. Resources of raw materials in the tobacco industry

Specification	2008	2009	2010	2011	2012	2013
Tobacco harvests (thousand tonnes)	41.2	41.9	34.8	34.4	35.0	30.8
Imports in thousand tonnes	67.2	69.5	84.0	80.5	89.3	88.1
in EUR million	175.2	236.2	300.6	318.4	342.4	357.8
Balance (EUR million)	-136.2	-197.6	-252.3	-275.2	-298.5	-296.8
Indicators (%)						
export-import coverage	22.3	16.3	16.1	13.6	12.8	16.9
self-sufficiency[a]	45.7	45.6	36.8	34.2	32.5	31.7
share of exports in resources[a]	63.3	62.3	70.7	70.1	71.8	74.1
share of imports in domestic use[a]	74.5	75.6	85.3	80.0	82.9	90.7
Purchase prices (PLN/kg)	3.11	4.08	6.23	6.93	6.72	.
for imports (EUR/kg)	2.61	3.40	3.58	3.96	3.83	4.05

[a] in accordance with quantitative data

Source: data from the CSO and the Ministry of Finance and own calculations.

13.4. Production of the tobacco industry

The CSO data on the production of the tobacco industry are inconclusive, because data in thousand tonnes and billion pieces, values at current prices and their change at constant prices or at exercise prices are inconsistent (Table 13.4). However, it can be estimated that the sector's production at constant prices (and in billion pieces) was by about 20% higher in 2013 than in 2008, i.e. grew by about 3.5% per year. Therefore, the growth rate was similar to the average growth rate of the Polish food industry as a whole. At that time, sales prices of tobacco products rose by about 20% as well, thus production value growth at current prices was twice faster and amounted to about 45%. The economic surplus increased slightly slower (by nearly 40%), while the gross value added (GVA) – much slower, i.e. by about 20% (at current prices). Therefore, their share in basic producer prices and the value of sold production continued to fall (Figure 13.1).

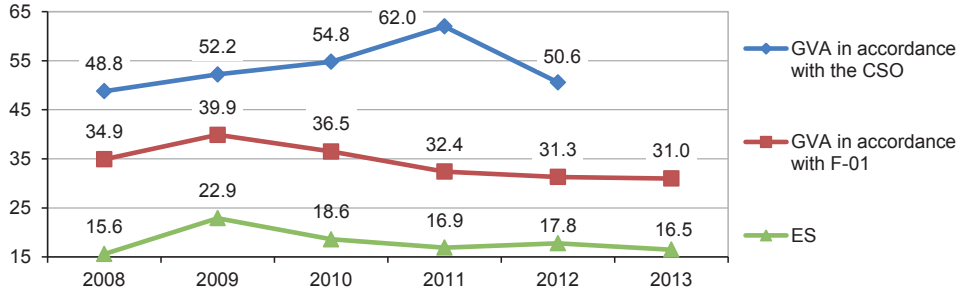
Table 13.4. Production of tobacco products

Specification	2008	2009	2010	2011	2012	2013
Production (thousand tonnes)	135.3	120.2	126.8	138.2	161.1	128.7
including: cigarettes (billion pieces)	130.1	125.2	144.7	150.5	156.5	150.5
Changes in production at constant prices (%)	.[a]	11.3	-1.5	-2.8	5.9	7.1
Changes in producer prices (%)	1.3	7.1	4.3	3.7	4.3	0.2
Production value[b] at current prices (PLN million)	2,726	3,235	3,318	3,356	3,697	3,990[c]
including: in accordance with F-01	2,867	3,358	3,088	3,426	3,915	3,762
Production value at constant prices (PLN million)	3,301	3,656	3,662	3,507	3,705	3,990
Production value at exercise prices (PLN billion)	15.5	18.2	17.2	15.4	16.2	16.1[c]
Gross value added (PLN billion)	1.33	1.69	1.85	2.08	1.87	.
including: in accordance with F-01 (PLN million)	1,001	1,342	1,126	1,110	1,229	1,167
Economic surplus in accordance with F-01 (PLN million)	446	768	582	578	696	621

[a] in accordance with the CSO, 2008 brought a 37% decline in the value of sold production at constant prices and a 9.8% drop in the production of tobacco products, while that of cigarettes increased by 4.9%, the value of production at exercise prices fell by 2.3% with an increase in producer prices by 1.3%; these data are contradictory and undermine the credibility of data on a decline in sold production by as much as 37%; [b] at basic prices; [c] estimate based on the CSO data on changes in producer prices and production value at constant prices

Source: the CSO data and own calculations.

Figure 13.1. Relative level of the gross value added and the economic surplus in the tobacco industry (% of the value of sold production)



Source: own calculations in accordance with CSO data (from the CSO Statistical Yearbooks of 2010--2013 and F-01 statements).

13.5. Resources of production factors

Production factors have been used economically in recent years. Over five years, human labour resources in the tobacco industry have fell by about 20%, i.e. by 3.5-4% per year, while labour cost has stabilised at about PLN 0.5 billion per year (Table 13.5). In this period, the value of fixed assets (at standard prices) indeed increased by about 40-50%, but at the same time the value of current assets almost halved (from PLN 3 billion on 1 January 2008 to PLN 1.7 billion in 2013). Therefore, the value of company assets in the sector and the total resources of production factors was only by about 5% higher in 2013 than in 2008 and by about 15% higher than that of 2010.

Table 13.5. Labour and capital resources in the tobacco industry

Specification	2008	2009	2010	2011	2012	2013
Number of employees (thousand employees)	7.2	6.4	6.0	5.6	5.6	.
Employment (thousand employees)	6.67	6.01	5.76	5.29	5.20	5.29
including: in accordance with F-01	6.47	6.03	5.69	5.25	5.19	5.27
Gross fixed assets (PLN million)	3,615	4,152	4,369	4,570	4,942	.
including: equipment	2,718	3,194	3,365	3,558	3,901	.
Net fixed assets (PLN million)	1,850	1,876	2,311	2,473	2,687	.
Company assets in accordance with F-01 (PLN million)	5,400[a]	5,167	4,859	4,932	5,362	5,577
including: fixed assets	2,375	2,896	3,061	3,341	3,570	3,863
Labour cost (PLN million per year)	511	521	491	495	510	523
Total resources[b] in accordance with F-01 (PLN million)	6,933	6,730	6,332	6,417	6,892	7,146
Investments (PLN million)	.	663	441	625	672	.
including: in accordance with F-01	469	642	349	581	670	550
Rate of investment[c]	7.8	16.0	10.1	13.7	13.6	.
Capital-labour ratio[d] (PLN thousand)	407.5	531.5	584.2	680.2	750.2	.
Capital intensity of production[e] in accordance with F-01 (PLN/PLN)	1.88	1.53	1.57	1.44	1.37	1.48
Total resources/production in accordance with F-01	2.42	2.00	2.05	1.87	1.76	1.90

[a] current assets at the beginning of the year; [b] fixed and current assets increased by the value of three times labour cost per year; [c] % of gross fixed assets, [d] applies to the value of equipment per employee, [e] the ratio of the value of fixed and current assets to the value of sold production at the basic prices

Source: the CSO data (Statistical Yearbooks of 2010-2013 and unpublished data from F-01 statements).

In the tobacco industry, as in the entire Polish economy, human labour continues to be substituted by objectified labour and the capital-labour ratio increases (over five years, it has almost doubled from about PLN 400 thousand to almost PLN 800 thousand), but at the same time the capital intensity of production falls (by about 20% in total). This phenomenon is rare in other branches of the Polish food industry.

The tobacco industry is also characterised by a high rate of investment. Capital expenditure in the sector averages over PLN 0.5 billion per year, representing about 12% of the initial value of fixed assets, while the average life cycle of machinery and equipment did not exceed eight years. This is a good basis for maintaining the competitiveness of Polish producers of tobacco products and their strong position in the European market.

13.6. Productivity and efficiency of the sector

In recent years, labour productivity in the tobacco industry has continued to grow rapidly. Labour productivity increased both at current and constant prices by as much as 90% and over 50%, respectively. At this time, also the average remuneration rose (by 24%), but the rate of pay for productivity growth with remuneration growth was only 27.5%, although the average remuneration in the sector (PLN 6 thousand) is by over 65% higher than in industrial processing as a whole. Rapid labour productivity growth is accompanied by a relative stabilisation in the productivity of fixed assets (PLN 0.75) and a significant improvement in resources productivity (by 27% from PLN 0.414 to PLN 0.526).

Productivity growth does not necessitate efficiency growth; but all efficiency measures improved in the tobacco industry (Table 13.6).

Table 13.6. Productivity and efficiency of the tobacco industry

Specification	2008	2009	2010	2011	2012	2013
Labour productivity (PLN thousand per employee) at						
– current prices	409.7	535.3	586.5	634.4	711.0	754.3
– constant prices	494.9	608.3	635.8	662.9	712.3	754.3
Productivity of						
– fixed assets	0.754	0.779	0.759	0.734	0.748	.
– total resources[a]	0.414	0.499	0.488	0.534	0.568	0.526
Efficiency[a] measured by GVA of:						
– labour inputs	1.96	2.58	2.29	2.24	2.41	2.23
– assets	0.185	0.260	0.231	0.225	0.229	0.209
– resources	0.144	0.199	0.178	0.173	0.178	0.163
Efficiency[a] measured by ES of:						
– labour inputs	0.873	1.474	1.185	1.168	1.365	1.187
– assets	0.083	0.149	0.120	0.117	0.130	0.111
– resources	0.064	0.114	0.092	0.090	0.101	0.087

[a] in accordance with F-01

Source: own calculations based on the CSO data (cf. Tables 13.3 and 13.4).

At the macro level (by GVA), the efficiency of labour inputs has improved by 14% over five years, while that of assets and resources – by over 10%. The sector's efficiency at the micro level, i.e. measured by the economic surplus, grew even more, as the efficiency of labour inputs was by about 36% higher in 2013 than in 2008 and that of assets and resources – by 34% and 36%, respectively. All of these efficiency measures approached average levels in the entire food industry.

Productivity and efficiency are already strengths of the tobacco industry and their considerable improvement strengthened competitiveness and the competitive position of the sector. This is a significant advantage of Polish producers of tobacco products, particularly important in the context of declining demand for these products, which is due to both fiscal policies of all EU Member States and their increasingly effective health-oriented policies.

13.7. Financial performance and standing of the sector

Tobacco enterprises do not achieve high returns[43], which were quite diverse and which stand at about 4% of production value at basic prices and 6-8% of equity (Table 13.7). Return on equity is almost twice lower than the average of the food industry and 3-4 times smaller than the average in the production of other stimulants (alcoholic beverages).

Table 13.7. Financial performance of the tobacco industry

Specification	2008	2009	2010	2011	2012	2013
Net profit – PLN million	15	303	201	134	278	212
– % of sales	0.39	4.80	4.36	2.67	5.20	3.95
– ROE	0.67	15.85	7.50	5.80	8.50	6.30
Equity (PLN million)	2,218	1,911	2,683	2,334	3,272	3,376
Total liabilities (PLN million)	4,239[a]	3,256	2,176	2,599	2,090	2,202
including: short-term liabilities	3,781[a]	2,996	1,883	1,976	1,784	1,906
Current liquidity	1.04	0.76	0.95	0.81	1.00	0.90
Total debt (%)	65.6	63.8	44.8	52.6	39.0	39.5

[a] at the beginning of the year

Source: own elaboration based on unpublished CSO data.

Tobacco companies have low liquidity and actually have no own funds in the market. At the same time, however, they achieved significant progress in managing current assets, as at the end of 2013 compared to the beginning of 2008:

– there were no changes in inventories, but inventories of finished goods decreased, while their turnover increased from about 180 days to 125 days,

[43] Except for 2008, when net profit amounted to only PLN 15 million due to a sudden and temporary increase in tax liabilities (to PLN 5.4 billion against PLN 0.8 billion in 2009), current assets grew, mainly accruals, inventories and receivables from affiliates. The situation was sorted out in 2008 and early 2009; therefore, assets, resources, productivity and efficiency were analysed based on assets as on 1 January 2008, rather than 31 December 2008.

– receivables decreased more than twice,
– current assets dropped by over 40%,
– current liabilities decreased by almost half, including tax liabilities decreasing almost fivefold.

As a result of these changes, the total debt of the sector is not high, i.e. below 40%, which is by 26 pp less than five years ago. This means that the financial standing of the sector is safe which, with a significant debt reduction, enables to conclude that it does not pose a threat to the continuation and development of activities in this regard.

13.8. Business breakdown structure

The business breakdown structure of the tobacco industry is stable and highly concentrated. Although the number of active companies grows, there have been 15 industrial companies for many years in this sector, including 8 large companies with at least 250 employees. Their share in the sector's employment and production amounts to 92-94% (Table 13.8). Every such company employs over 600 people on average. The share of the three largest companies in sales revenue of the sector amounts to 58%. The tobacco industry is one of the branches of the food industry with the highest level of concentration and globalisation, similar to that in oil-mill, sugar and brewing industries. In the tobacco industry, no company is dominant, as the share of the largest one in the sector's turnover was 22.5% (in 2013).

Table 13.8. Tobacco undertakings

Specification	2008	2009	2010	2011	2012	2013
Number of companies	20	20	22	23	26	.
including: industrial companies	15	15	15	14	11	15
including: large companies	9	9	8	8	8	8
Employment (thousand employees)	6.67	6.01	5.76	5.29	5.20	5.29
including: large companies	6.21	5.59	4.88	4.92	4.91	4.88
Sold production (PLN billion)	2.73	3.23	3.30	3.34	3.66	3.99
including: large companies	2.52	3.02	3.07	3.08	3.45	.

Source: the CSO data.

13.9. Position of the Polish tobacco industry in the EU

Poland is the third largest tobacco producer in the EU, behind Germany and the UK, and has a significant advantage over other EU Member States. The tobacco industry is one of few branches of the food industry witnessing an EU-wide fall in production, in particular in France and the Netherlands; it noted a growth only in certain EU-12 Member States (Hungary, Romania, Bulgaria).

The Polish tobacco industry is also characterised by relatively high rates of production per capita, employee or company. In Poland, these rates are similar to or slightly lower than the EU average, but still significantly lower than those achieved by the tobacco industry in Germany and the UK and higher than in other EU Member

States. It is also important that all measures of the position of our tobacco producers significantly improved: in 2000, Poland was the fourth largest producer of these products, while labour performance was below the EU-15 average by 35% (in 2012, by 24%).

Table 13.9. Tobacco industry in the EU Member States in 2012

Member States	Production[a] value (EUR billion)	Share of the Member States in production[b] (%)	Changes in production value (% per year[c])	Production[a] value per		
				capita (EUR)	employee (EUR thousand)	company (EUR million)
EU-27	**38.89**	**100.0**	**-2.0**	**78.0**	**963.5**	**150.7**
EU-15	**30.29**	**77.9**	**-2.9**	**76.1**	**1,104.7**	**170.2**
Germany	13.56	34.9	-0.4	166.2	1,292.7	467.5
UK	10.56	27.2	-0.9	166.7	2,246.9	960.0
Netherlands	2.29	5.9	-4.5	136.6	781.6	120.5
France	1.21	3.1	-15.0	19.0	636.8	242.0
Spain	1.11	2.9	-2.3	23.4	403.6	23.1
EU-12	**8.60**	**22.1**	**0.2**	**85.3**	**766.5**	**124.6**
Poland	4.39	11.3	0.5	114.0	841.0	151.4
Romania	1.66[d]	4.3	4.0	88.0	1,057.3	207.5
Bulgaria	1.49	3.8	4.1	204.4	470.0	78.4
Hungary	1.06	2.7	7.5	106.3	861.8	212.0

[a] at comparable prices, i.e. at current prices adjusted by the purchasing power parity, [b] Eurostat does not provide, mainly due to statistical confidentiality, data on production of this sector in Sweden, Finland, Ireland and the Czech Republic, Slovakia, the Baltic States, Cyprus and Malta, [c] in 2000-2012, values at nominal prices, [d] estimate

Source: own calculations based on Eurostat data.

13.10. Conclusions

The tobacco industry – despite rapidly declining domestic demand – is still a major branch of the Polish food industry. In recent years, it has strengthened its position as an exporter of tobacco products, produced mainly of imported raw materials, and has become the third largest producer of these products in the European Union enjoying significant competitive advantages in the European market.

Its strong position stems not only from export expansion, but also the cost--effective use of labour and capital resources. Over five years, the sector's productivity and efficiency have significantly improved. This is due to a reduction in employment and the value of assets, both fixed and current assets; remunerations grew almost four times slower than labour productivity, the capital intensity of production fell, while the efficiency of labour and capital resources increased significantly, not only at the micro but also macro level. This allowed for maintaining a safe, albeit relatively low, level of returns and decreasing corporate debt. These are adaptation measures that consolidated the strong competitive position of Polish producers of tobacco products.

14. Food industry

14.1. Domestic demand

Recently, the food market in Poland has been characterised by a fall in domestic demand for food, beverages and tobacco products (Table 14.1). In 2013, the value of consumption of food and stimulants at constant prices was by almost 5% lower than its peak in 2008. This was a major change in one of the main factors stimulating the development of our food economy, as previous 15 years had brought growth in the consumption of these goods by 2.8% per year.

Table 14.1. Consumption and retail sales of food, beverages and tobacco products in Poland

Specification	2008	2009	2010	2011	2012	2013[a]
Consumption value (PLN billion) of food, beverages and tobacco products at current prices	207.1	218.8	225.8	233.4	239.8	237.0
including: food and soft beverages	156.1	162.5	167.9	174.0	179.1	178.5
Changes in consumption value at constant prices (%):						
– food and soft beverages	2.4	0.1	0.1	-1.2	-2.0	-1.0
– alcoholic beverages and tobacco products	2.3	0.8	-2.2	-1.7	-1.8	-2.0
– food and stimulants on average	2.4	0.3	-0.5	-1.3	-1.9	-1.4
Share of food, beverages and tobacco products in household expenditure (%).	26.8	27.0	26.4	25.3	24.8	24.1
Retail sales of food, beverages and tobacco products at current prices (PLN billion)	194.0	204.3	209.8	215.7	222.4	219.4
including: food and soft beverages	146.5	152.2	156.0	161.0	166.2	165.8
Changes in retail sales at constant prices (%):						
– food and soft beverages	0.9	-0.2	-0.2	-2.1	-1.1	-2.2
– alcoholic beverages and tobacco products	2.4	0.1	-1.9	-1.9	-1.3	-7.8
– food and stimulants on average	1.3	-0.1	-0.5	-2.0	-1.1	-3.2

[a] non-final data

Source: the CSO Statistical Yearbooks, 2010, pp. 587, 771, 772; 2013, pp. 553, 726, 727; Concise Statistical Yearbook of Poland 2014, CSO, Warszawa 2014, pp. 212-213.

A slowdown in economic growth was one of the reasons for declining domestic demand in the food market, although GDP has steadily increased for the last five years, by 2.7% per year on average, to be 14.4% higher in 2013 than in 2008. Incomes of the population also steadily increased, as individual consumption in this period grew by 10%, while real remunerations – by 8%. In this context, reduced domestic demand for food products can be partly explained by rapidly rising prices of food, beverages and tobacco products, as prices of food and soft beverages were by 20% higher in 2013 than in 2008, while those of alcoholic beverages and tobacco products grew by 28% (including tobacco – by 65%), with inflation at about 16%. This period brought an actual increase in prices of food, especially tobacco products. Thus, the increase in prices was the only source of growth in the value of consumption and retail sales of food, beverages and tobacco products at current prices, which have grown respectively by 14.4% and 13.1% over the last five years. This also means that the

impact of growing prices and risks arising out of the global economic and financial crisis on domestic demand was higher than that of income factors. This resulted in a further decrease in the share of food, beverages and tobacco products in household expenditure. In 2013, it amounted to about 24%, compared to 30% in 2000 and 36% in 1992. This may indicate not only a change in the consumption structure in Poland, but also progress in the rationalisation of nutrition, because the energy value of the average food ration continues to fall in our country, just as in other developed countries.

14.2. Foreign trade in food products

The effects of declining domestic demand for food were more than compensated by rapidly growing exports. Over the past five years, exports of food products in Poland – despite the crisis and recession in many receiving countries – have increased by nearly 12% per year (EUR 1.5 billion) and a positive trade balance more than doubled (up to EUR 6.6 billion). It was indeed slower than in 2003-2008, but still fast enough to significantly improve all the main measures of the sector's competitiveness and internationalisation (Table 14.2).

Table 14.2. Results of foreign trade in food products

Specification	2008	2009	2010	2011	2012	2013
Agri-food exports (EUR billion)	11.3	11.5	13.5	15.2	17.9	20.4
including: food products	9.6	9.3	11.4	13.0	14.7	16.7
Imports of food products (EUR billion)	6.8	6.7	7.8	8.9	9.6	10.1
Balance of trade in food products (EUR billion)	2.8	2.7	3.6	4.1	5.2	6.6
Indicators (%)						
– export-import coverage	140.8	140.4	145.5	146.0	153.9	165.2
– sector's self-sufficiency[a]	106.9	107.9	109.6	110.2	112.0	115.3
– share of exports in the sector's sales	22.5	25.6	28.0	29.3	30.6	33.7
– share of imports in domestic use	16.7	19.7	21.1	22.1	22.2	23.5

[a] ratio of production to domestic use, which = production + imports – exports

Source: based on data from the Ministry of Finance and own calculations.

Hence, the export-import coverage indicator of food products grew by as much as 25 pp (to 165%), the sector's self-sufficiency indicator – by over 8 pp (up to 115%), the share of exports in the sector's sales – by 11 pp, while the share of imports in domestic use – by nearly 7 pp. This suggests the growing competitiveness of the Polish food industry in markets worldwide, mainly in Europe, but also the increasing internationalisation of food businesses. In 2013, 1/3 of the sector's production was exported, while imported food accounted for almost 1/4 of domestic use.

14.3. Resources of raw materials in the food industry

In recent years, the food industry has experienced no severe raw material constraints. In 2008-2013, agricultural commodity production (at constant prices) grew by 12.5% (by 2.4% per year), but experienced high variability (Table 14.3). Imports of raw materials (agricultural and semi-finished products) grew more than three times faster and increased by over 50% (9% per year on average) in the same period.

Table 14.3. Supply of raw materials for food processing

Specification	2008	2009	2010	2011	2012	2013
Changes (%) in the value of:						
– agricultural commodity production (at constant prices)	6.1	2.8	-1.7	3.8	1.2	6.1
– raw material imports (EUR)	19.7	-6.6	16.1	18.2	6.6	5.6
Value of agricultural commodity production (PLN billion, at current prices)	56.3	56.2	59.4	71.3	75.0	81.3
Value of imports (EUR million) of:						
– agricultural products	3,024	2,644	3,112	3,737	3,983	4,176
– semi-finished products	3,461	3,410	3,917	4,573	4,837	5,182
Value of raw material resources (PLN billion)	72.5	82.4	87.5	105.5	111.9	120.1
Share of agricultural commodity production in resources (%)	77.7	68.2	67.9	67.6	67.0	67.7

Source: data from the CSO and the Ministry of Finance and own calculations.

Over five years, the value of supply of raw materials has grown by 66% at current prices, i.e. by about 30% at constant prices. Imported products account for almost 1/3 of raw materials in total, i.e. 10 pp more than in 2008. The dependence of the food industry on the supply of raw materials from domestic agriculture decreases, while international-isation moves forward rapidly also in terms of supply of raw materials for processing.

14.4. Prices in the agri-food market

Recent years have been a period of high prices of food and agricultural products. After a temporary decline in 2009, world food prices turned back to their high level of 2007-2008 and have recently been more than two times higher than a decade ago (Table 14.4). Prices of agricultural and food products rose also in Poland. In 2013, purchase prices were by about 30% higher than in 2008, while consumer prices of food, beverages and tobacco products went up by 22% in this period.

Table 14.4. World and domestic agri-food prices

Specification	2008	2009	2010	2011	2012	2013
1. FAO price index (2002-2004 = 100)	201.4	160.3	188.0	229.9	213.3	209.8
Changes in the FAO price index (%)	24.8	-20.4	17.3	22.3	-7.2	-1.7
2. Changes in domestic (%)						
– purchase prices of agricultural products	-0.1	-3.8	5.2	19.5	6.1	-0.4
– sales prices of food and beverage producers	1.4	1.7	-0.2	8.6	4.2	1.2
– retail prices of: food and soft beverages	6.1	4.1	2.7	5.4	4.3	2.0
alcoholic beverages	2.7	6.1	1.8	0.9	0.9	1.1
tobacco	13.4	15.7	11.9	9.0	8.8	7.5
on average	6.1	5.3	3.5	5.0	4.2	2.4
– inflation	4.2	3.5	2.6	4.3	3.7	0.9

Source: FAO (http://www.fao.world) and the CSO data published in Statistical Yearbooks.

Processor prices rose slower, as they grew by 17% in the same period, with inflation at 16% (3% per year). This price variation suggests that food became more expensive in every food chain link, in particular at the level of agricultural producers,

and that processing margins shrunk significantly at that time. This was not only a significant barrier to the development of food processing, but also a limiting factor to generating the economic surplus by food processors.

14.5. Production of the food industry

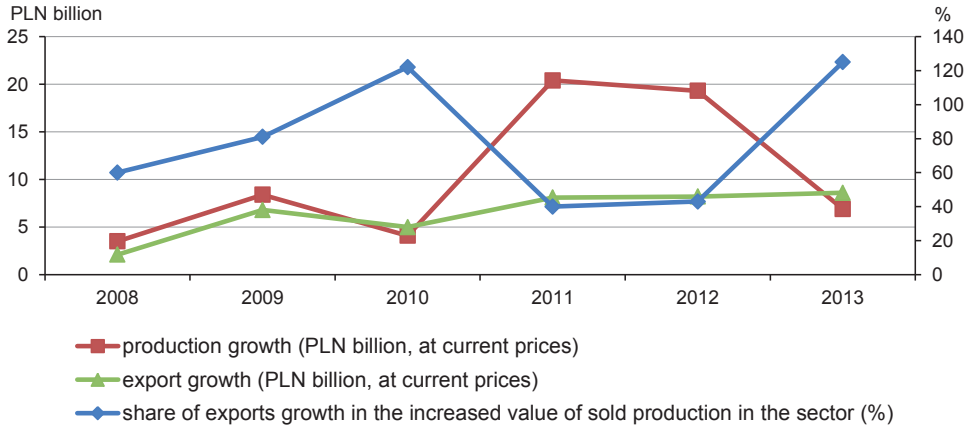
Recent years have brought a considerable slowdown in the development of the sector. The production of the food industry grew by 3.3% per year on average, which was almost twice slower than in 2003-2007 (5.9%). This mainly applies to beverage production (Table 14.5). The period was also characterised by highly varied changes in the production of: food ranging from +0.6% to +6.5%, beverages – from +4.4% to -8.5%, tobacco products – from +7.1% to -3.8%, the food industry – from +1.0% to +6.2% on average. During this period, the growth rate of the sector was high only in 2012. Exports, whose share in the increased value of sold production exceeded 60% and ranged from 40% to 125%, were the main source of growth in the food industry (Figure 14.1).

Table 14.5. Changes in the production value of the food industry
(% per year at constant prices)

Specification	2008	2009	2010	2011	2012	2013
Production of food products	0.6	4.5	4.6	4.2	6.5	2.4
Production of beverages	4.4	-0.8	-8.5	1.8	3.7	-0.4
Production of tobacco products	4.8	-3.8	-1.5	-2.8	5.9	7.1
Food industry on average	1.0	3.9	2.8	3.8	6.2	2.2
including: – pre-processing	-1.4	6.6	-1.1	3.6	10.7	6.8
– main processing	0.4	0.6	-1.5	3.4	5.0	5.8
– secondary processing	3.9	5.6	1.9	5.3	4.3	3.3
– production of stimulants	3.2	-3.3	5.1	2.7	2.6	0.9
– production for non-food purposes	3.5	10.3	7.9	-2.1	13.2	3.2

Source: the CSO data and own calculations.

Figure 14.1. Share of exports in the increased sold production of the food industry



Source: own calculations based on data from the CSO and the Ministry of Finance.

Recently, as in previous years, processing for non-food purposes has grown the fastest (in 2008-2013, by 6% per year on average), mainly the production of biofuels and feed, just as secondary processing, but only by 4% per year, as opposed to 7.2% per year in 2003-2007. A major slowdown in development was observed in the production of stimulants (from nearly 6% to 1.8% per year), while the primary (pre) processing of agricultural products continued to grow relatively fast (about 4.4% per year). Normal food production (main processing), which used to develop at the slowest rate, follows a slow upward trend (2.3% per year).

14.6. Resources of means of production

Labour and capital are the main factors of any business activity. Most often, they are measured by employment and the value of fixed assets or total assets engaged in a specific business. However, these measures fail to describe well the value of these resources, because:

- labour quality changes over time and differs across individual types of businesses,
- value of fixed assets is recorded at standard prices as on the date of registering a particular asset, therefore it neither reflects the current value of assets, nor the value at constant prices and all conversion is doubtful.

Therefore, the analysis of these resources and relationships between them, in accordance with the measures to date, was supplemented by:

- valuation of labour value based on three-year labour cost,
- analysis of all assets engaged in a specific business,
- estimate of the total value of labour and asset resources.

Table 14.6. Resources of means of production

Specification	2008	2009	2010	2011	2012	2013
Gross fixed assets (PLN billion)	72.8	77.6	81.8	87.7	94.0	100.5[a]
including: machinery and equipment	46.7	50.1	52.8	56.9	60.9	65.0[a]
Net fixed assets (PLN billion)	39.3	40.4	42.4	44.4	47.2	50.3[a]
Number of employees (thousand employees)	465.3	461.0	454.3	439.2	442.5	440.0[a]
Employment (thousand employees)	404.1	393.1	398.3	393.8	388.5	384.1
including: large and medium companies	307.9	297.6	300.3	299.8	299.2	298.4
in accordance with F-01	336.6	325.5	327.7	322.4	324.0	322.7
Labour cost (PLN billion per year in accordance with F-01)	14.1	14.5	14.7	15.8	16.6	17.1
Company assets (PLN billion)	103.5	108.9	110.8	127.7	134.3	143.8
including: fixed assets	53.0	61.8	62.0	71.5	73.9	81.6
Resources of means of production[b] (PLN billion)	145.7	152.5	154.9	179.8	184.0	195.2
Capital-labour ratio[c] (PLN thousand per capita)	115.6	127.4	132.6	144.9	156.8	169.2
Capital intensity[d] (PLN/PLN)	0.486	0.491	0.504	0.480	0.466	0.481
Total resources/production (PLN/PLN)	1.072	0.947	1.067	1.069	0.995	1.031
Investments (PLN billion)	7.93	6.62	6.68	7.63	8.11	8.50[a]
including: in accordance with F-01	7.32	5.93	5.92	6.53	6.73	7.11
equipment	5.53	4.59	4.80	5.36	5.67	6.20[a]

[a] estimate, [b] asset value + three times labour cost per year, [c] initial value of machinery and equipment per employee, [d] initial value of fixed assets per unit of production

Source: the CSO data and own calculations.

The main components of such a notion of resources of production factors involved in the food industry are presented in Table 14.6, which shows a slow decline in employment and a much faster increase in the value of fixed assets. The sector witnesses a well-known phenomenon, i.e. the substitution of human labour by capital, leading to continuous capital-labour ratio growth (by 46% after 2008).

Both assets and resources grew similarly to production (at current prices), thus indicators of the capital intensity of production and the ratio of resources to production value remained, in principle, unchanged throughout the period considered, i.e. a relative level of resources remains fairly stable. At the same time, the value of investments in the sector, following a major decline in 2009, increased steadily later on, reaching a slightly higher level in 2013 than before the global economic crisis. At that time, the ratio of capital expenditure to the value of fixed assets dropped, thus meaning an extension of the average asset restoration period (from 10 to 12 years).

14.7. Productivity and efficiency of the food industry

In recent years, labour productivity has continued to trend rapidly upwards, being 27% higher at constant prices in 2013 than in 2008. The rate of pay for labour productivity growth with average remuneration growth was 48.6%. Furthermore, the productivity of fixed assets and the total resources of production factors have recently followed a slight upward trend (Table 14.7).

Table 14.7. Measures of productivity and efficiency of the food industry

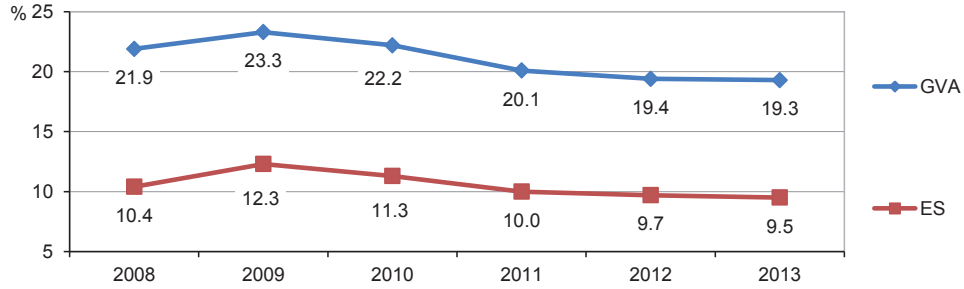
Specification	2008	2009	2010	2011	2012	2013
Labour productivity (PLN thousand, current prices)	370.5	402.2	407.2	463.7	519.7	543.6
including: large and medium companies	366.1	383.3	431.1	482.0	562.2	.
Labour productivity (PLN thousand, constant prices)	429.4	452.8	465.2	488.6	525.4	543.6
Productivity of fixed assets (PLN/PLN)	2.06	2.04	1.98	2.08	2.14	2.08
Productivity of resources (PLN/PLN)	0.93	0.95	0.95	0.94	1.00	0.97
Efficiency measured by GVA (PLN/PLN) of:						
– labour inputs	2.12	2.32	2.19	2.14	2.16	2.13
– assets	0.29	0.31	0.29	0.26	0.27	0.26
– resources	0.204	0.221	0.208	0.188	0.194	0.187
Efficiency measured by ES (PLN/PLN) of:						
– labour inputs	0.99	1.22	1.11	1.06	1.08	1.05
– assets	0.136	0.134	0.133	0.131	0.133	0.125
– resources	0.096	0.095	0.094	0.088	0.090	0.088

Source: own calculations based on the CSO data.

Changes in efficiency measures followed a different pattern. Due to a decline in the share of the gross value added (GVA) and the economic surplus (ES) in the basic price (Figure 14.2), the overall efficiency of assets and total resources dropped both at the macro (by GVA) and micro (by ES) level. In the period under analysis, these measures fell by 1/10 on average. Only the efficiency of labour inputs grew which, however, has trended steadily downwards for four years. Nevertheless, all the efficiency measures of the food industry, just as labour productivity, are high, i.e. several

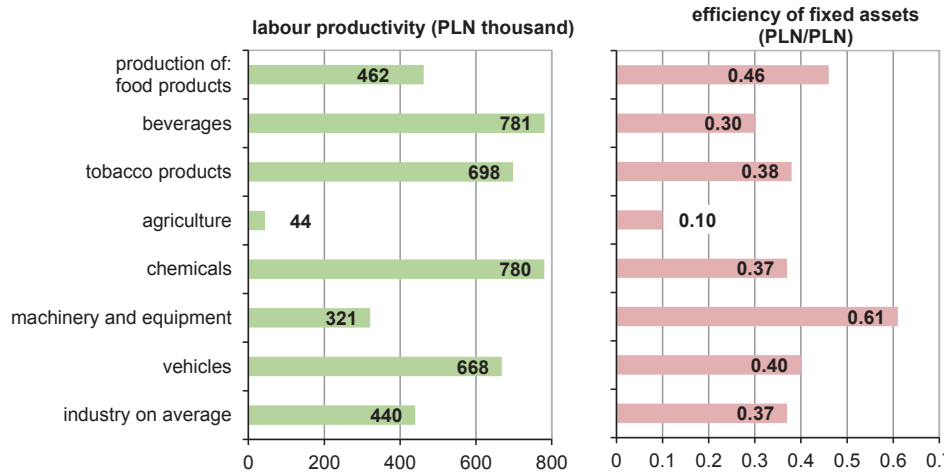
times higher than in agriculture and higher than the average level of the whole Polish industry, although labour productivity is lower than in chemical and automobile industries, while the efficiency of fixed assets – lower than, e.g. in the engineering industry (Figure 14.3).

Figure 14.2. Share of the gross value added (GVA) and the economic surplus (ES) in the basic price of food products (in accordance with F-01)



Source: own calculations in accordance with unpublished CSO data.

Figure 14.3. Labour productivity and the efficiency of fixed assets in selected branches of the Polish economy (in 2012)



Source: own calculations based on the CSO data published in the Statistical Yearbook of 2013, CSO, Warszawa 2013.

14.8. Financial performance

The food industry maintains a sustained ability to generate profits (Table 14.8). Following a temporary decline in 2008 and 2011, the amount of profit already exceeded PLN 8 billion, being 40% higher than the average of 2007-2009, while return on sales remains at 4% of net turnover. Return on equity is high and accounts for 12-15%, i.e. several times higher than profits from other safe capital investments (deposits or

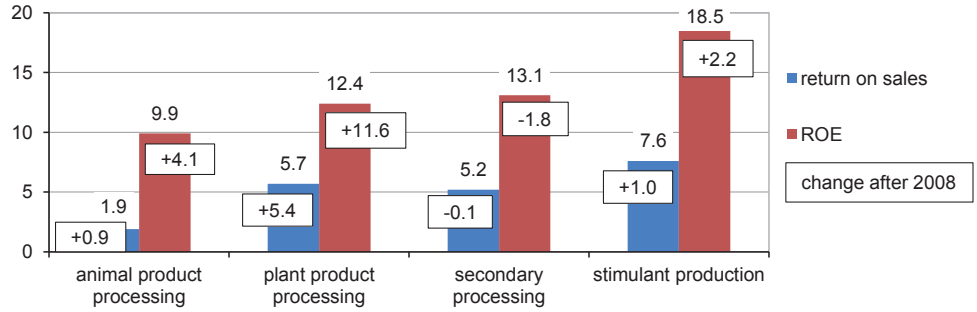
bonds). The share of profitable companies in the sector's production is almost 90%. Producers of stimulants achieve the best financial performance (7.6% of turnover and 18.5% of equity), while processors of animal products are characterised by the lowest return on sales which is, on average, at least twice lower than in other branches of the industry (Figure 14.4), although return on equity (ROE = about 10%) is also relatively high.

Table 14.8. Financial performance of the food industry

Specification	2008	2009	2010	2011	2012	2013
Net profit (PLN billion)	4.1	7.9	7.7	6.5	7.9	8.7
Net return on sales (%)	2.64	4.67	4.66	3.38	3.75	4.02
ROE (%)	9.3	15.0	14.3	10.8	12.1	12.7
Share of profitable companies in the sector's profits (%)	75.4	85.8	87.7	83.9	87.7	88.3

Source: own calculations according to F-01 statements.

Figure 14.4. Differences in returns in the food industry in 2013



Source: own calculations in accordance with F-01 statements.

14.9. Financial standing

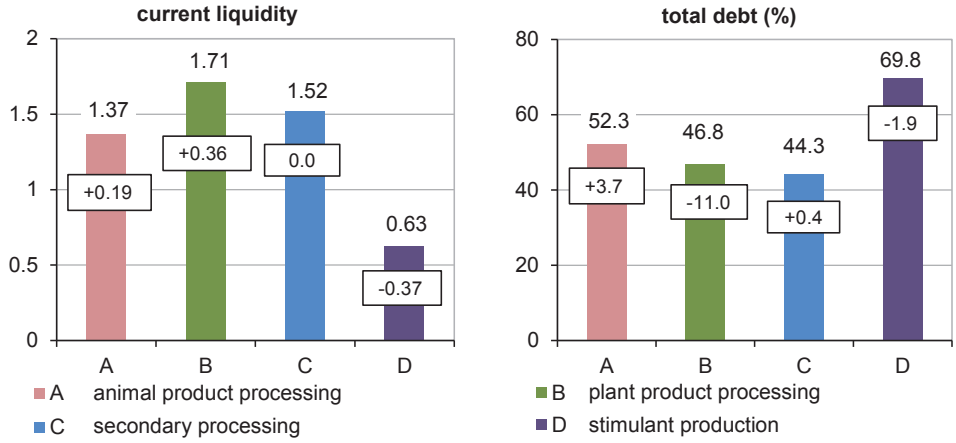
Recent years have brought a further improvement in the financial standing of food enterprises (Table 14.9). The value of equity continues to grow (since 2008, by over 50%), so does the value of own funds in the market and current liquidity. Although these two measures of financial standing dropped in 2013, it was a temporary phenomenon, as they significantly improved as early as in the first half of 2014 (liquidity – to 1.46, while own funds in the market – to PLN 18.8 billion). In 2008-2013, corporate debt decreased as well (from 57% to 51%), which is only by about 5% higher than equity (in 2008, it was higher by 1/3, while in the first half of 2014 – already lower by 6%).

Table 14.9. Financial standing of the food industry

Specification	2008	2009	2010	2011	2012	2013
Equity (PLN billion)	44.4	52.5	53.8	60.0	65.1	69.1
including: own funds in the market	9.5	11.7	12.0	15.2	16.0	12.5
Debt (PLN billion)	59.2	56.3	57.0	67.8	69.2	72.5
including: short-term debt	41.1	35.4	36.8	41.0	44.4	49.7
Current liquidity	1.23	1.33	1.33	1.37	1.36	1.25
Total debt (%)	57.1	51.7	51.4	53.1	51.5	51.2

Source: the CSO data and own calculations.

Figure 14.5. Differences in current liquidity and total debt in 2013 and the change after 2008



Source: the CSO data and own calculations.

Among the four separate types of processing, secondary processing, as well as animal and plant product processing enjoy safe and constantly improving financial standing (Figure 14.5). In contrast, producers of stimulants (mainly beer and tobacco products) face hard times, as current liquidity ratios are very low (<1.00) and debt – high, amounting to about 70% of assets. It must be borne in mind that this sector of the food industry is characterised by significant cash flows between affiliates and fixed financial assets that affect current liquidity measures. Therefore, it can be concluded that the financial standing of enterprises is safe and does not pose a threat to the continuation and development of activities in the production of food, beverages and tobacco products.

14.10. Business breakdown structure

After 2008, the number of food enterprises in operation is fairly stable and totals to about 15-16 thousand undertakings, including just over 6 thousand industrial companies (more than 9 employees), of which about 280 are large companies (>249 employees), less than 1,200 – medium companies (from 49 to 249 employees), and about 14 thousand – small and micro companies (Table 14.10).

During this period, the food industry continued to concentrate slowly, as the share of large companies in both the sector's employment and production grew by 2 pp, in the context of the slowly weakening position of the smallest companies. Recently, the share of large companies in the sector's production has been a bit higher than the EU average, while the position of small, micro and medium companies has deteriorated slightly. Food production concentration ratios are even higher than in other major branches of the Polish industry.

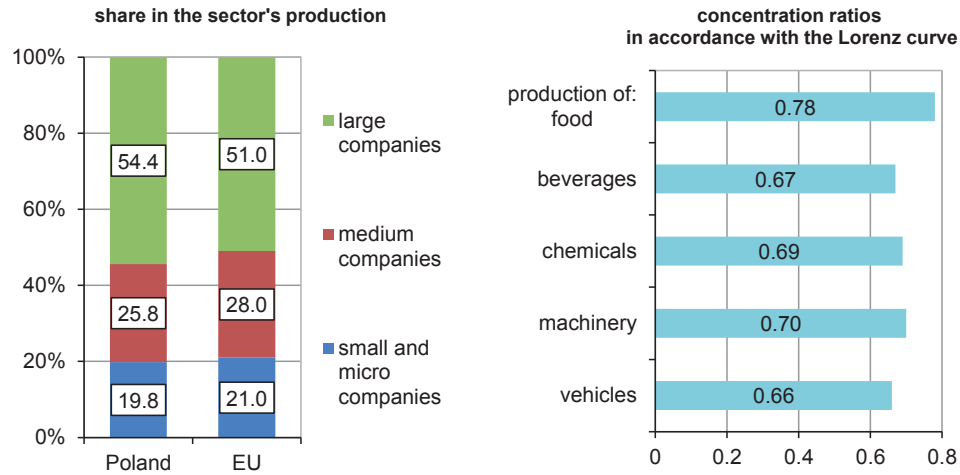
Table 14.10. Food companies

Specification	2008	2009	2010	2011	2012	2013
Number of companies	17,527	15,686	15,971	15,185	15,726	.
including: industrial companies	6,512	6,086	6,470	6,150	6,001	6,121
including: large companies	288	283	287	278	282	274
medium companies	1,228	1,209	1,211	1,156	1,159	1,178
Share in the number of employees (%):						
large companies	37.5	37.0	38.3	39.1	39.5	39.5[a]
medium companies	28.2	28.4	28.3	28.8	27.8	28.3[a]
Share in production (%):						
large companies	52.3	53.4	54.1	54.5	54.4	54.5[a]
small and micro companies	20.6	20.3	20.1	19.4	19.8	19.5[a]

[a] own estimates

Source: own calculations based on published (in the Statistical Yearbooks of Industry) and unpublished CSO data.

Figure 14.6. Comparison of the degree of concentration of the Polish food industry against the EU and other industrial processing branches in 2012



Source: own calculations based on the CSO data published in the Statistical Yearbook of Industry and Data & Trends of the European Food and Drink Industry in 2012.

14.11. Polish food industry against the EU

The Polish food industry continues to get stronger in the EU. We are the sixth largest producer of food products in the European Union with a share of almost 9% (in 2003, it was 6.8%) and we are increasingly closer to the UK level. In 3-4 years, Poland may become the fifth largest food producer in the EU. The production of this sector per capita already exceeded the EU-15 average, being similar to that in France, Germany and Spain, but clearly lower (by 1/3) than in countries with the most developed food sector, such as: the Netherlands, Ireland, Denmark and Belgium. In this regard, Poland is clearly ahead of all the "new" EU Member States.

In the Polish food industry, labour productivity approaches the average for the EU-15 and countries, such as: France, the UK and Spain, being slightly higher than the average for Germany and significantly higher than that for the EU-12 and Greece or Portugal. Labour productivity in the Polish food industry picked up considerably compared to the "old" EU level (the gap narrowed from 40% in 2000 and 33% in 2005 to 18% in 2012).

Table 14.11. Food industry in Poland and other EU Member States in 2012

Member States	Member States' share in the production of the EU-27 food industry	Labour[a] productivity (EUR thousand per employee)	Production[a] (EUR per capita)	Average turnover[a] per company (EUR million)	Agri-food exports (% of GDP)[b]
EU-15	**82.7**	**271.7**	**2,178**	**3.8**	**2.4**
Germany	17.2	211.6	2,206	5.8	2.0
France	14.7	266.3	2,416	2.7	2.1
Italy	11.4	352.7	2,003	2.1	1.6
UK	9.9	257.4	1,638	13.3	1.0
Spain	10.3	306.8	2,276	3.9	2.2
Netherlands	5.3	444.4	3,299	11.8	8.9
EU-12	**17.3**	**174.7**	**1,799**	**3.5**	**3.6**
Poland	8.6	223.8	2,339	6.3	3.9
Czech Republic	1.7	170.7	1,715	2.1	2.6
Lithuania	0.6	153.4	2,003	4.5	7.5

[a] at comparable prices, i.e. at current prices adjusted by the purchasing power parity, [b] in accordance with M. Bułkowska, R. Mroczek, M. Tereszczuk, *Pozycja polskiego przemysłu spożywczego w Unii Europejskiej (Position of the Polish Food Industry in the European Union)*, IERiGŻ-PIB, Warszawa 2014, typescript.

Source: Eurostat, own calculations and M. Bułkowska, R. Mroczek, M. Tereszczuk, Pozycja polskiego przemysłu spożywczego w Unii Europejskiej (Position of the Polish Food Industry in the European Union), IERiGŻ-PIB, Warszawa 2014, typescript.

In Poland, average turnover per food company is already significantly higher than the EU average and the level achieved, e.g. by France, Italy or Spain, but still lower than in countries with the highest competitiveness of the food sector. The level of development of agri-food exports, measured by its ratio to GDP, is one of the largest in Europe. Only the Netherlands, Belgium, Denmark, Ireland or Lithuania are better in this regard.

14.12. Conclusions

Operating in the face of risks arising out of various global crises, the Polish food industry was under strong pressure from declining domestic demand for food, as well as high and rising prices of agri-food products. In this context, exports were the main driver for the development of the food industry, growing by about 10% per year, thus enabling an increase in the production of this industry at a rate similar to that of economic development of the country (GDP).

The sector's production grew under the conditions of gradually declining employment, with a relatively high level of investment, which resulted in a fairly rapid increase in the capital-labour ratio and labour productivity. The production capacity of the sector was maintained at a high technical standard. Shrinking processing margins necessitated the cost-effective use of human labour and objectified resources and other means of production. This is evidenced not only by labour productivity growth, but also the fact that the previously achieved level of business productivity and efficiency was maintained, especially at the micro level, just as a quite stable ability to generate profits and the secure financial standing of enterprises. As a result, the Polish food industry strengthened its position in the European Union, developed its links with foreign markets and its competitive position therein.

Adaptation processes of industrial food and beverage producers to changing and challenging market and macroeconomic conditions involved, in particular:

- development of exports, particularly in foreign customer-oriented branches,
- effective competition with local processing, mainly by means of the range and quality of products, such as meat and meat products, bread, confectionery, beverages, ready-to-eat and functional food,
- cost-effective use of all the main means of production (labour, energy, services, raw materials, etc.).

The intensity of such actions varied across specific industries, but they were widespread and they were inspired mainly by leaders and global companies, as well as retail chains.

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Print run: 150 copies, 10,42 publisher's sheets
Printing and binding: EXPOL Włocławek