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DEVELOPMENT OF PIG MARKET IN POLAND AGAINST EU BACKGROUND

Summary: The paper considers the development of the pig market in Poland. The article presents pork production and consumption in households. The analysis covered production costs, stock structure and pig exports in EU countries. Tabular, graph and descriptive method were used in the analysis of data. The paper use secondary data which source was meat market and MSO. The research shows that Poland occupies in the production of swine fifth position after Germany, Denmark, France and Spain. In Poland, in recent years, there has been a drop in the pig population, which were mainly the result of growing competition on international markets and the spread of ASF.

Key words: pork production, consumption, foreign trade.

1. INTRODUCTION

Pork meat is one of the main sectors of agricultural production in the world. Pork meat is a basic product in human diet alongside poultry and cattle meat. The pig population in Poland in 2016 amounted to 784.8 million animals and was lower by 1.5% in comparison to 2015. One may, thus conclude that the decrease in the population resulted from factors making production less profitable [Meat Market, Its Conditions and Perspectives. Market Analysis, 2016]. Asia is the main leader in pork meat production, that in 2014 produced 60 million tons of meat, which accounts for half of the world's production [Mroczek 2014]. In the EU, Poland as regards pig production is ranked in the fifth place, achieving the result of 1,606 thousand tons, just behind Germany, Denmark, France and Spain [Małkowski and others, 2014].

The pork meat market in Poland is unstable. Price fluctuations as well as decrease in profitability result in ever decreasing number of animals. In the half of 2009 it amounted to about 14.5 million animals, whereas in 2015 – only 11.5

million, which illustrates a drop of 2.9 million animals over the period of 6 years. The drop in animal population took place in all groups of pigs for fattening, including piglets by 12%, "weaners" by 9.5% and porkers by 13.4% (Pig Population as of June 2014, GUS – Main Statistical Office). In the case of the largest farms that deal with livestock rearing, its population has increased by 15%. In 2009, 34 animals fell on one farm on average, whereas in 2015 – 55 ones [Małkowski and others, 2014].

The difficult situation on the pork market is an aftermath of the occurrence of African swine fever virus in Poland which resulted in stopping import by Russia, China and Japan. The embargo imposed on Poland that involved export ban on Polish pork meat as well as products processed from such pork meat to Eastern countries, but not only, resulted in losing selling markets and consequently in price decrease that could no longer cover the production costs. [Szymańska 2014]. Recently, the price of porkers has increased and the price of grains being the main feedingstuff decreased, which gives hope for such production trend to develop (Małkowski 2014).

Over the period of few last years, there has been an increase in livestock production all over the world. This leads to achieving lower production costs, introducing new and better production technologies, limiting the number of employees and increasing profitability. However, small scale of such production in Poland, makes it impossible to obtain positive economic results as expected by farmers [Dzwonkowski 2015].

Both production and processing of pork meat are closely related with obeying hygienic and sanitary regulations therefore adaptation to such regulations must be an aim of every farm. A great competition is offered by countries with larger natural resources, which are capable of producing grains that are the main feedingstuff. Moreover, pig population increases worldwide and Polish pork enjoys great popularity and consumers' satisfaction [Gołaś, Kozera 2008].

The aim of the research was to analyse production, consumption and foreign trading of pork meat. In the course of the analyses, table, graphic and descriptive methods were used as well as data of the state statistics provided by GUS in Poland [Main Statistical Office]. The analyses concerned population, production, consumption and foreign trade of pork meat.

2. RESULTS

Pig population in Poland in 2010 amounted to 14.9 million animals, whereas in 2015 – 11.6 million. The relation between the price for one kg of meat to the prices of grains and fodder is considered to be one of the most important reasons of such abrupt drop. Such reasons result in the increase of production costs and consequently decrease in its profitability and final economic result.

The discovered rate of population drop in *wielkopolskie* province is especially alarming as this region is considered to be the biggest pig producer with the amount of 1,152,853 animals. Besides the largest pig population, *wielkopolskie* province also stands out due to its high amount of pigs per every farm of 90 animals [Blicharski, Hammermeister 2013]. Over a half, i.e. 54% of the whole pig population is located in *kujawsko-pomorskie* province, reaching the total amount of 420,645 animals. The first population increase that had been recorded for many years took place in 2014 and amounted to 11,724.1 thousand animals and was bigger by 5% than the previous year. However, the increase in pig population occurred at inadequate moment of time as it was then that Poland experienced an embargo imposed by Russia, which resulted in violent drop in pork prices and consequently also grain prices that made it possible to maintain stable production [Agricultural Statistical Diary, 2014].

Drop in pig population was experienced in most provinces, however the problem was even more acute in the case of pregnant sows as presented in table 1. Production scale measured by the number of sows and size of sold livestock within a year is a factor that determines production profitability [Ziętara 2016]. Keeping sows and rearing piglets require much more knowledge than just the process of fattening. Adapting pigsties to piglet production is a difficult and expensive task, therefore small farms are not interested in such specialization and thus increasing breeding [Dzwonkowski 2014].

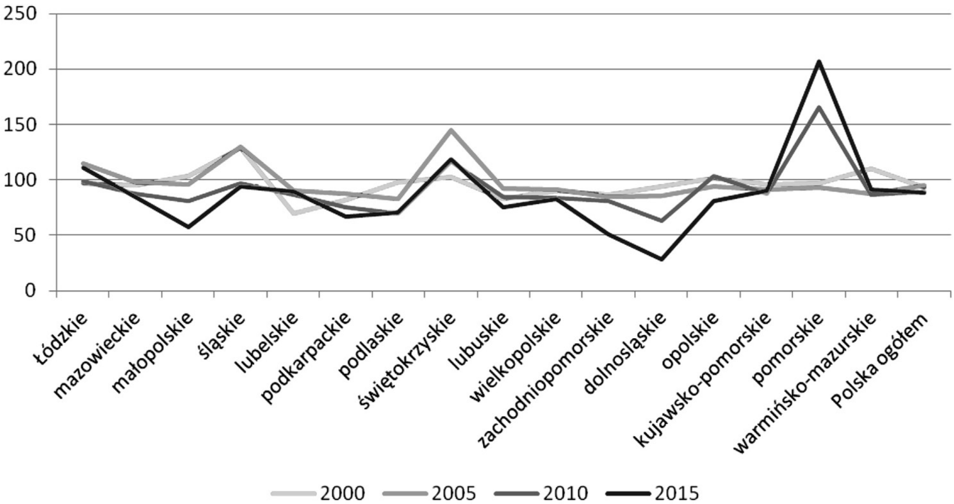
Table 1. Changes in the production of livestock in Poland (year 2011=100)

Specification	2012	2013	2014	2015	2016
Sows in total	90,0	94,4	98,8	85,2	84,2
Pregnant sows	94,0	94,2	101,2	83,6	85,5
Other sows	83,0	94,8	96,8	98,5	97,4
Piglets of up 20 kg in weight	82,9	98,0	97,3	90,9	88,3
Piglets of weight 20-50 kg	88,2	97,5	102,0	94,3	90,6
Livestock for slaughter of weight 50 kg and over	89,8	94,3	98,4	85,2	84,1

Source: Main Statistical Office 2015.

Pork production is varied as regards regions in Poland (pict. 1). The analysis proves that the largest increase of livestock for slaughter in the years 2000-2015 took place in *pomorskie, świętokrzyskie* and *łódzkie* provinces. In contrast, the biggest drop in the production of pork livestock was experienced in the above period by *dolnośląskie, zachodniopomorskie* and *małopolskie* provinces. According to Kusz and co-authors' analyses (2017) it results that the drop in pig population was bigger than that of the livestock for slaughter. It was the result of completing herds with animals imported from abroad. In the case of some farms with larger production scale, it is more profitable to import piglets from abroad than carry out rearing on one's own farm.

Picture 1. Changes in pork livestock production for slaughter in Poland and breakdown into provinces (year 1999 =100)



Source: own eleborations according to GUS [Main Statistical Office] data.

Asia, and especially Eastern Asia, is the main producer of pork meat, which is ranked as no 1 in the world [Mroczek 2014]. The second largest producer is the European Union with countries such as Germany, Spain, France, Italy, Denmark and Poland that have become producers which may compete with other world producers.

"*World resources of animal production are estimated at 0.9 billion pigs, 13 billion poultry, 1.3 billion cattle, 1.1 billion sheep and 0.7 billion goats"* [Gołaś, Kozera 2008].

China is the largest pork meat producer, which in 2016 produced as much as 51-52 million tons of meat. According to Blicharski and Hammermeister (2013), in the years 2010-2013 there was an increase in pig production, followed by 2 years of decrease and stabilization. The drop in the pig production was a result of high prices and food crisis.

The size of pork meat production in the years 2012-2016 is presented in table 2.

Table 2. Pork meat production in the EU-28 (in thousand tons of carcass weight)

Country	2012	2013	2014	2015	2016
Germany	5 459	5 474	5 507	5 562	5 495
Spain	3 466	3 431	3 620	3 896	4 050
France	1 957	1 939	1 944	1 968	1 935
Poland	1 733	1 606	1 803	1 836	1 799
Italy	1 621	1 625	1 328	1 486	1 535
Denmark	1 604	1 589	1 594	1 599	1 645

cd. Table 2.

Country	2012	2013	2014	2015	2016
Holland	1 322	1 307	1 371	1 459	1 541
Belgium	1 110	1 131	1 118	1 124	1 070
United Kingdom	825	833	862	898	915

Source: EUROSTAT, European Commission, GUS and calculations by IERiGŻ – PIB. Meat Market – Its Conditions and Perspectives. Current and Predictable Conditions of the Pork Market.

According to data in table 2 it results that Germany is the main leader in pork production in the European Union and as regards its high scale of pork meat production, the country highly surpasses other EU countries. According to the European Commission, year 2016 brought the production increase of 0.9% [Małkowski and others 2014].

Pork meat consumption is influenced to a large degree by both economic and extra-economic factors (such as cultural and demographic ones). An average EU citizen consumes about 90 kg meat a year, of which 42 kg is pork meat. This result proves that pork meat is one of the favourite types of meat. The highest consumption of pork meat is observed in: Germany, Spain, Holland, Belgium and Denmark. It is estimated that by 2020 consumption of pork meat will increase by 5% [Wojnar, Kasprzyk, 2014]. Pork meat consumption in the years 2008-2010 in Holland and Germany amounted to about 60 kg per person, in Denmark 55 kg per person and in Holland about 40 kg per person [Dybowski, Rycombel 2011].

Drop in prices has initiated worsening of profitability of pig rearing and stopped the increasing tendency of pig population. Currently, due to its high production, Poland is among EU leaders in pork production. The share of pork meat in all produced kinds of meat amounts to 13%. Too low profitability has led many pig breeders to give up their breeding businesses. It was also exacerbated by the oubreak of African swine fever and imposing of the embargo [Szymańska 2014]. Despite the decrease in pig population, pork meat production is still at high level. Pig breeders must meet current veterinary regulations as well as stay competitive in relation to other producers from all over the world. Drop in pig population and lack of price stability should be compensated by increasing sow productivity [Pejsak 2012].

Competitiveness in rearing and breeding of pigs is related to incurred production costs that include: fodder costs, veterinary services, drugs, exchange of basic herd, costs of maintenance of breeding buildings, electricity as well as general economic costs.

From table 3, it results that the costs of pork livestock production in Poland in relation to other countries was high and amounted to Euro 145.1 for 100 kg of carcass weight. The highest production costs are associated with the Czech Republic – 192.5/100 kg MPS. Lower costs than in Poland are recorded in Holland, Denmark, Spain and France. Another important factor that limits the competition of Polish breeding farms with other farms in te above EU countries was extensive and not highly economical production as well as low price paid for livestock.

Table 3. Production costs of pork meat in some EU countries

Country	Production cost – Euro/100kg
Czech Republic	192,5
Italy	175,0
United Kingdom	166,7
Germany	149,4
Poland	145,1
Belgium	145,0
Holland	139,8
Denmark	139,1
Spain	139,1
France	136,3

Source: Szymańska E., 2014, *Competitiveness of Polish Pork on EU Market,* SGGW, Warszawa.

Changes in the relation between the prices paid for pork livestock in Poland as compared to those of top EU producers, such as in Denmark and Holland, are constantly deteriorating. As Szymańska emphasizes (2014) such changes are probably of structural character and result from lower rate of production concentration processes in Polish farms.

3. PORK CONSUMPTION IN THE WORLD

Within the period of the years 2012-2016 China became the world leader in pork meat production. As the population's purchasing power rose there also the consumption of animal products increased. Following the breakdown in profitability of pork meat production in China as well as ever increasing consumption, pork import increased by 38%.

Pork meat is one of the most favourite kinds of meat. Its consumption in Poland amounts to c. 40 kg/person, whereas in Denmark and Holland it is as high as 55 kg/person. Factors that stimulate pork consumption all over the world include among others: geographical location, farmers' knowledge and experience, well organized animal product processing industry, seasonal inflow of tourists or number of country inhabitants.

Table 4. Pork consumption in Polish households

Year	Pork consumption in total raw meat (%)
2005	48,2
2006	45
2007	47,3
2008	46,9
2009	45,5

cd. Table 4.

Year	Pork consumption in total raw meat (%)
2010	45,0
2011	45,7
2012	44,6
2013	44,9
2014	45,1

Source: authors' own elaboration according to Meat Market – Conditions and Perspectives, 2016

4. PORK MEAT EXPORT IN THE WORLD

World export of pork meat products increased in 2016 and amounted to 8,538 thousand tons and was bigger by 18% than the previous year. This increase was due to: European Union – increase by 25%, the United States – by 4%, Canada – by 9% and Brasil – by 44.5%. The export from the European Union and the Unites States was sent to Asian markets [Meat Market – Conditions and Perspectives, 2016]

Table 5. Main pork meat exporters (in thousand tons)

Country of origin	I-II 2017	I-II 2016	% change
Germany	142 974	146 513	-2,4
Spain	136 530	102528	33,2
Denmark	93 651	93 927	-0,3
Holland	67 989	43 663	55,7
France	40 150	41 579	-3,4
Poland	**35 832**	**31 036**	**15,5**
United Kingdom	22 612	20 781	8,8
Hungary	16 843	12 504	34,7
Belgium	16 005	15 620	2,5
Italy	15 814	15 040	5,1
Other countries	40 412	39 403	2,6
Total	**628 822**	**562 594**	**11,8**

Source: Information Bulletin of the Agricultural Market Agency, December 2016.

In spite of changing eating habits, pork meat remains one of the fovourite kinds of meat. In Poland its consumption amounts to about 40 kg/person and accounts for 60% of total meat consumption. Even bigger consumption is recorded in Spain, Denmark, Belgium, Austria and Germany. When Poland joined the EU community, it was recorded that the production of beef meat decreased and all market deficiencies are completed by importing meat from other counties

[Blicharski, Hammermeister 2013]. As meat demand depends on population's income therefore according to economic forecasts, its consumption will have an increasing tendency. [Wojnar, Kasprzyk, 2014]. Poland's economic independence in that respect amounted in 2013 to 90%, which informs to which extent the country is able to satisfy its own consumers' needs. Unfortunately, when in 2008 a breakdown in national production occurred, the level of economic independence decreased and in order to satisfy the demand for pork, it was necessary to increase the livestock production [Blicharski, Hammermeister 2013].

However, there are other advantages of Poland's joining the EU community. It made it possible to open new selling markets as well as foreign trade. In the year 2016, export of pork meat amounted to 8,538 thousand tons and was bigger by 18% than the previous year, whereas world's import in 2016 amounted to 8,314 thousand tons and was bigger by 24% than the year before.

Table 6. Pork foreign trade

Specification	Foreign trade				
	2003	2008	2013	2003	2013
	Thousand tons			Million euro	
Export	244	427	638	232	782
Import	49	516	804	79	1045
Balance	195	-89	-166	153	-263

Source: authors' own elaboration according to Tereszczuk M. (2014), Foreign Trade of Agricultural and Food Products. Conditions and Perspectives; no 19-36. IERiGŻ-PIB, ARR, Warszawa.

Even in the first years after Poland joined the EU structures, with the application of new sanitary and hygienic requirements, the European market became the main place of selling Polish pork meat. It is also the EU that Poland imports most meat from and exports as much as 80% of its meat products [Tereszczuk 2014]. The main importers of Polish meat in 2014 included: China, Japan, Byelorus, Russia, Germany, Slovakia and Czech Republic. [Mroczek, 2014].

5. SUMMARY

Improvement in profitability of pig production is mainly connected with inceasing its scale. Bigger size of pig herds makes it possible to negotiate better prices, reducing production costs at the same time. Meat processing plants are more willing to start cooperation with a big producer, who can ensure delivery of large groups of animals.

Poland is an important livestock producer in the EU structures. Only Germany, Denmark, France and Spain boast larger pig production than Poland. In order to retain the position of an important pig producer on the EU market, further spending and investment are required to develop the production, modernize herds and wellness of animals.

Poland is the sixth pork meat exporter in the EU, just after Germany, Spain, Denmark, Holland and France. Export profitability is influenced by prices and production costs related to them. According to available data, it results that the production costs of pork livestock in Poland are higher than those in Belgium, Holland, Denmark, Spain and France. In contrast, higher production costs of pork livestock were recorded in the Czech Republic, Italy, the United Kingdom and Germany.

The main problem of the development of pig production market in Poland is the decrease in pig population, including mainly pregnant sows. It is a result of relatively high costs of maintaining pregnant sows as well as a weak adaptation of pigsties to piglet production.

The situation of both Polish and European pig producers is bound to become more and more difficult. It will be the result of many factors such as a diet or decrease in demography. As a result pig producers must prepare to face many new challenges as well as ever increasing competition both on the European and world market.

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ROZWÓJ RYNKU TRZODY CHLEWNEJ W POLSCE NA TLE UE

Streszczenie: Artykuł dotyczy rozwoju rynku trzody chlewnej w Polsce. W artykule przedstawiono produkcję wieprzowiny oraz spożycie w gospodarstwach domowych. Analizie poddano koszty produkcji, strukturę stada oraz eksport trzody chlewnej w krajach UE. W analizie wyników badań wykorzystano metody tabelaryczne, graficzne i opisowe. W artykule analizie poddano dane wtórne pochodzące z rynku mięsa oraz GUS. Z badań wynika, że Polska w produkcji trzody chlewnej znajduje się na piątym miejscu z wynikiem 1606 tys. ton, tuż za Niemcami, Danią, Francją i Hiszpanią.. W Polsce w ostatnich latach nastąpił spadek pogłowia trzody chlewnej co było głównie wynikiem rosnącej konkurencji na rynkach międzynarodowych oraz rozprzestrzenianie się ASF.

Słowa kluczowe: produkcja wieprzowiny, konsumpcja, eksport.

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