

THE WORKFORCE AND ITS PRODUCTIVITY IN THE FOOD ECONOMY OF THE EU COUNTRIES

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Abstract. The main aim of the article is a comparative analysis of the workforce and its productivity in the food economy of the EU countries in the years 1995 and 2009. The first part of the article analyses the internal structure of the workforce in the food economy and its share in the national economy. In the following part the workforce productivity was estimated, taking into consideration the value of global output and gross value added per employee. The basic source materials used in this study were input-output tables for individual EU countries. The results of the calculations indicate that the internal structure of the workforce in the food economy, its share in the national economy, and the level of the workforce productivity in the EU countries differ considerably. The level of the labour productivity is much higher in the countries of Western and Northern Europe than in the countries of Central and Eastern Europe. It is mainly caused by a structural defect which is due to an excessive workforce in the agricultural sector EU member states.

Key words: agri-food industry, workforce, internal structure, the share in the national economy, labour productivity

INTRODUCTION

Agribusiness, also known as the food economy or agri-food sector, is a subsystem of the national economy, which has developed its own internal connections and which is simultaneously strongly integrated with other sectors of the national economy. The dynamism of development of agribusiness considerably depends upon the character of internal proportions which develop between its individual components and upon relations with the other sectors of the national economy. One of the detailed theories inves-

tigating the share and importance of individual sectors of the national economy in food production is the agribusiness theory, which was developed by John Herbert Davis and Ray Goldberg¹. J.H. Davis first used the term 'agribusiness' on 17 October 1955 at the conference in Boston, where he made a speech on "Business responsibility and market for farm products". In 1956 Davis published the article "From agriculture to agribusiness" in *Harvard Business Review* and in 1957, his famous book "A concept of agribusiness" was published, which included the most advanced concept of agribusiness with scientific explanations. Ray Goldberg was the co-author of the book. He developed statistical and mathematical problems, especially the input-output tables, which showed the flow of goods and services between individual aggregates of agribusiness and different sectors of the national economy. It widely applied Wassily Leontief's input-output theory [Davis and Goldberg 1957].

Davis understood agribusiness as the total of all operations of agricultural production, including the production and distribution of the entire supply stream providing farms with means of production and production services, as well as all operations related with the turnover, storage, processing and distribution of agricultural products. According to the classic formula, agribusiness is part of the economic system which produces food and provides raw materials from the farm to consumers. Agribusiness as a national economy sector consists of three main economic aggregates (groups), which are used in this analysis. Sphere I includes the industries manufacturing means of production and services for agriculture and the food industry, sphere II – agriculture, and sphere III – the food industry [Davis and Goldberg 1957].

At the current stage of the socioeconomic development in the European Union the significance of the entire agri-food sector (agribusiness) in the national economy is important in terms of the volume of the production potential, production and income output [Mrówczyńska-Kamińska 2013]. The production potential of the food economy and the production capacity of this sector of the national economy are determined by the country's natural resources, its workforce and technical equipment. In the food economy all these factors are significant from the point of view of rationality and their influence on the production volume of raw materials and finished food products. However, labour resources are the only active and creative factor of production. The other factors play an accessory role, creating suitable conditions for a business activity and contributing to the making of a product [Smith 2007, Baer-Nawrocka 2008]. The analysis of labour resources in the food economy in terms of their internal structure, their share in the national economy and productivity is important from the point of view of research on the development of agriculture towards modern agribusiness [Polopolus 1986].

The main aim of the article is a comparative analysis of labour productivity in agribusiness in the European Union in 1995-2009 years². The first part of the article pre-

¹ The essential study on the theory of agribusiness, its internal structure and connections with the national economy is, "A concept of agribusiness" by Davis and Goldberg [1957, 1967].

² Data about employment in agriculture and in the food industry is from 2009, whereas the number of people employed in the first zone (supply) is for 2005 or 2007. It is dependent on the availability of data about "input-output tables" for individual EU countries, which is necessary for calculating the employment rate in the first zone of agribusiness in accordance with the formula suggested by Woś [1979]. The latest available data from input-output balance sheets is from 2005 for the following countries: Austria, Belgium, Bulgaria, Estonia, Greece, Spain, Ireland, Lithuania, Poland, Romania, Slovakia, Slovenia, Sweden, the United Kingdom, Hungary, and Italy.

sents the volume and internal structure of the workforce in three sphere of agribusiness (the industries manufacturing means of production and production services, agriculture and the food industry) and the share of agribusiness in the national economy. The second part analyses the level of labour productivity in agribusiness. The analysis concerns three spheres of agribusiness according to the scheme suggested by Davis and Goldberg [1957]. The basic source of materials used in this study were input-output tables for individual countries of the European Union and the data from Eurostat.

THE VOLUME AND INTERNAL STRUCTURE OF THE WORKFORCE, GLOBAL PRODUCTION AND GROSS VALUE ADDED IN AGRIBUSINESS IN THE EUROPEAN UNION

The processes of quantitative changes and the accompanying structural changes in the workforce proceed in different ways in individual countries. They depend on the level of economic development, agrarian structure, socioeconomic policy and the degree of substitution of living labour with objectified labour [Wiatrak 1990]. In different analysis concerning labour resources in the countries of e.g. the European Union, it is possible to observe a general regularity, which consists of fact that the more economically developed a country is, the smaller the number of people directly employed in agriculture is and the higher the number of people employed in other non-agricultural sectors of the national economy is. Table 1 and Figure 1 show the internal structure of labour resources in the food economy and their share in the total employment in the EU countries.

Table 1. Workforce in agribusiness in the EU countries in 1995 and 2009 years

Tabela 1. Zasoby pracy w gospodarce żywnościowej w krajach Unii Europejskiej w 1995 i 2009 roku

Specification Wyszczególnienie	1995				2009			
	I sphere I sfera	II sphere II sfera	III sphere III sfera	total ogółem	I sphere I sfera	II sphere II sfera	III sphere III sfera	total ogółem
1	2	3	4	5	6	7	8	9
EU-15 – UE-15								
Austria Austria								
Thousand people Tysiąc osób	49.3	540.0	155.0	744.3	46.4	143.6	74.3	264.3
%	6.6	72.6	20.8	100.0	17.6	54.3	28.1	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	20.9	x	x	x	6.5

Data for the Czech Republic, Denmark, Finland, France, The Netherlands, Germany, and Portugal is from 2007.

Table 1 – cont. / Tabela 1 – cd.

1	2	3	4	5	6	7	8	9
Belgium								
Belgia								
Thousand people Tysiąc osób	79.0	94.7	99.7	273.4	83.9	78.3	94.2	256.4
%	28.9	34.6	36.5	100.0	32.7	30.5	36.7	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	7.1	x	x	x	5.7
Denmark								
Dania								
Thousand people Tysiąc osób	72.4	107.0	90.0	269.4	63.3	76.0	63.0	202.3
%	26.9	39.7	33.4	100.0	31.3	37.6	31.1	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	10.3	x	x	x	7.2
Finland								
Finlandia								
Thousand people Tysiąc osób	35.0	150.1	44.2	229.3	31.9	120.0	38.0	189.9
%	15.3	65.4	19.3	100.0	16.8	63.2	20.0	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	11.2	x	x	x	7.6
France								
Francja								
Thousand people Tysiąc osób	508.1	1 024.6	538.1	2 070.8	496.3	799.4	557.3	1 853.0
%	24.5	49.5	26.0	100.0	26.8	43.1	30.1	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	8.7	x	x	x	6.9
Greece								
Grecja								
Thousand people Tysiąc osób	.	.	.	.	125.7	527.1	122.8	775.6
%	x	x	x	x	16.2	68.0	15.8	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	x	x	x	x	16.4

Table 1 – cont. / Tabela 1 – cd.

1	2	3	4	5	6	7	8	9
Spain Hiszpania								
Thousand people Tysiąc osób	324.0	1 002.9	413.1	1 740.0	429.7	806.7	428.1	1 664.5
%	18.6	57.6	23.7	100.0	25.8	48.5	25.7	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	12.8		x	x	8.9
Holland Holandia								
Thousand people Tysiąc osób	157.6	278.6	162.1	598.3	200.1	252.1	135.1	587.3
%	26.3	46.6	27.1	100.0	34.1	42.9	23.0	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	8.4	x	x	x	6.8
Ireland Irlandia								
Thousand people Tysiąc osób	66.2	133.6	53.6	253.4	63.7	99.9	45.1	208.7
%	26.1	52.7	21.2	100.0	30.5	47.9	21.6	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	16.6	x	x	x	11.3
Germany Niemcy								
Thousand people Tysiąc osób	661.5	864.0	808.0	2 333.5	695.0	648.0	852.0	2 195.0
%	28.3	37.0	34.6	100.0	31.7	29.5	38.8	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	6.2	x	x	x	5.4
Portugal Portugalia								
Thousand people Tysiąc osób	87.0	631.1	118.9	837.0	86.1	550.0	113.3	749.4
%	10.4	75.4	14.2	100.0	11.5	73.4	15.1	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	18.5	x	x	x	13.9

Table 1 – cont. / Tabela 1 – cd.

1	2	3	4	5	6	7	8	9
Sweden Szwecja								
Thousand people Tysiąc osób	45.6	136.9	68.1	250.6	42.7	95.6	58.6	196.9
%	18.2	54.6	27.2	100.0	21.7	48.6	29.8	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	6.1	x	x	x	4.4
Great Britain Wielka Brytania								
Thousand people Tysiąc osób	384.0	391.3	498.0	1 273.3	422.0	282.1	442.0	1 146.1
%	30.2	30.7	39.1	100.0	36.8	24.6	38.6	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	4.9	x	x	x	3.9
Italy Włochy								
Thousand people Tysiąc osób	329.0	1 269.2	488.3	2 086.5	352.1	934.7	504.5	1 791.3
%	15.8	60.8	23.4	100.0	19.7	52.2	28.2	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	9.6	x	x	x	7.3
EU-12 – UE-12								
Bulgaria Bułgaria								
Thousand people Tysiąc osób	.	.	.	.	74.1	710.4	128.6	913.1
%	x	x	x	x	8.1	77.8	14.1	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	x	x	x	x	26.0
Czech Republic Czechy								
Thousand people Tysiąc osób	104.8	324.7	159.0	588.5	87.1	184.0	145.3	416.4
%	17.8	55.2	27.0	100.0	20.9	44.2	34.9	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	11.5	x	x	x	8.2

Table 1 – cont. / Tabela 1 – cd.

1	2	3	4	5	6	7	8	9
Estonia								
Estonia								
Thousand people Tysiąc osób	23.9	58.5	30.1	112.5	13.5	23.3	16.3	53.1
%	21.2	52.0	26.8	100.0	25.4	43.9	30.7	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	17.7	x	x	x	9.6
Lithuania								
Litwa								
Thousand people Tysiąc osób	49.5	284.7	72.4	406.6	53.3	116.3	51.9	221.5
%	12.2	70.0	17.8	100.0	24.1	52.5	23.4	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	27.5	x	x	x	15.7
Latvia								
Łotwa								
Thousand people Tysiąc osób	33.6	167.4	37.7	238.7	32.5	87.0	35.1	154.6
%	14.1	70.1	15.8	100.0	21.0	56.3	22.7	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	24.6	x	x	x	16.6
Poland								
Polska								
Thousand people Tysiąc osób	83.3	3 835.8	450.0	4 369.1	444.3	2 202.1	539.4	3 185.8
%	1.9	87.8	10.3	100.0	13.9	69.1	16.9	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	29.7	x	x	x	20.2
Romania								
Rumunia								
Thousand people Tysiąc osób	265.6	3 320.3	229.0	3 814.9	366.8	2 794.0	216.1	3 376.9
%	7.0	87.0	6.0	100.0	10.9	82.7	6.4	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	40.7	x	x	x	36.8

Table 1 – cont. / Tabela 1 – cd.

1	2	3	4	5	6	7	8	9
Slovakia Słowacja								
Thousand people Tysiąc osób	48.4	172.2	66.5	287.1	43.8	78.9	47.8	170.5
%	16.9	60.0	23.2	100.0	25.7	46.3	28.0	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	13.6	x	x	x	7.7
Slovenia Słowenia								
Thousand people Tysiąc osób	20.5	121.4	23.2	165.1	13.5	85.1	17.3	115.9
%	12.4	73.5	14.1	100.0	11.6	73.4	14.9	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	17.9	x	x	x	11.8
Hungary Węgry								
Thousand people Tysiąc osób	124.2	595.5	165.3	885.0	102.3	294.6	127.4	524.3
%	14.0	67.3	18.7	100.0	19.5	56.2	24.3	100.0
Share of national economy Udział w gospodarce narodowej	x	x	x	22.1	x	x	x	13.0

Source: the author's calculations based on Input-output tables in the EU countries [Bilanse..., access: 15.07.2012] and Eurostat's data [Rachunki..., access: 15.07.2012].

Źródło: obliczenia własne na podstawie Bilansów... [dostęp: 15.07.2012] i danych Eurostatu [Rachunki..., dostęp: 15.07.2012].

As can be concluded from the data analysis, in highly socioeconomically developed countries³ the structure of employment in the agri-food sector has modern relations, whereas in poorer countries the structure is not modern. Among the EU countries it is possible to distinguish those with a very high number of people employed in the food economy and with a non-modern agribusiness structure. In Poland and Romania there are 3 million people working in food production, nearly 80.0% of whom work in agriculture. The situation is similar in Bulgaria, Slovenia, Portugal, Greece and Slovakia, where in the internal agribusiness structure more than 3/4 are the people employed in agriculture. On the other hand, in richer countries, mainly those of the former fifteen

³ Measured with the GDP per capita [Mrówczyńska-Kamińska 2013].

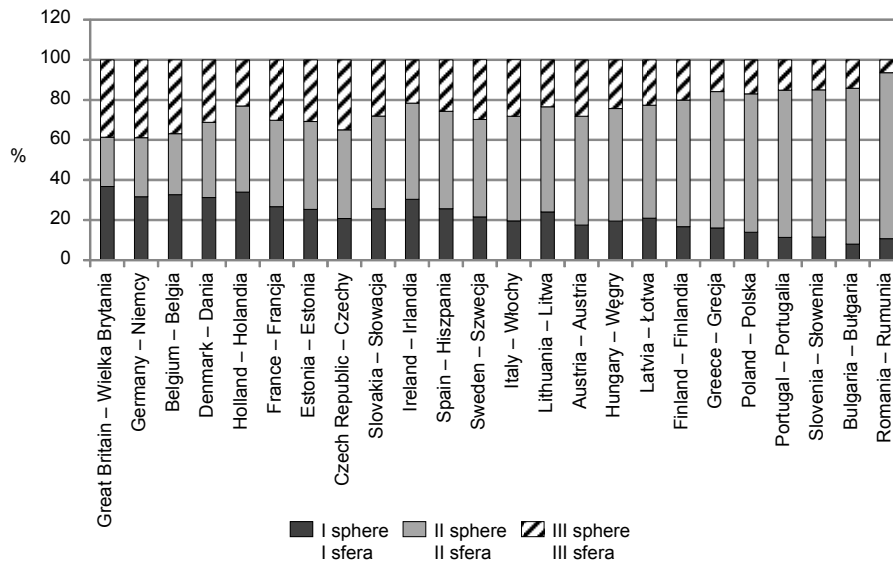


Fig. 1. The employment structure in the food economy in the EU countries in 2009

Source: the author's compilation based on Table 1.

Rys. 1. Struktura zatrudnienia w gospodarce żywnościowej w krajach Unii Europejskiej w 2009 roku

Źródło: opracowanie własne na podstawie tabeli 1.

member states, the internal structure is dominated by the people employed in the food industry and in the first zone of agribusiness (e.g. Belgium, Sweden, the United Kingdom). Also in France, Germany and Spain, in spite of the fact that there are as many as 2 million people employed in the food economy, most of them work in the food industry and in the first zone of agribusiness. Thus, it is possible to state that the greatest problems with the employment structure in agribusiness can be observed in the countries which joined the European Union after 2004 and which have the lowest socioeconomic development level, measured with the GDP per capita. The problem of high employment in agriculture in those countries is one of the most difficult issues concerning agriculture itself and the entire food economy. In Poland this fact should chiefly be attributed to the socioeconomic structure of agriculture, which is dominated by a fragmented peasant economy. The high level of employment in agriculture is also forced by its low equipment with modern, workload-limiting technology [Czyżewski 1992]. The problem of absence of appropriate technological equipment in peasant farming also causes low workload productivity in the agricultural sector.

The employment structure in the agri-food sector is very important, because it is decisive to the modernity of a country's economic structure. There is a well-known regularity, which consists of the fact that the falling share of employment in agriculture in relation to the entire national economy is accompanied by the increasing share of employment in the production and trade sectors providing services for agriculture, in the food industry and in the entire services sector, i.e. in the first and third zones of employment. The data presented in Table 1 confirm these correlations in individual coun-

tries of the European Union. In the countries with a low share of employment in agriculture in relation to the entire national economy there is a significant share of employment in the sectors generating means of production for agriculture and the food industry and in the sector of services.

To sum up, we can say that in spite of the changes which have taken place in individual EU countries since 1995 and which have resulted in the development of the zone providing services for agriculture and the food industry, the structure of agribusiness in Central and Eastern European countries is not modern yet. This is the cause of the weakness of the food economy in Central and Eastern Europe. The increase in employment in the industries providing services for agriculture and the food industry seems to be the most significant element in the evolution of employment structure in the development of agriculture towards agribusiness.

THE SHARE OF EMPLOYMENT IN AGRIBUSINESS IN TOTAL EMPLOYMENT IN THE NATIONAL ECONOMY

As early as 1957 Davis and Goldberg [1957] pointed to the fact that the increasing employment in the procurement sector and in the food industry combined with the decreasing employment in agriculture is a specific trait of the technological revolution, which should take place in the social process of food production. The revolution is related to the increasing stream of means of industrial origin flowing to agriculture and with the handling of exchange relations. Studies on the material flow in agribusiness in the countries of the European Union give grounds for the conclusion that the new member states of the European Union have not undergone a technological revolution in the social process of food production yet, although the first symptoms of changes in this aspect are noticeable [Mrówczyńska-Kamińska 2010].

The share of employment in agribusiness in total employment is a significant index reflecting the level of economic development in a particular country. High employment in agriculture is strictly related to the level of development, or rather underdevelopment. The employment in non-agricultural sectors rises along with the economic growth, which enables absorption of excessive labour resources from agriculture. In consequence of specialisation, modernisation and technological progress reduced employment in agriculture is a necessary and unquestionable tendency [Tomczak 2005, Bański 2007]. The process of reduction of employment in agriculture is taking place at different rates in individual member states of the European Union. It is a result of disproportion in the level of socioeconomic development in a particular country, the applied socioeconomic policy, the agrarian structure, the access of agriculture to means of production and the possibility to replace living labour with objectified labour [Poczta and Kołodziejczak 2004]. Employment is one of the basic indexes determining the volume of labour which a community uses to produce food. In individual countries of the European Union there are different shares of employment in the food economy in relation to the total national economy (Table 1, Fig. 2). In the last year under study the entire European Union directly and indirectly spent 9.6% of the total labour resources it had at its disposal. In the EU-15 the process of decreasing employment in agriculture and increasing employment in non-agricultural sectors led to the situation where employment in the

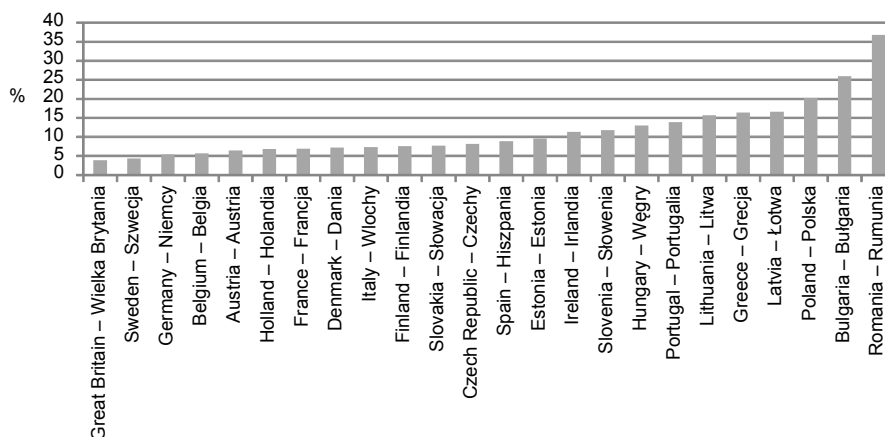


Fig. 2. The share of employment in the agri-food economy in the total employment in the national economy in the EU countries in 2009

Source: the author's compilation based on the data from Table 1.

Rys. 2. Udział zatrudnionych w gospodarce żywnościowej w ogólnym zatrudnieniu w gospodarce narodowej w krajach Unii Europejskiej w 2009 roku

Źródło: opracowanie własne na podstawie danych z tabeli 1.

total food economy is about 5-7.0% of total employment in the national economy. This situation can be observed in such countries as: the United Kingdom, Sweden, Germany, Belgium, Austria, Holland, France, Denmark and Italy. In most of those countries the share of employment in the sector producing agricultural raw materials and finished food products remained at a low level during the entire period under investigation. On the other hand, in less developed countries, where agriculture is still one of the most important sectors of the national economy, the share remains at a considerable level, e.g.: Romania (35.0%), Bulgaria (26.0%), Poland (20.0%), Latvia, Greece and Lithuania (about 15.0%). Altogether those countries concentrate more than 50.0% of the total number of people employed in agriculture in the Community (over 6.5 million people). These results point to the fact that on average every fifth employee in those countries is related (directly or indirectly) to food production. It is a very high rate and it means that 1/5 of the total potential of living labour is used to satisfy society's most basic need. Tomczak [2001] wrote: "A country cannot be highly developed if a large part of its potential and resources is used for food production". The diversion of resources (mainly labour) from agriculture to the sectors with higher workforce productivity, industry or services is a sine qua non for higher economic growth of a country [Fereniec 1999, Tomczak 1985, 2004, Poczta and Mrówczyńska-Kamińska 2004].

LABOUR PRODUCTIVITY IN THE AGRI-FOOD ECONOMY IN THE EUROPEAN UNION

In the research on the development of agriculture towards agribusiness it is an important aspect to determine the effectiveness of the use of the factors of production (Table 2) [Woś 1979, Tomczak 2004]. The analysis of labour productivity in agribusiness in the EU countries was made on the basis of the volume of global production and gross value added. The research showed that the food economy in the EU-15 has the highest labour productivity, measured with global production. In such countries as Belgium, Holland, Ireland, Sweden and Denmark in 2009 labour productivity reached 160-

Table 2. Labour productivity in agribusiness in the European Union in 2009 (thous. euros)
Table 2. Wydajność pracy w agrobiznesie w krajach UE w 2009 roku (tys. euro)

Specification Wyszczególnienie	Global productivity per one employee (thousands of euro) Produkcja globalna na jednego zatrudnionego (tys. euro)				Gross value added per one employee (thousands of euro) Wartość dodana brutto na jednego zatrudnionego (tys. euro)			
	I sphere I sfera	II sphere II sfera	III sphere III sfera	total razem	I sphere I sfera	II sphere II sfera	III sphere III sfera	total razem
1	2	3	4	5	6	7	8	9
Austria Austria	138.3	59.8	229.1	121.2	59.5	26.3	77.1	46.4
Belgium Belgia	136.0	82.9	307.1	182.6	58.4	25.5	65.6	51.0
Bulgaria Bułgaria	27.4	6.1	24.3	10.4	14.3	2.4	4.7	3.7
Czech Republic Czechy	43.5	39.2	86.7	56.7	10.4	15.1	24.4	17.4
Denmark Dania	131.8	114.4	273.2	169.3	47.1	20.1	72.0	44.7
Estonia Estonia	44.9	34.9	75.1	49.8	16.7	12.0	16.3	14.5
Finland Finlandia	137.0	65.4	274.4	119.2	47.2	32.9	69.3	42.6
France Francja	120.7	105.5	241.0	150.3	38.3	36.2	46.1	39.7
Greece Grecja	57.9	20.4	148.7	46.8	12.9	11.4	60.3	19.4
Spain Hiszpania	85.3	55.1	218.4	104.9	28.1	30.1	49.0	34.5
Holland Hollandia	105.3	101.9	421.4	176.5	43.7	34.3	110.2	55.0
Ireland Irlandia	145.8	64.8	434.8	169.5	44.8	13.0	133.7	48.8

Table 2 – cont. / Tabela 2 – cd.

1	2	3	4	5	6	7	8	9
Litwa Lithuania	28.7	18.9	60.4	31.0	12.8	6.7	18.3	10.9
Latvia Łotwa	10.6	17.6	48.2	23.1	2.3	6.1	11.2	6.5
Germany Niemcy	101.0	82.6	191.4	130.7	32.8	26.4	42.5	34.7
Poland Polska	33.9	11.0	60.1	22.5	9.3	4.5	13.5	6.7
Portugal Portugalia	55.6	13.3	119.5	34.2	16.1	5.8	24.5	9.8
Romania Rumunia	17.1	5.7	92.2	12.4	6.3	2.7	34.4	5.1
Slovakia Słowacja	46.8	55.8	73.8	58.5	20.5	28.5	21.3	24.4
Slovenia Słowenia	61.2	18.2	103.2	35.9	25.5	8.8	29.5	13.9
Sweden Szwecja	144.4	99.6	259.4	156.9	61.5	46.3	58.9	53.4
Hungary Węgry	50.3	24.5	65.6	39.5	20.1	8.8	13.6	12.2
Great Britain Wielka Brytania	75.1	106.9	213.3	136.2	25.4	51.3	74.5	50.7
Italy Włochy	112.8	48.7	230.6	112.5	37.3	25.5	51.0	35.0

Source: the author's calculations based on Input-output tables for individual countries of the EU [Bilanse..., access: 15.07.2012] and the Eurostat's data [Rachunki..., access: 15.07.2012].

Źródło: obliczenia własne na podstawie Bilansów... [dostęp: 15.07.2012] i danych Eurostatu [Rachunki..., access: 15.07.2012].

-180.0 thousand euros per employee, whereas in Germany, France and the United Kingdom it was about 140.0 thousand euros. These are chiefly highly developed countries, where the level of development of the food economy is the highest in the entire European Union. In those countries there are modern correlations in input-output in agribusiness [Mrówczyńska-Kamińska 2010]. On the other hand, the lowest labour productivity can be observed in the countries of Central and Eastern Europe, where one person employed in the entire food economy generates from about 11.0 thousand euros of global production in Bulgaria and Romania to about 25.0 thousand euros in Poland, Latvia and Lithuania. In 2009 the mean level of labour productivity in the entire European Union reached about 90.0 thousand euros, but in the EU-15 the productivity amounted to 117.0 thousand euros on average, whereas in the new member states it was slightly less than 35.0 thousand euros. Above all, it was the level of productivity in the food industry that caused considerable differences in the level of labour productivity in the food economy

in individual countries. In 2009 in Ireland and Holland one person employed in the food industry generated more than 420 thousand euros of global production, whereas e.g. in Bulgaria this level was more than 20 times lower (24.0 thousand euros). Similar differences can be observed in labour productivity in agriculture. For example, in Denmark, France, Holland, Germany and Sweden one employee generated more than 100.0 thousand euros of production, whereas in Bulgaria, Romania and Poland it was more than 10.0 times less. These results point to the fact that in comparison with the EU-15 the differences in the level of labour productivity in the new member states are huge, which is chiefly caused by the level of labour productivity in agriculture.

The research on labour productivity in the food economy measured with gross value added per employee reveals very similar correlations. There is high productivity in the food economy in the countries of Western and Northern Europe, whereas the productivity is very low in Bulgaria, Romania, Poland, Latvia and Lithuania. The differences are chiefly influenced by high labour productivity in the food industry, e.g. in Ireland, Holland, Denmark, Belgium, Sweden or in the United Kingdom and by relatively low labour productivity in agriculture in the new member states of the European Union. The fact that in comparison with labour productivity in the former EU-15 differences between labour productivity in agriculture in the new member states are smaller and smaller is a positive symptom [Floriańczyk 2006, Baer-Nawrocka and Markiewicz 2012.

SUMMARY

When summarising the analysis of the employment in the food industry of the EU countries it should be noted that there is a modern agribusiness structure in terms of the workforce in the countries of Western and Northern Europe, which are dominated by people working in the food industry and in the first zone of agribusiness. In the countries of Central and Eastern Europe, in turn, this structure is not modern and dominated by the people employed in agriculture. Similar relationships occur in case of the share of agribusiness in the overall employment in the national economy, as well as in the level of the workforce productivity. Therefore, it can be stated that in the countries of Central and Eastern Europe changes regarding the internal structure, the share of agribusiness in the national economy, and the workforce productivity will be possible only when employment in agriculture falls. Its high level in new EU member states has a structural character, which resulted from a long period of development of economic, social, and demographic processes.

Falling employment rate in the second zone of the agribusiness and an increase in the workforce productivity are crucial for the development of agriculture towards agribusiness. Creating suitable conditions for the development of a modern food economy should itself contribute to reducing the number of the employed in agriculture, mainly because of the emergence of companies related to agriculture and cooperating with agriculture. In this way, the agricultural population in agriculture itself would decline, leading to beneficial ratios in relation to the entire national economy and to the emergence of a modern agribusiness. The problem of an excessive agricultural population can be solved only if there is a long-term and fast growth in non-agricultural sectors,

especially when the level of an economic development in a particular country is high. For many years the countries of Western Europe were developing in conditions of full employment, when displacement of the workforce from agriculture to more efficient forms of employment outside this sector of economy was essential. Therefore, the most considerable progress was made in the entire agri-food sector in these countries.

The high level of employment in agribusiness in new EU member states should be a crucial issue when planning agricultural policy of these countries. Creating new jobs in the rural areas and shifting the people employed in agriculture towards non-agricultural activities should be the key issue determining particular aims of the EU agri-food policy.

REFERENCES

- Baer-Nawrocka A., 2008. Zasoby pracy jako przesłanka konkurencyjności rolnictwa nowych krajów członkowskich Unii Europejskiej. *Rocz. Nauk. SERiA* 10, 1, 16-22.
- Baer-Nawrocka A., Markiewicz N., 2012. Procesy konwergencji/dywergencji w zakresie wydajności pracy w rolnictwie Unii Europejskiej – analiza regionalna. *J. Agribus. Rural Dev.* 3 (25), 13-23.
- Bański J., 2007. *Geografia rolnictwa Polski*. PWE, Warszawa.
- Bilanse przepływów międzygałęziowych dla krajów Unii Europejskiej, www.epp.eurostat.ec.europa.eu [access: 15.07.2012].
- Czyżewski A., 1992. *Gospodarka żywnościowa w Polsce i w regionie*. PWE, Warszawa.
- Davis J.H., Goldberg R.A., 1957. A concept of agribusiness. Division of Research Graduate School of Business Administration, Harvard University, Boston.
- Davis J.H., Goldberg R.A., 1967. *Koncepcja agrobiznesu*. IER, Warszawa.
- Fereniec J., 1999. *Ekonomika i organizacja rolnictwa*. Wyd. Key Text, Warszawa.
- Floriańczyk Z., 2006. Polskie rolnictwo w Unii Europejskiej w świetle rachunków ekonomicznych dla rolnictwa. In: *Wyniki ekonomiczne polskiego rolnictwa w ujęciu europejskim i regionalnym. Program Wieloletni 2005-2009. Raport nr 43*. IERiGŻ-PIB, Warszawa.
- Mrówczyńska-Kamińska A., 2010. Współzależności międzygałęziowe w agrobiznesie w krajach Unii Europejskiej. *Pr. Nauk. UE Wroc. Polit. Ekon.* 111, 459-477.
- Mrówczyńska-Kamińska A., 2013. Znaczenie agrobiznesu w gospodarce narodowej w krajach Unii Europejskiej. *Gosp. Narod.* 3, 79-100.
- Poczta W., 2012. *Przemiany w rolnictwie ze szczególnym uwzględnieniem przemian strukturalnych*. W: *Polska Wieś 2012. Raport o stanie wsi*. Eds J. Wilkin, I. Nurzyńska. FDPA, Wyd. Nauk. SCHOLAR, Warszawa.
- Poczta W., Kołodziejczak M., 2004. Potencjał produkcyjny rolnictwa polskiego i efektywność gospodarowania w aspekcie integracji z Unią Europejską. Wyd. AR, Poznań.
- Poczta W., Mrówczyńska-Kamińska A., 2004. *Agrobiznes w Polsce jako subsystem gospodarki narodowej*. Wyd. AR, Poznań.
- Polopolus L.C., 1986. Labour productivity and agribusiness. *Agribus.* 2, 3, 269-277.
- Rachunki narodowe. Eurostat, www.epp.eurostat.ec.europa.eu [access: 15.07.2012].
- Smith A., 2007. *Badania nad naturą i przyczynami bogactwa narodów*. T. 2. Wyd. PWN, Warszawa.
- Tomczak F., 1985. Doświadczenia światowe a problemy przekształceń struktury agrarnej w Polsce. *Zagad. Ekon. Roln.* 5, 28, 20-35.
- Tomczak F., 2004. *Od rolnictwa do agrobiznesu. Transformacja gospodarki rolniczo-żywnościowej Stanów Zjednoczonych Ameryki Północnej*. Wyd. SGH, Warszawa.

- Tomczak F., 2005. Gospodarka rodzinna w rolnictwie: uwarunkowania i mechanizmy rozwoju. Wyd. IRWiR PAN, Warszawa.
- Wiatrak A.P., 1990. Zasoby siły roboczej w rolniczych gospodarstwach rodzinnych. PWN, Warszawa.
- Woś A., 1979. Związki rolnictwa z gospodarką narodową. PWRiL, Warszawa.

ZASOBY PRACY I ICH WYDAJNOŚĆ W GOSPODARCE ŻYWNOŚCIOWEJ W KRAJACH UNII EUROPEJSKIEJ

Streszczenie. Celem artykułu była analiza porównawcza zasobów pracy i ich wydajności w gospodarce żywnościowej w krajach Unii Europejskiej w 1995 i 2009 roku. W pierwszej części artykułu przeanalizowano strukturę wewnętrzną pracujących w gospodarce żywnościowej oraz ich udział w gospodarce narodowej. W kolejnej części obliczono wydajność pracy, odnosząc wartość produkcji globalnej i wartości dodanej brutto na jednego zatrudnionego. Głównym materiałem źródłowym były Bilanse przepływów międzygałęziowych dla poszczególnych krajów Unii Europejskiej. Wyniki obliczeń świadczą o tym, że struktura wewnętrzna pracujących w gospodarce żywnościowej, ich udział w gospodarce narodowej oraz poziom wydajności pracy w krajach Unii Europejskiej wykazuje znaczne zróżnicowanie. W krajach Europy Zachodniej i Północnej zależności te są znacznie nowocześniejsze niż w krajach Europy Środkowo-Wschodniej. Spowodowane jest to przede wszystkim wadliwością strukturalną, związaną ze zbyt dużymi zasobami pracy w rolnictwie w nowych krajach członkowskich UE.

Słowa kluczowe: gospodarka żywnościowa, zasoby pracy, struktura wewnętrzna, udział w gospodarce narodowej, wydajność pracy

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