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BENEDYKT PEPLIŃSKI

Poznan University of Life Sciences, Poland

REGIONAL DETERMINANTS OF AGRICULTURAL PRODUCTION DEVELOPMENT IN POLAND

Key words: regional development, crop production, livestock production, productivity, spatial concentration

ABSTRACT. The aim of the analysis was to determine changes in the level of spatial concentration of production in Poland in the years 1990-2020. The analysis includes output and commodity production, the production of basic agricultural raw materials, the livestock of cattle, cows, pigs, hens and animals converted to LU, and changes in the level of yield and milk yield of cows. The study used data from the Central Statistical Office and the Local Data Bank. In order to limit short-term variability, especially in crop production, five-year averages for the beginning and end of the period were used in most of the analyses. The analysis was carried out for the currently binding administrative division including 16 voivodships. The research has shown large changes in the spatial distribution of agricultural production in Poland. First of all, the Wielkopolskie Voivodship gained in the production of agricultural raw materials, as it increased its share in the majority of plant and animal agricultural products, the Mazowieckie Voivodship, which specialized in animal production (except pork), and the Podlaskie Voivodship, with the production of milk and beef livestock, developed above average. On the other hand, the importance of voivodeships from South-Eastern Poland decreased, as animal production was marginalised, and plant production declined as a result of the greater exclusion of land from agricultural production and a higher decline in crop yield. In the case of the provinces of Western Poland, there was also a significant reduction in the livestock production, but the importance of that region in crop production increased, mainly due to a higher-than-average increase in crop yield in Poland.

INTRODUCTION

Agriculture in Poland after 1990 underwent significant structural and economic transformations, which resulted from the adaptation to changed conditions resulting from, among others, the release of purchase prices and means of production, Poland's accession to the EU and changes in agricultural policy, access to modern technologies, increased

international exchange of food products, changes in agri-food processing and many other economic, technological, social and cultural factors. Their impact on the agri-food sector, including agriculture, is increasing and takes place in close and interpenetrating connections [Runowski 2014]. Polish agriculture entered the process of market changes in 1990 quite spatially differentiated, despite the fact that agricultural policy during the period of a centrally controlled economy led, to some extent, to blurring regional differences [Pepliński 2019a]. The free market, again, highlighted the historical background accelerating the processes, concentration, specialization and spatial polarization of production, which became particularly evident in animal production [Olszańska 2012, Parzonko 2014, Pepliński 2017, Kopiński 2018, Pepliński 2019a]. In turn, the issues of regional determinants of crop production were undertaken, among others, by Stanisław Krasowicz [2009] and Mariusz Matyka [2012]. However, a comprehensive long-term analysis of changes in agricultural production in Poland is lacking. This is particularly important in the context of the concept of the Green Deal being introduced in the EU, increasing public environmental awareness and pro-environmental decisions by the EU and national executive bodies, e.g., the Dutch Council of State, which found that the policy of nitrogen reduction in protected nature reserves by implementing economic projects with an uncertain promise that environmental damage would be compensated at a later date flawed, and the European Commission›s dispute with the German government over reducing nitrate levels in groundwater [Pepliński 2019b]. These processes will also include Poland and will primarily affect regions with the highest concentration of livestock production and highest productivity.

The aim of the analysis was to determine changes in the level of spatial concentration of production in Poland in the years 1990-2020, with the exception of the analysis of output and commodity production, which, due to data availability, was carried out for the years 1990-2019.

RESEARCH MATERIAL AND METHODOLOGY

The analysis includes output and commodity production, the production of basic agricultural commodities, the livestock of cattle, cows, pigs, hens and animals converted to LU, and changes in the level of yield and milk yield of cows. The research used data from the Statistical Yearbooks of the Central Statistical Office, the Statistical Yearbooks of Provinces [www.stat.gov.pl] and from the Local Data Bank [www.bdl.stat.gov.pl/BDL]. In order to limit short-term variability, especially in crop production (excluding output and commodity production), five-year averages for the beginning and end of the period, i.e., 1990-1994 and 2016-2020, were adopted for the study. The analysis was carried out for the currently binding administrative division including 16 voivodeships. Since, for

the years 1990-1995 statistical data are only available for the division into 49 provinces, therefore, it was necessary to make appropriate calculations, which were carried out according to the methodology used by Benedykt Pepliński [2019a]. In order to compare the changes in yield obtained in individual provinces, the yield index was used, which was calculated from the formula:

$$Wwp = \frac{\sum_{i=1}^{n} Pn_1}{\sum_{i=1}^{n} Pu_1} \times 100\%$$

where:
Wwp – the yield index (%),
Pn_i – the area necessary to achieve harvest *i* of this plant in a given voivodship with an average yield *i* of this plant in Poland (ha),
Pu_i – the area under cultivation *i* of this plant in a given voivodship (ha).

RESULTS

In the structure of global agricultural production in Poland, the two largest Polish voivodships stand out: Mazowieckie and Wielkopolskie, which occupy, respectively, 11.4% and 9.5% of the country's area. In the case of the former, in 1990, its share in global production coincided with the share in the country's area, while, in the case of the Wielkopolskie Voivodeship, it was by 2.6 percentage points (p.p.) higher. These voivodeships increased their share in output by 5.1 and 5.9 p.p. by 2019, together accounting for 35.5% of agricultural output in Poland (Figure 1). Another 30.2% of global production is realized in the Lubelskie, Łódzkie, Podlaskie and Kujawsko-Pomorskie voivodships. An increase in the share in output was also recorded in the Podlaskie Voivodship (by 1.9 p.p. to 7.1%) and the Łódzkie Voivodship (by 0.3 p.p.). The latter, however, has been systematically losing importance since 2009. In relation terms, the greatest loss was recorded in the Podkarpackie (-2.9 p.p.), West Pomerania (2.5 p.p.) and Lower Silesia (2.0 p.p.) voivodships. In relative terms, in relation to the initial share, the greatest regression in agricultural production took place in the Podkarpackie (decline in shares by 56%), Zachodniopomorskie (by 42%), Lubuskie and Dolnośląskie (by about 1/3) voivodships.

Similar trends occur in the case of the commodity production structure (Figure 2), although the magnitude of change is different than in output. The greatest differences, in this regard, are found in the case of the Wielkopolskie Voivodeship, which in 2019 had a higher share in national commodity production than in global national production by 1.7 p.p., compared to 0.4 p.p. in 1990, and the Mazowieckie Voivodeship (0.6 p.p. and 0.2 p.p., respectively). Accordingly, the share of these provinces in commodity national production during this period increased from 25.0% to 37.8% and continues to show

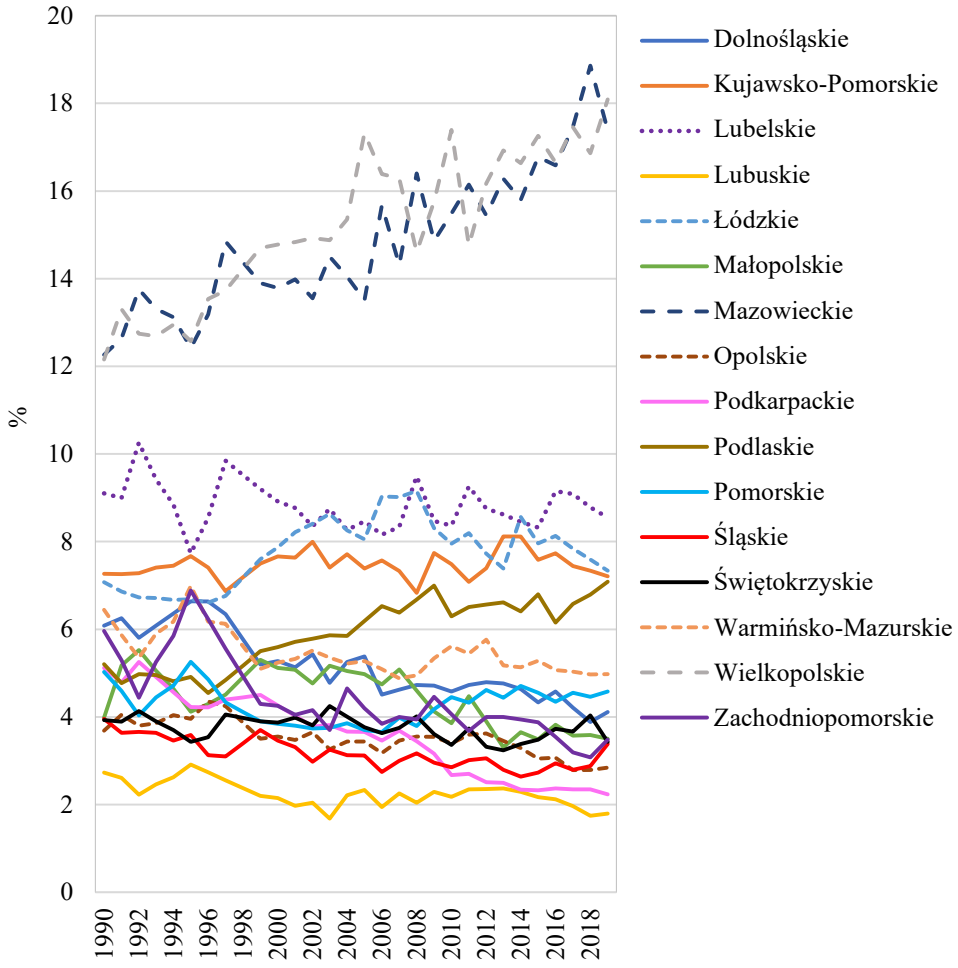

Figure 1. Structure of output by voivodship in Poland in 1990-2019
Source: own elaboration based on CSO data

a strong upward trend. The higher-than-average share of self-supply, which is the reason for the lower share of commodity production than of global production in 2019 and 1990, mainly affected the provinces of south-eastern Poland. Large changes in the period under study occurred in the provinces located in western Poland and the Warmińsko-Mazurskie Voivodeship. Until 1993 they were characterized by higher-than-average commodity productivity in the country. The collapse of highly profitable State Agricultural Farms led to a deep relative decline in the level of commerciality. The development of production in farms created on the basis of State Agricultural Farms and the construction of industrial

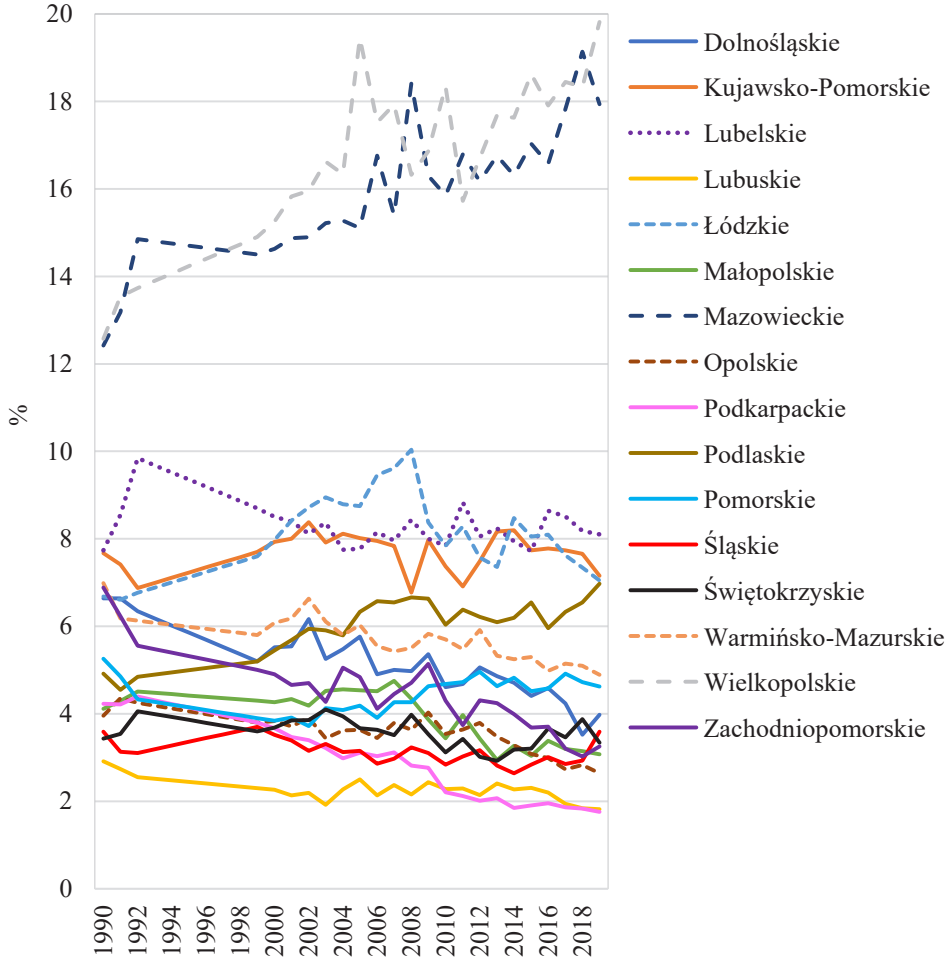

Figure 2. Structure of commodity production by voivodship in Poland in the years 1990-2019
Source: own elaboration based on CSO data

farms in some of them, to a large extent, enabled to rebuild the commodity character of this region. Unfortunately, uncertainty about the possibility of renewal of lease contracts causes a reduction in investment and production, which translates into a renewed decline in commodity relative to the national average [Pyrgies 2019].

Changes in the level of output and commodity production are a derivative of changes in plant and animal production. An important determinant of these changes were trends in the amount of utilised AL. In 1990-2020 the area of AL in Poland decreased from 18.72 million ha to 14.68 million ha, i.e., by 21.6%. This loss was not evenly distributed among

the individual provinces (Figure 3). The least amount of AL was lost in the Wielkopolskie (-8.6%), Kujawsko-Pomorskie (-10.9%) and Podlaskie (12.2%) voivodships, which translated into a corresponding increase in the share of these voivodships in the AL structure. The largest amount of AL was lost in the provinces of South-Eastern Poland, i.e., in the provinces of the Podkarpackie, Małopolskie and Śląskie (by about 40%) voivodships. In the first two provinces, this was a consequence of the high fragmentation of farms and quite widespread deproductivization, i.e., the actual withdrawal from agriculture of farmers from foothill areas, e.g., in the Lesko district this process affected as many as 60% of farms, and in the Podkarpackie Voivodship about 30% [Musiał 2019, Sroka 2019]. In the case of the Silesian Voivodship, this is due to the high degree of urbanization, the development of suburban settlements of the Katowice agglomeration and the anticipation of non-agricultural use of AL around the largest cities, which meant that the share of AL within a 20 km radius around Katowice was the lowest among the largest cities in Poland [Pepliński 2020].

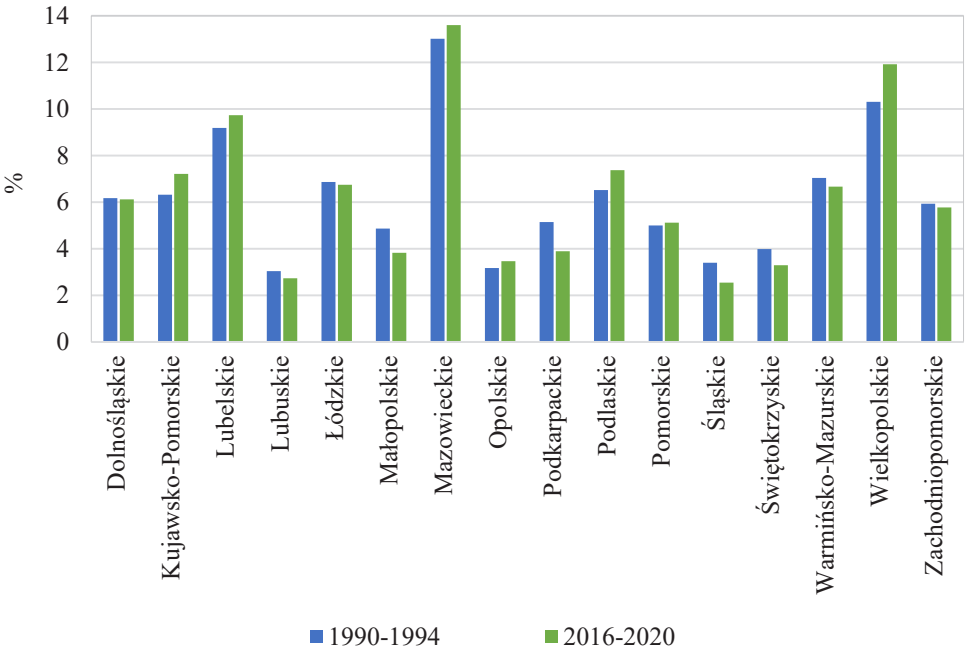

Figure 3. Structure of agricultural land resources by voivodship in Poland in 1990-1994 and 2016-2020

Source: own elaboration based on CSO data

The second major factor affecting yield levels was changes in yield levels calculated using the yield height index. Large variation in the yield level (Figure 4 and Table 1) results from a great diversity of soil and climate conditions in Poland. The highest yields were obtained by farmers from the Opole Voivodship (in the studied period the yield growth rate exceeded the national average), where at the end of the analysed period the yields were higher than average by as much as 33.8% and from the Lower Silesia Province, where the relative yields at the beginning and end of the period in review were nearly 19% higher than the average. The fastest increase in yield occurred in the Lubelskie (which together with the two previous voivodships is characterized by the best soil and climatic conditions) and Pomorskie voivodships, where, in the study period, the yield index increased by over 7.0 p.p. The lowest yields at the end of the studied period were obtained by farmers in the Podlaskie and Mazowieckie voivodships, which are characterized by the lowest coefficient of valorisation of agricultural production space, and in the Świętokrzyskie

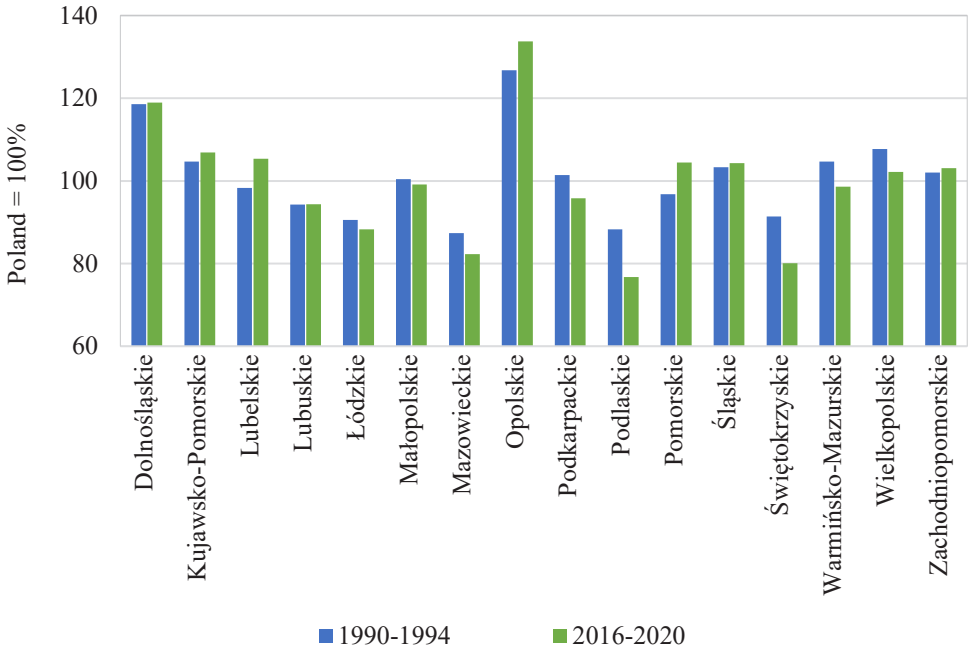

Figure 4. Yield index by voivodship in Poland in 1990-2020 and 2016-2020 (average for Poland = 100%)

Source: own elaboration based on CSO data

Voivodship, which, in turn, is characterized by a high fragmentation of agriculture. In the studied period, they also experienced a large relative decrease in yield by 5.1-11.5 p.p. Unexpectedly, a large relative decrease in yield also occurred in the Wielkopolskie Voivodship, which is characterized by a slightly lower than average index of valorization of agricultural production space. One of the more important reasons may be the lowest level of precipitation in Poland (especially in the central, northern and eastern parts of the voivodship) associated with the commonly reported, although not comprehensively

Table 1. Yield level of the most important crops by voivodship in Poland in 1990-2020 and 2016-2020

Region	Cereals		Potatoes		Suger beet		Rapeseed	
	1990-1994	2016-2020	1990-1994	2016-2020	1990-1994	2016-2020	1990-1994	2016-2020
	Average for Poland = 100%							
Dolnośląskie	125.26	123.97	105.49	106.50	92.84	96.86	98.68	103.96
Kujawsko-Pomorskie	106.16	108.65	99.85	97.08	93.76	100.72	109.83	97.12
Lubelskie	97.50	106.89	103.51	105.18	105.70	92.13	96.68	101.98
Lubuskie	92.65	94.47	92.38	95.39	97.00	98.85	83.73	89.86
Łódzkie	87.95	86.67	96.85	104.49	96.14	100.58	102.96	95.01
Małopolskie	102.13	100.52	99.07	89.82	100.52	100.44	105.95	108.13
Mazowieckie	84.60	80.82	97.41	100.09	98.09	97.15	99.53	100.94
Opolskie	136.00	141.00	104.53	120.07	104.08	107.74	114.82	110.10
Podkarpackie	101.74	97.02	103.45	93.16	115.58	105.83	99.28	94.72
Podlaskie	83.70	75.36	111.57	90.69	91.65	76.26*	81.47	105.06
Pomorskie	95.65	103.97	93.57	109.70	109.03	115.57	94.24	105.04
Śląskie	103.26	105.56	107.23	88.95	99.51	110.10	102.64	99.07
Świętokrzyskie	91.35	79.12	90.62	92.70	111.98	102.00	81.91	86.41
Warmińsko-Mazurskie	105.61	98.89	90.01	89.79	103.08	95.36	100.01	94.86
Wielkopolskie	108.70	102.31	101.49	101.49	100.79	102.32	104.71	96.85
Zachodniopomorskie	102.17	104.94	94.06	108.24	98.37	100.53	87.48	93.61

* 2016-2019 average

Source: own elaboration based on CSO data

studied, falling level of groundwater in Poland [Pepliński 2021]. Such a cause is indicated, among others, by the study of Pinke et al. [2020], who indicated that a 0.21-0.60 m drop in groundwater levels in the Great Plains between 1986 and 2010 compared to the state from 1961 to 1985 resulted in an 11.6% reduction in yield. Since the amount of water consumed by crops increases proportionally with an increase in yield [Rydałowski 2016], yield increases have been and will be most difficult in regions with the lowest precipitation in Poland, i.e., the Wielkopolskie and Kujawsko-Pomorskie voivodships. This thesis can also be confirmed by studies conducted in the southwestern part of Wielkopolska, where precipitation is higher than the average in the voivodship. This region was characterized by much faster yield growth than the average in Poland and the Wielkopolska Voivodship [Poczta et al. 2017].

The highest differentiation of yield level occurs in the case of cereals and, in the analysed period, there was an increase in the spatial differentiation of the yield, which was similar to the trends observed in the analysis of the yield index. It results from the domination of cereals in the sowing structure. In 2016-2020, cereal yields in the Opole Voivodship averaged 5.6 t/ha, while in the Podlaskie Voivodship it was only nearly 3.0 t/ha. In the case of other plants, the yield differentiation was smaller and resulted from the use of land of similar quality in the cultivation of these plants. In the case of potatoes and oilseed rape, the highest yields were also in the Opolskie Province and amounted to 32.8 t/ha and 3.1 t/ha respectively, while the lowest yield of potatoes were in the Małopolskie Voivodship (24.6 t/ha) and of oilseed rape in the Świętokrzyskie Voivodship (2.5 t/ha). In most voivodships a relative increase in yield of one or two crops was accompanied by a decrease or increase in the relative yield of the third analysed crop.

Changes in the structure of AL and crop yield had a large impact on cereals, sugar beet, potatoes and oilseed rape production (Table 2). In the analysed periods, the share in the production of cereals mainly increased in the western voivodships, most of which were the Wielkopolskie and Kujawsko-Pomorskie voivodships, while the eastern part lost its share. Similar processes took place in the case of potatoes, where, until about 2005, a decrease in the cultivated area resulted from a decline in their importance as a fodder crop. These processes were faster in the western part of Poland. In the second decade of the 21st Century there was a growing significance of production in the Kujawsko-Pomorskie, Pomorskie and Wielkopolskie voivodships, which were dominated by medium and large farms specializing in this production and capable of delivering large homogeneous batches of high-quality potatoes.

Changes in the structure of sugar beet production coincided with the location of operating sugar factories, which results from the economic vulnerability of beets to transport. Therefore, the share of voivodships where the number of sugar plants closed was the lowest, i.e., the Wielkopolskie, Kujawsko-Pomorskie and Lubelskie voivodships, where almost 57% of beets were produced at the end of the period, increased. In the rapeseed

production structure, we can observe, first of all, an over 4-fold increase in the share of the Lubelskie Voivodship in this production at the cost of the Opolskie, Warmińsko-Mazurskie, Wielkopolskie and Zachodniopomorskie voivodships.

Much greater changes took place in the structure of animal production in which dependence on the amount of arable land is much smaller due to the possibility of transporting feed, mainly concentrates over long distances. In 1990-2020, the animal population expressed in LU decreased from 12.2 million LU to 10.2 million LU and concerned all voivodships except the Mazowieckie, Podlaskie and Wielkopolskie

Table 2. The production structure of the most important crops by voivodship in Poland in 1990-1994 and 2016-2020

Region	Cereals		Potatoes		Suger beet		Rapeseed	
	1990-1994	2016-2020	1990-1994	2016-2020	1990-1994	2016-2020	1990-1994	2016-2020
	%							
Dolnośląskie	7.64	8.43	4.22	6.85	9.26	8.58	14.91	14.43
Kujawsko-Pomorskie	7.66	8.99	4.87	7.68	15.59	20.51	8.68	9.24
Lubelskie	9.91	11.03	11.35	6.51	16.53	15.26	2.66	11.68
Lubuskie	2.57	2.50	1.41	1.11	2.01	0.70	4.80	3.00
Łódzkie	6.58	6.83	10.31	12.03	3.87	2.41	1.38	2.44
Małopolskie	3.84	2.90	6.05	6.78	0.75	0.58	0.97	1.31
Mazowieckie	11.45	9.96	17.57	11.81	7.74	7.41	2.22	4.85
Opolskie	4.70	6.22	2.59	2.88	7.56	7.34	12.42	9.30
Podkarpackie	4.22	3.00	6.18	7.35	3.54	1.81	1.86	2.60
Podlaskie	5.19	4.27	7.27	3.21	1.53	0.01	1.24	1.91
Pomorskie	4.72	5.42	3.20	7.60	3.02	4.75	6.42	8.75
Śląskie	3.23	2.90	4.83	2.22	0.94	0.80	2.51	2.43
Świętokrzyskie	3.64	2.44	4.82	4.32	2.91	1.54	0.70	1.06
Warmińsko-Mazurskie	6.45	4.95	3.01	2.34	3.45	1.32	11.68	7.11
Wielkopolskie	12.69	14.31	9.47	12.51	17.20	21.18	14.66	10.67
Zachodniopomorskie	5.49	5.85	2.85	4.81	4.10	5.79	12.88	9.21

Source: own elaboration based on CSO data

voivodships. These provinces, together with the Kujawsko-Pomorskie, Łódzkie and Warmińsko-Mazurskie voivodships, increased their share in national livestock production (Figure 5), most notably in the Wielkopolskie Voivodship, whose share increased from 12.4% to 23.3%, and the share of the Mazowieckie and Podlaskie voivodships increased by about 3 p.p. The decline in the importance of livestock production in the voivodeships of western Poland was associated with the liquidation of state farms and the maintenance or reconstruction of production only in some farms established on state farm property. The decline in animal production in South-Eastern Poland resulted mainly from the fragmentation of agriculture and livestock production, which ceased to be profitable (especially for small-scale production) as a result of the real decline in the purchase prices of animal raw materials. In this region in 1990, for example, 85% of farms kept 1-2 cows each, and only less than 1% had 6 or more cows, while in the former Łomża Voivodship it was 28% and 24%, respectively [Dzun 2012]. Similar fragmentation also applied to swine production. Despite such a large reduction in the number of cows and pigs (Table 3), production in small herds still dominates there [Musiał 2019, Pepliński 2019a].

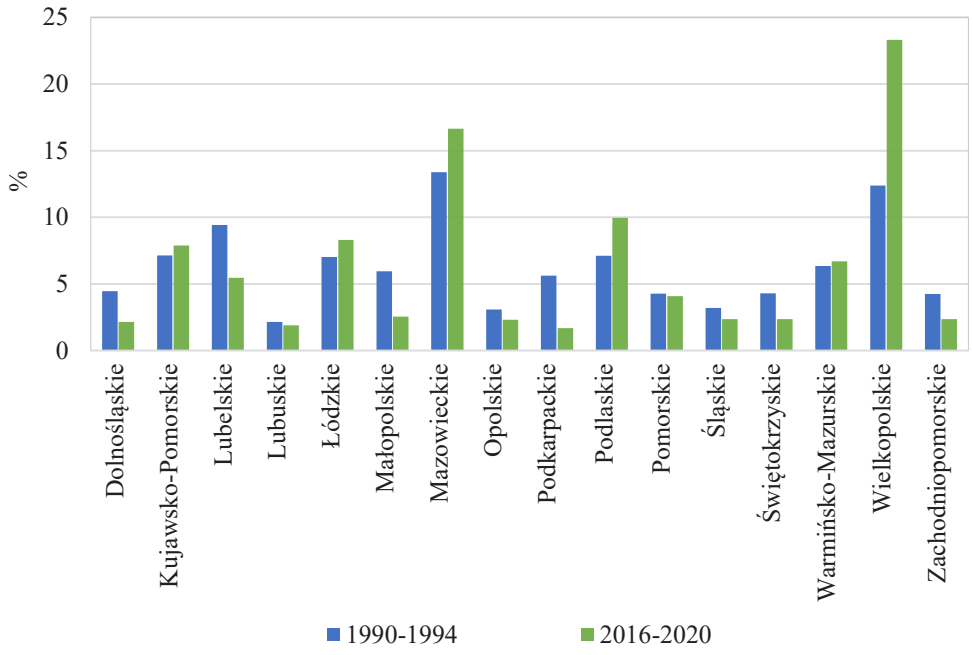

Figure 5. Structure of animal stock per LSU by voivodship in Poland in the years 1990-1994 and 2016-2020

Source: own study based on CSO data

Table 3. The structure of the stock of total cattle, cows, pigs and poultry by voivodship in Poland in the years 1990-1994 and 2016-2020

Region	Cattle		Cows		Pigs		Hens Total	
	1990-1994	2016-2020	1990-1994	2016-2020	1990-1994	2016-2020	1990	2016-2020
	%							
Dolnośląskie	4.56	1.67	3.69	1.18	4.55	1.72	7.52	3.37
Kujawsko-Pomorskie	6.44	8.29	5.53	6.61	9.77	10.25	5.49	6.24
Lubelskie	9.06	6.12	9.50	5.70	8.12	4.43	9.11	4.04
Lubuskie	1.91	1.30	1.56	0.63	2.84	1.20	2.24	2.50
Łódzkie	7.14	7.72	8.05	8.18	6.09	10.17	8.17	7.20
Małopolskie	6.72	2.80	7.88	3.56	3.20	1.38	8.35	2.73
Mazowieckie	13.38	18.55	15.81	22.49	12.13	10.12	13.17	21.76
Opolskie	3.21	2.04	2.56	1.81	3.58	3.19	4.17	2.50
Podkarpackie	6.20	1.24	7.25	1.81	3.02	1.30	6.37	2.82
Podlaskie	7.89	16.27	8.13	19.79	5.40	2.87	4.10	6.70
Pomorskie	3.97	3.47	3.40	2.64	5.68	6.67	3.94	3.44
Śląskie	3.54	2.03	3.47	1.96	2.69	1.95	6.98	4.55
Świętokrzyskie	4.33	2.57	4.95	2.25	2.88	1.81	3.72	3.27
Warmińsko-Mazurskie	6.84	7.43	5.89	7.85	5.99	4.69	3.34	2.54
Wielkopolskie	10.73	16.80	9.16	12.46	18.55	35.94	9.79	20.32
Zachodniopomorskie	4.07	1.68	3.17	1.07	5.51	2.32	3.54	6.01

Source: own elaboration based on CSO data

In animal production one can notice a progressive process of specialization, which mainly concerns the central and north-eastern voivodships (Table 3). In the stock of cattle and cows, the greatest increase in the share in national stock took place in the Mazowieckie, Podlaskie and Wielkopolskie voivodships with a stable share in the Kujawsko-Pomorskie, Łódzkie and Warmińsko-Mazurskie voivodships. The Dolnośląskie, Lubuskie, Opolskie, Zachodniopomorskie and Podkarpackie voivodeships are of minimum significance. In the latter, the share of national beef and cow livestock decreased by more than 3/4. The Wielkopolskie Voivodeship has specialized in pork livestock production, with almost 36% of the Polish pig livestock in 2016-2020. The importance of the Łódzkie

Voivodship also increased, which together with the Kujawsko-Pomorskie and Mazowieckie voivodships had slightly more than 10% of the pig population at the end of the period under study. On the other hand, the Mazowieckie and Wielkopolskie voivodeships specialized in poultry production. Highly profitable poultry production in Poland was created after 1990 and, in the first period, the Wielkopolskie Voivodship was leading, where in 2007-2008 there were 27-31% of chicken poultry. Since 2010, the importance of the Mazowieckie Voivodship and, to a lesser extent, the Podlaskie Voivodship has systematically been growing. The development of poultry production was mainly determined by the location of existing and emerging poultry plants that provided knowledge transfer to emerging farms.

Changes in the structure of slaughter livestock production, including beef, pork and poultry livestock, corresponded to the trends resulting from the observed changes in the animal population (Figure 6). However, the structure of production itself differs, especially in the final period of analysis, as the production of livestock per 1 LSU varies considerably

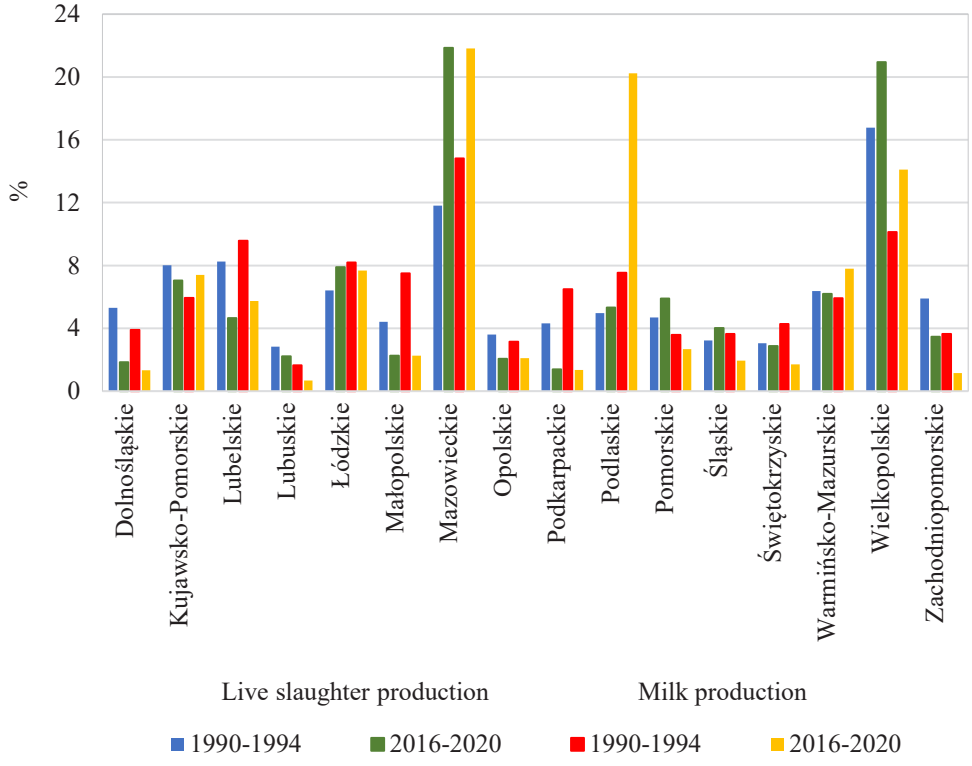

Figure 6. The structure of slaughter livestock and milk production by voivodship in Poland in the years 1990-1994 and 2016-2020

Source: own elaboration based on CSO data

across species. The highest production is in the case of poultry, so the Mazowieckie Voivodeship, in which the share in slaughter livestock production was higher than in the stock by 5.2 p.p., and to a lesser extent the Śląskie Voivodeship, gained importance in livestock production (see Figures 5 and 6). The lowest production of livestock is in the case of total cattle, as it is characterized by the longest production cycle and also includes cows which constitute more than 1/3 of the cattle population. Therefore, a much lower share in the production of slaughter livestock than results from the share in the stock has the Podlaskie (-4.6 p.p.) and Wielkopolskie (-2.4 p.p.) voivodeships. Milk production is mainly concentrated in the Mazowieckie, Podlaskie and Wielkopolskie voivodeships, because they had jointly 56.2% of Polish production at the end of the examined period and in the examined period their share increased by as much as 23.7 p.p. Next, 22.9% of milk production was located in the Kujawsko-Pomorskie, Łódzkie and Warmińsko-Mazurskie voivodeships, and their total share in the examined period increased by 2.8 p.p.

The highest increase in the milk yield of cows in Poland in relation to the national average in the analysed period was observed in voivodeships that specialized in milk production, that is in the Mazowieckie, Podlaskie and Warmińsko-Mazurskie voivodeships,

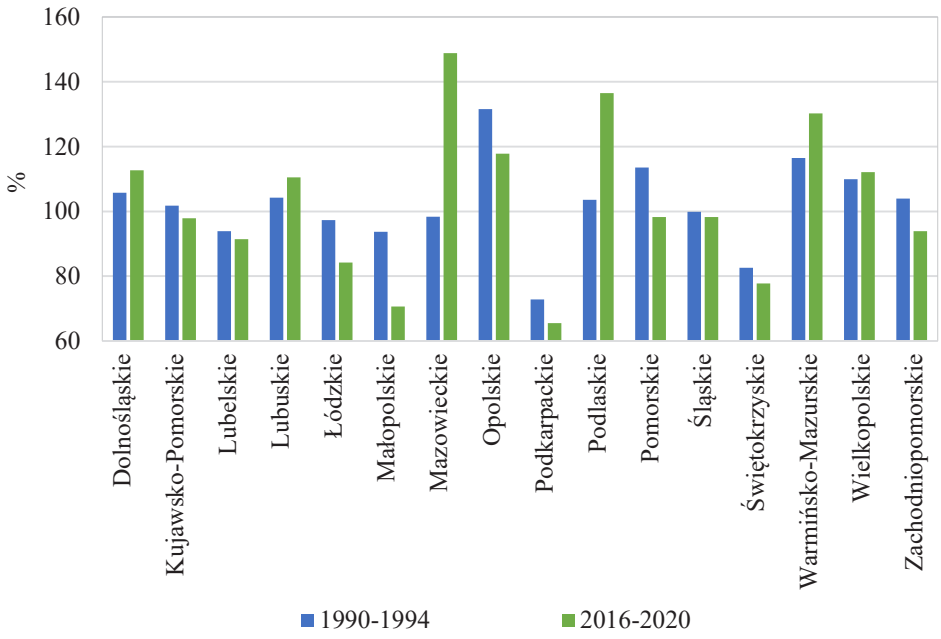

Figure 7. Changes in the level of milk yield of cows by voivodship in Poland in 1990-1994 and 2016-2020 (average milk yield in Poland = 100%)

Source: own elaboration based on CSO data

where a relative increase in the milk yield level was 50.5 p.p., 33.0 p.p. and 13.7 p.p., respectively (Figure 7). A faster increase in cow milk yield than the Polish average was also observed in the Wielkopolskie, Dolnośląskie and Lubuskie voivodeships, where milk production was mainly carried out in large farms created on the basis of State Agricultural Farms. A decrease in relative milk yield occurred in the voivodships of south-eastern Poland, which, at the beginning of the studied period, were already characterized by the lowest milk yield, which resulted from the domination of cows kept for self-supply and the neighbourhood sale of milk [Dzun 2012].

CONCLUSIONS

The conducted analysis allows to formulate the following conclusions:

1. In the analysed period there were large changes in the spatial distribution of agricultural production in Poland. It particularly applied to animal production.
2. In the production of agricultural raw materials, first of all, the voivodships of Wielkopolska, Mazowieckie and Podlaskie have gained in importance. The importance of voivodeships from South-Eastern Poland and Western Poland decreased.
3. In the case of the Wielkopolskie Voivodeship, the increase in importance in agricultural production resulted from the smallest reduction in the amount of arable land and the largest in the country increase in the share of most species of livestock. There was also a slightly higher relative increase in milk yield than the national average and a slight relative decrease in the yield height index.
4. In the case of the Mazowieckie Voivodship, the increase in importance in agricultural production mainly resulted from the highest increase in the production of slaughter livestock, mainly poultry, a higher-than-average increase in the milk yield of cows and an increase in the share of this region in the AL structure, which, to a large extent, compensated for the relative decrease in the harvest index.
5. The Podlaskie Voivodeship specialized in milk and cattle production, which more than compensated for the decrease in the share of cereal and sugar potato production caused primarily by a decrease in yield. In 2020, the cultivation of sugar beets was also abandoned in this voivodship.
6. A decrease of significance in agricultural production of the south-eastern voivodships resulted from the deterioration of plant and animal production efficiency indicators, an above-average loss of UAA and a decrease in the importance of this region in animal production in the stock of all analysed animal groups. This was caused by a fragmented agrarian structure and a high share of livestock in small herds, which did not improve in the studied period in relation to other regions of the country.
7. In the western voivodeships, there was a slight increase in their share in plant production, but their share in animal production decreased by nearly a half.

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REGIONALNE UWARUNKOWANIA ROZWOJU PRODUKCJI ROLNEJ W POLSCE

Słowa kluczowe: rozwój regionalny, produkcja roślinna, produkcja zwierzęca, produktywność, koncentracja przestrzenna

ABSTRAKT

Celem badań było określenie zmian w poziomie przestrzennej koncentracji produkcji w Polsce w latach 1990-2020. Analiza obejmowała produkcję globalną i towarową, produkcję podstawowych surowców rolnych, pogłowie bydła, krów, trzody chlewnej, kur i zwierząt przeliczonych na DJP oraz zmiany poziomu plonów i mleczności krów. W badaniach korzystano z danych pochodzących z GUS oraz Banku Danych Lokalnych. W celu ograniczenia krótkookresowych zmienności, szczególnie w produkcji roślinnej, w większości analiz przyjęto do badań pięcioletnie średnie dla początku i końca okresu. Analizę przeprowadzono dla aktualnie obowiązującego podziału administracyjnego obejmującego 16 województw. Badania wykazały duże zmiany w przestrzennym rozmieszczeniu produkcji rolniczej w Polsce. Na znaczeniu w produkcji surowców rolnych zyskały przede wszystkim województwa: wielkopolskie, które zwiększyło swój udział w większości produktów rolnych roślinnych i zwierzęcych; mazowieckie, które wyspecjalizowało się w produkcji zwierzęcej (z wyjątkiem wieprzowiny) i podlaskie, w którym ponadprzeciętnie rozwinęła się produkcja mleka i żywca wołowego. Spadło natomiast znaczenie województw z południowo-wschodniej Polski, gdzie zmarginalizowaniu uległa produkcja zwierzęca i zmalało znaczenie produkcji roślinnej, wskutek większego wyłączania UR z produkcji rolnej i wolniejszego spadku plonów. W przypadku województw położonych w zachodniej Polsce, nastąpiła znaczna redukcja produkcji zwierzęcej, wzrosło jednak znaczenie tego regionu w produkcji roślinnej, głównie dzięki wyższemu niż przeciętnie w Polsce przyrostowi plonów.

AUTHOR

BENEDYKT PEPLIŃSKI, DR HAB. PROF. PULS

ORCID: 0000-0003-2568-6814
Poznan University of Life Sciences
Department of Law and Enterprise Management in Agribusiness
28 Wojska Polskiego St., 60-637 Poznań, Poland
e-mail: benedykt.peplinski@up.poznan.pl

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