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AN ASSESSMENT OF THE SELF-SUFFICIENCY LEVEL OF SELECTED COUNTRIES IN CENTRAL AND EASTERN EUROPE IN POULTRY MEAT PRODUCTION

Key words: meat market, production, consumption, international trade, agricultural development

ABSTRACT. One of the key markets of the European Union is the poultry meat market. The situation on this market is of significant importance to both producers and consumers. The main aim of the article is to study the level of self-sufficiency of selected countries in Central and Eastern Europe in the production of poultry meat. Eleven countries were selected as the research area: Bulgaria, Croatia, the Czech Republic, Estonia, Lithuania, Latvia, Poland, Romania, Slovakia, Slovenia and Hungary. In the conducted research, simplified indices of self-sufficiency were used: the balance of foreign trade in terms of volume and value, average annual consumption per capita and production volume in relation to consumption. The study was conducted for the years 2009-2018. The statistical sources used come from FAOSTAT and International Trade Centre databases. Research has shown that the analyzed countries are characterized by a significant diversification of the self-sufficiency level of poultry meat production. Only 6 analyzed countries can meet the domestic consumption demand from their own production, the remaining countries supplement the deficit from imported goods. The highest level of self-sufficiency of poultry meat production was observed in Poland, Slovenia, Lithuania and Hungary. On the other hand, the lowest level is found in Bulgaria, the Czech Republic, Estonia, Slovakia and Latvia.

INTRODUCTION

A universal and, at the same time, basic need in all national economies is to ensure enough food, and the agricultural sector, together with the agri-food processing sector, plays a key role in economic strategies and policies [Servolin 2005]. Food self-sufficiency is one of the basic priorities for the functioning of modern agriculture. It is of particular importance due to the emerging crises in the economy [Grochowska et al. 2013].

The concept of food self-sufficiency is an extremely complicated issue. This is mainly due to the numerous approaches to this issue by various authors. It was particularly important to distinguish this concept within a closed and an open economy. In the case of closed economies, food self-sufficiency should be understood as the ability of the economy to produce all or most of the food needed, measured as the ratio of the country's domestic production to consumption [Hałasiewicz 2010]. However, in modern economy, it is necessary to extend this definition due to the greater degree of economic openness. In this case, food self-sufficiency should be understood as the ability of the economy to meet national food demand, while taking the country's foreign trade potential into account [Szczepaniak 2012]. The subject of self-sufficiency was dealt with by many researchers, both domestic and foreign. These include, among others: Anita Tiraspolsky [1980], Agnieszka Baer [2002], Agnieszka Baer-Nawrocka [2014], Franciszek Kapusta [2012], Aneta Mikuła [2012], Steffen Noleppa and Matti Carlsburg [2013], Pavel Kotyza and Josef Slaboch [2014], Jennifer Clapp [2017], Jean Christophe Bureau and Johan Swinnen [2018], Krzysztof Firlej and Sebastian Kubala [2018], Areidy Beltran-Pena, Lorenzo Rosa and Paolo D'Odorico [2020] or Sebastian Kubala and Chrystian Firlej [2021].

One of the key markets in the European Union is the poultry meat market. The situation on this market is significant for both producers and consumers due to the high share of revenues generated by the market in the total amount of all agricultural revenues [Kubala 2018]. At the same time, it should be noted that the poultry meat market is prone to emerging crises and increases in animal disease cases. The main determinants of the rapid development of the poultry meat market are primarily food issues. This meat is a source of wholesome animal protein, it also has a higher nutritional value than pork and beef and is a reliable source of minerals [Kijowski 2003, Konarska et al. 2015].

The issues raised address the basic question of how the level of self-sufficiency of poultry meat production is shaped in the countries of Central and Eastern Europe, which belong to the structure of the European Union. Analyzing these countries is extremely important as it allows to assess to what extent the level of agriculture in this region is similar and to what extent it differs from each other. On the other hand, this issue seems to be particularly important from the point of view of development prospects for the poultry meat market. Therefore, the main aim of the article was to study the level of self-sufficiency of poultry meat production in individual countries of Central and Eastern Europe.

MATERIAL AND METHODS OF RESEARCH

Eleven countries of the Central and Eastern European region have been adopted as a research area that belong to the structure of the European Union: Bulgaria, Croatia, the Czech Republic, Estonia, Lithuania, Latvia, Poland, Romania, Slovakia, Slovenia and Hungary.

The research used simplified self-sufficiency indicators, referring to the measures proposed by Krystyna Szybiga [2013] and Franciszek Kapusta [2011]. The focus was on technical and economic self-sufficiency. The first one is based on the research of foreign trade balance in terms of volume and the calculation of indicators representing the amount of average annual consumption per capita and the volume of production in relation to the volume of consumption. Economic self-sufficiency was based on the research of foreign trade balance in the value approach.

Research was conducted for the years 2009-2018. The statistical sources used come from FAOSTAT and International Trade Centre databases.

RESEARCH RESULTS

Poland is the largest producer of poultry meat from the region of Central and Eastern Europe (Figure 1). Its production potential means that it can produce relatively more annually than the sum of the other 10 countries (1,214,000 tonnes). For this reason, Poland can be called the production leader in the above-mentioned countries. In terms of

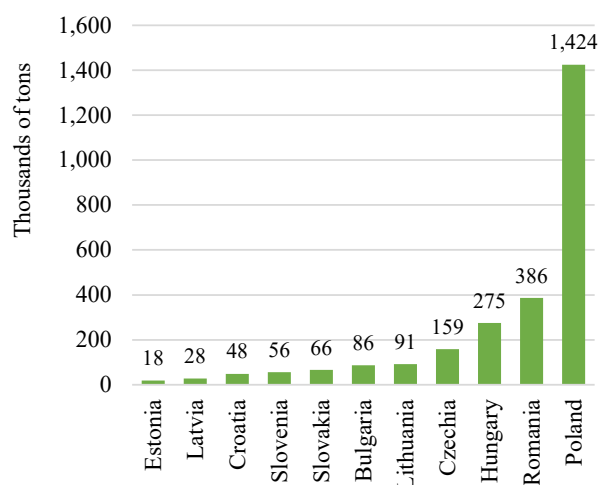


Figure 1. The average annual production of poultry meat in the period 2009-2018

Source: own study based on FAO data

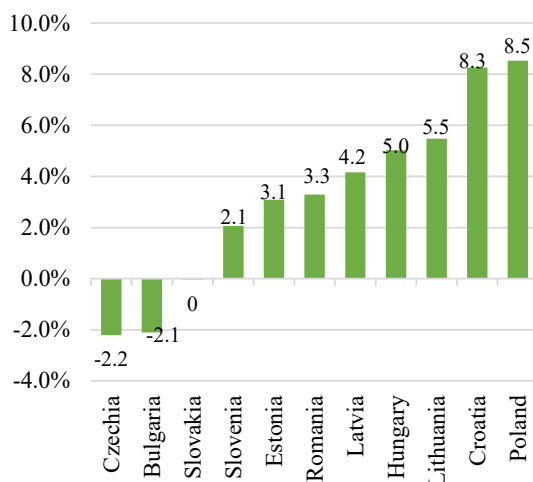


Figure 2. The average annual change in production dynamics for the period 2009-2018

Source: own study based on FAO data

changes in production dynamics y/y (Figure 2), Poland also ranks first with the result of 9% per year. Croatia is close behind it, with the result of 8%. In the case of Bulgaria and the Czech Republic, there is a tendency to reduce the production of this type of products (on average, -2% per year). The best year for Poland was 2018, when the production of poultry meat changed by over 41% compared to the previous year, however, it was Croatia that recorded the highest dynamics of changes between 2010 and 2009, amounting to 64% of all analyzed countries.

Over the period under study, a gradual increase in the production of poultry meat is visible and, within the discussed decade, its value increased by over 57% (between 2009 and 2018). In terms of the future, the phenomenon of further production growth should not be disturbed. The main argument for the above statement is the assumption of a further increase in the consumption of these types of products in the discussed region (Figure 3). In the case of 64% of the surveyed countries, the average dynamics of changes in the consumption of poultry meat per capita each year increases. Comparing the two charts in Figure 2 and Figure 3, one can notice a relationship regarding the increase in consumption in a country where a positive change in the dynamics of production is recorded. The only country that deviates from the rule is Bulgaria, where the value of consumption increases by 0.8%, on average, while production decreases by 2.1%. Using the graph showing the average production volume to the number of inhabitants (Figure 4), it can be noticed that Bulgaria also records one of the lowest values of this indicator. This may not only be

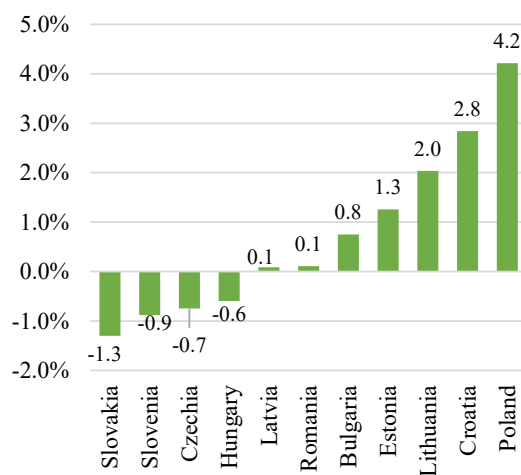


Figure 3. The average annual change in the consumption of poultry meat in the period 2009-2018

Source: own study based on FAO data

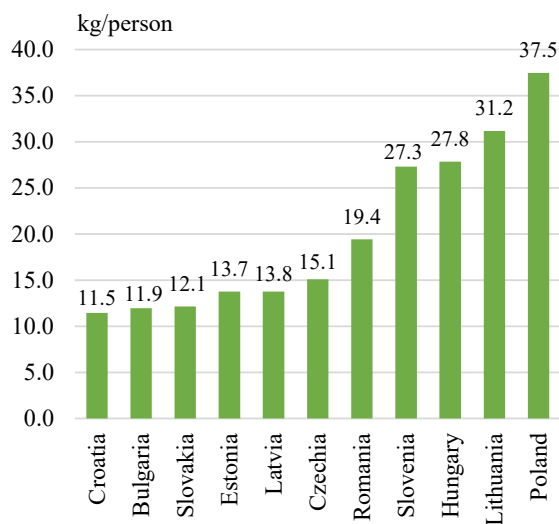


Figure 4. The average annual consumption of poultry meat per capita in the period 2009-2018

Source: own study based on FAO data

related to the decrease in poultry meat production, but also to a relatively greater decrease in the number of inhabitants of a given country (the decrease over 2009-2018 is 5.6%, compared to a 0.5% decrease in Poland).

In each ranking, Poland obtains the best position in the region of Central and Eastern Europe. The volume of production in Poland in relation to the inhabitant of the country records historical highs, and only over the discussed decade, its value almost doubled (from 27.78 kg per person in 2009 to 54.77 kg per person in 2018). Poland is the most dynamic country developing this branch of the economy than in the other (discussed) country. The passion of Poles for the production of this type of meat was also emphasized in the study by Katarzyna Utnik-Banaś [2018], which showed a 25-fold increase in poultry production over 1965-2016. The author also emphasizes that Poland is the largest producer of poultry meat in the European Union. Figure 4 also shows how large the variation in the

Table 1. The volume of poultry meat production per consumption for selected countries in the region of Central and Eastern Europe

Year	Bulgaria	Croatia	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Slovakia	Slovenia
	%										
2009	67	65	75	56	78	52	86	130	88	80	101
2010	62	136	77	57	93	52	102	137	101	81	106
2011	52	154	74	69	94	54	106	136	108	72	108
2012	50	130	71	62	98	59	107	144	103	95	107
2013	51	135	73	65	104	65	110	146	105	77	109
2014	51	130	68	75	108	70	122	140	109	78	111
2015	55	134	66	73	128	74	136	126	102	89	110
2016	55	131	68	71	134	75	134	116	98	86	119
2017	56	118	65	74	138	82	159	116	97	92	128
2018	55	104	64	66	131	82	126	180	128	95	128
\bar{x}	55	124	70	67	111	66	119	137	104	85	113

\bar{x} – arithmetic average

Source: own study based on FAO data

Table 2. The balance of foreign trade among selected countries in the region of Central and Eastern Europe in terms of value in 2009-2018

Year	Bulgaria	Croatia	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Slovakia	Slovenia
	Values expressed [thousand USD]										
2009	7,401	-14,853	-75,282	-15,350	78017	-24,487	14,276	436,837	-107,949	-36,289	21,888
2010	19,407	-18,046	-81,900	-14,607	122,162	-21,004	31,965	546,332	-13,879	-17,807	20,276
2011	-52,269	-18,501	-124,279	-11,621	165,442	-21,955	40,280	665,472	99,060	-42,875	21,515
2012	-87,159	-21,925	-122,303	-15,805	132,051	-13,623	42,641	785,891	106,202	-16,933	18,556
2013	-37,514	-25,630	-96,543	-14,660	148,372	-11,869	53,319	885,223	68,288	-27,752	17,883
2014	-40,952	-26,015	-114,391	-16,389	159,401	-6,756	65,903	893,982	14,218	-25,472	19,397
2015	-30,316	-25,487	-143,290	-13,329	144,710	-7,846	54,090	873,192	21,151	-7,619	8,918
2016	-26,756	-23,401	-125,968	-16,545	147,941	-17,298	54,769	1,018,897	-12,005	-1,946	14,238
2017	-32,639	-20,613	-130,619	-16,021	84,149	-16,001	52,540	1,263,702	-9,282	-47,733	18,987
2018	-31,798	-32,582	-160,493	-26,873	94,136	-20,759	55,036	1,550,427	4,224	-67,758	19,297
\bar{x}	-31,260	-22,705	-117,507	-16,120	127,638	-16,160	46,482	891,996	17,003	-29,218	18,096

\bar{x} – arithmetic average
Source: own study based on ITC data

consumption of poultry meat exists between countries, which may result from the culture and traditions represented by individual nationalities. For example, in the case of Croatia or Bulgaria, consumption is three times lower than in Poland. This is probably due to the showcase of local cuisines that specialize in fish and seafood dishes.

Table 1 presents the volume of poultry meat production in relation to the consumption volume in a given country. The summary aims to show the level of self-sufficiency of poultry production for selected countries. The presented comparison in Table 1 shows that only 6 countries are able to meet the domestic consumption demand from their own production. Poland and Slovenia are the only countries that can meet local consumption requirements each year (values over 100% for the entire period). In the case of Poland, a significant jump in 2018 can be noticed, close to twice the production compared to the demand. In the case of Slovenia, a systematic increase is noticeable, without major fluctuations. Bulgaria fared the worst, as it has not achieved self-sufficiency in any of the above-mentioned periods, and its value fluctuates around 55%. Latvia is closely behind (the average was 66%), although in recent years a significant improvement can be noticed, which for 2018 amounted to 82%. Countries that are unable to ensure a production volume adequate to meet its demand are usually forced to import it from other countries. Therefore, Table 2 and Table 3 present the balance of foreign trade in terms of value and quantity for the discussed countries.

The tables presented above show that Poland, as a leader in poultry production, also ranks first in terms of foreign trade. In the period 2009-2018, it increased its balance sheet nearly 4 times, and the average annual value was almost USD 892 million. Such a dynamic change is conditioned by the high competitiveness of Poland compared to other European producers. The main recipients of "Polish poultry" include countries such as: Germany, Great Britain or the Netherlands, where there is a noticeable tendency to increase exports. It should be noted that in the period 2009-2018, poultry meat exports systematically increased by an average annual value of 16%. Only 5 countries generated a positive foreign trade balance in terms of value within the decade in question, while in terms of quantity, this value decreased to 4 countries. The second list lacks Romania, which, showing a positive foreign trade balance in terms of value, was surprisingly importing more meat than exporting it. This is also an interesting phenomenon, which can be explained by the possibility of conducting a transaction concerning the export of goods with higher prices than in the field of importing products with a much lower financial value. A similar phenomenon can be seen in Bulgaria or Lithuania, but not for the entire period, just for a single year.

Table 3. The balance of foreign trade among selected countries in the region of Central and Eastern Europe in quantitative terms in 2009-2018 [values expressed in thous. kg]

Year	Bulgaria	Croatia	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Slovakia	Slovenia
	Values expressed [thousand kg]										
2009	-23,502	-9,490	-33,236	-9,833	13,253	-17,344	-2,671	197116	-69061	-11,356	6,760
2010	-22,472	-8,307	-34,998	-11,304	38,037	-16,870	5,773	268,515	-14,413	-7,320	8,213
2011	-44,410	-7,389	-44,464	-8,168	53,202	-16,005	8,406	288,846	9,365	-8,546	7,039
2012	-59,228	-9,386	-45,342	-9,518	50,769	-13,487	8,758	359,710	-4,136	6,510	6,241
2013	-51,619	-9,009	-38,810	-8,893	56,654	-1,0821	10,119	403,584	-851	-1,6981	6,274
2014	-56,473	-7,089	-44,846	-9,162	63,173	-11,655	14,812	395,878	-34,495	-6,252	6,538
2015	-59,449	-8,052	-62,009	-9,443	70,979	-10,403	13,847	472,053	-37,320	-9,279	2,163
2016	-60,094	-7,805	-56,427	-11,198	77,394	-17,475	15,382	599,162	-44,596	-14,720	4,310
2017	-66,116	-7,014	-63,427	-9,547	50,011	-19,550	17,781	693,972	-57,840	-29,776	6,525
2018	-66,832	-7,186	-65,468	-15,854	50,576	-23,243	14,398	759,183	-49,937	-38,463	5,903
\bar{x}	-51,020	-8,073	-48,903	-10,292	52,405	-15,685	10,661	443,802	-30,328	-13,618	5,997

\bar{x} – arithmetic average

Source: own study based on ITC data

CONCLUSIONS

The conducted research allowed to determine the degree of self-sufficiency of selected countries of Central and Eastern Europe in the production of poultry meat. As analyzes have shown, countries are characterized by a significant diversification in terms of the consumption of these types of products as well as in terms of the results of the foreign balance sheet. Therefore, the following conclusions can be drawn:

1. Poland, as a significant leader in the ranking, prides itself on the greatest dynamics in the production of poultry meat. This is related to greater demand for goods on the domestic market and in terms of its export outside the country.
2. Only 6 countries out of the 11 surveyed can satisfy the domestic consumption demand from their own production. Remaining countries replenish the deficit from imported goods. The highest level of self-sufficiency of poultry meat production was observed in Poland, Slovenia, Lithuania and Hungary. On the other hand, the lowest level is found in Bulgaria, the Czech Republic, Estonia, Slovakia and Latvia.
3. The export of own goods at a higher price and the import of the product at a lower price is noticeable in the analyzed markets – especially in the Romanian market. Such activity is aimed at improving the balance in terms of foreign trade.

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OCENA POZIOMU SAMOWYSTARCZALNOŚCI ŻYWNOŚCIOWEJ PRODUKCJI MIĘSA DROBIOWEGO W WYBRANYCH KRAJACH EUROPY ŚRODKOWO-WSCHODNIEJ

Słowa kluczowe: rynek mięsa, produkcja, konsumpcja, handel międzynarodowy,
rozwój rolnictwa

ABSTRAKT

Jednym z kluczowych rynków Unii Europejskiej jest rynek mięsa drobiowego. Sytuacja panująca na tym rynku ma istotne znaczenie zarówno dla producentów, jak i konsumentów. Głównym celem artykułu jest badanie poziomu samowystarczalności produkcji mięsa drobiowego w poszczególnych krajach Europy Środkowo-Wschodniej. Za obszar badawczy przyjęto jedenaście państw: Bułgarię, Chorwację, Czechy, Estonię, Litwę, Łotwę, Polskę, Rumunię, Słowację, Słowenię oraz Węgry. W badaniach posłużono się uproszczonymi wskaźnikami samowystarczalności, takimi jak: bilans handlu zagranicznego w ujęciu wolumenowym oraz wartościowym, średnia roczna konsumpcja w odniesieniu do mieszkańca oraz wielkość produkcji w stosunku do wielkości spożycia. Badanie przeprowadzono dla danych za lata 2009-2018. Wykorzystane źródła statystyczne pochodzą z bazy FAOSTAT oraz International Trade Centre. Jak wykazały badania, analizowane państwa charakteryzują się znacznym zróżnicowaniem poziomu samowystarczalności produkcji mięsa drobiowego. Zaledwie 6 analizowanych krajów jest w stanie zaspokoić zapotrzebowanie krajowej konsumpcji z własnej produkcji, pozostałe kraje uzupełniają deficyt z importu towaru. Najwyższy poziom samowystarczalności produkcji mięsa drobiowego zaobserwowano w Polsce, Słowenii, na Litwie oraz Węgrzech. Z kolei najniższy poziom występuje w Bułgarii, Czechach, Estonii oraz na Słowacji i Łotwie.

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