

## THE DEVELOPMENT OF THE PORK MARKET IN THE WORLD IN TERMS OF GLOBALIZATION\*

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**Abstract.** The globalization of the world economy and the processes associated with the liberalization of trade, capital flows and technology produce certain effects for the development of the agricultural sector. This study is aimed at identifying determinants of the development of the pork market on a global scale. The analysis includes changes in pork production, foreign trade and the activities of the biggest leaders in the pork market. Literature studies, including reports AHDB and USDA were used in the research. The analysis shows that the increasing demand for food and the high cost of production is a global challenge for pork producers. Increases of industrialization and concentration of production have been found allowing the use of economies of scale. The activities of transnational corporations that invest capital is becoming increasingly important where highest profits are achieved. The competition in international trade is growing, mainly from countries in North and South America which have a price advantage in exports.

**Keywords:** pork market, globalization, changes, foreign trade

### INTRODUCTION

Pork meat has long established its position on the market as a staple food. According to the USDA data (USDA, 2016) global pork production in 2014 amounted to 110.5 million tonnes and was 1.5% higher than in

2013. It is forecast by the Food and Agricultural Policy Research Institute (FAPRI, 2008) that in the coming years the production of this kind of meat will continue to increase, reaching in 2020 the level of 120.3 million tonnes. This is interrelated with population growth in the world and economic development, particularly in countries with high demographic growth. Economic development leads to increased prosperity of the world's population, a higher demand for food and to changes in the patterns of food consumption with the consumption of meat and meat products as dominant. The level and structure of meat consumption is also largely affected by nutritional recommendations produced by international organizations dealing with the issues of nutritional status of the population such as FAO and WHO. However, greater opportunities of increasing pork production will be created in those countries which have lower costs of production factors.

Globalization of the world economy and the associated processes of liberalization of trade, or capital and technology flows have consequences for the development of the pork meat sector. Progressive computerization and the disappearance of administrative barriers make possible the global flow of products in all directions. A gradual increase in the price of grains and protein feed lead meat producers to reduce production costs of pork. As a result, the number of farms is falling

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and the concentrated pig farming keeps growing. There follows a mushroom growth of worldwide marketing chains dominated by uniform standards and large scale of production facilitates the sale of meat in foreign markets. Additionally, community-based organizations, such as: the European Union, NAFTA, ASEAN, MERCOSUR and the agreement within the WTO focusing on providing broad access to foreign markets made the process of globalization even more dynamic (Stępień, 2011).

Apart from the increased scale of the export of agricultural raw materials, the opening of the global economy has opportunities for capital transfer as well as access to new technologies and research (Boehlje, 2009). It has contributed to the development of international corporations that invest their capital where they can achieve the highest profits. In order to achieve economies of scale they concentrate business entities in many countries which are strongly interlinked at the stage of production, distribution and marketing (Łuczka-Bakuła, 2004).

A big challenge for producers of pork is a higher demand for food, driven by a growing population and high production costs resulting from increasing costs of fuels and energy, a heightened interest in biofuels, and the weather risk. Maximizing economic efficiency becomes the most important criterion in economic decision-making. The market based on efficiency relationships raises new challenges because of the external effects, mainly social and environmental, which are transposed to the global level (Zegar, 2010). Moreover, as world trade develops, income in agri-food industry becomes increasingly dependent on successful sales of raw materials on international markets. Sanitary and veterinary standards often act as instruments of market protection.

## MATERIAL AND METHODS

The research aimed at identifying determinants of the global pork market development. The study presents the circumstances and effects of globalization processes in the agricultural sector. Against this background, the current status and development prospects for the pork market have been presented. The analysis includes changes in the production and trade of pork meat, the production costs of pork and the activities of the biggest leaders in the pork market. The study is based on professional literature, including the developments produced by the Central Statistical Office of Poland (CSO) and

the United States Department of Agriculture (USDA) reports. In terms of changes in production and trade of pork, the analysis covered the years 2005–2015. The research includes countries that have the greatest importance in the production and trade of pork in the world. The purpose of this article is to provide a general review of the issue based on elements of deductive reasoning.

## PROCESSES OF GLOBALIZATION IN AGRICULTURE AND FOOD ECONOMY

The term “globalization” began being commonly used in the mid 80s of the 20<sup>th</sup> century to determine profound transformations in the world economy resulting from the liberalization of economic relations, a reduced role of the State in the economy, the internationalization of capital, the information technology revolution and the rise of multinational corporations. Currently, there can be found numerous definitions of globalization in literature. J. E. Stiglitz (2004) describes globalization as the closer integration of the countries and peoples of the world which has been brought about by the enormous reduction of costs of transportation and communication, and the breaking down of artificial barriers to the flows of goods, services, capital, knowledge, and (to a lesser extent) people across borders. The process of globalization has accelerated due to technology advances in transportation and communication, and as a result of the rapid liberalization and deregulation of trade and capital flows, both at national and international level (UNCTAD, 1996).

The European Commission report of 1997 identified globalization as a process in which production and markets in different countries are becoming increasingly interdependent due to high dynamics of the exchange of goods and services and flows of capital and technology. Trying to put it in scientific terms, Liberska (2002) defines the concept of globalization as an ongoing process of integrating the domestic and regional markets into one global market of goods, services and capital. This process leads to a greater interpenetration and merging of markets, internationalization of production, distribution and marketing and to the adoption of global strategy by companies. In this way, markets and production in different countries become increasingly interrelated and interdependent.

Globalization affects many areas of the economy, including agriculture and the food industry. In the

macroeconomic framework, globalization of agriculture involves the removal of all border barriers hindering the allocation of production factors, production and distribution of agricultural products, with all its consequences. The following can be listed as the features of economic globalization (Pawlak, 2013):

- trade based on free exchange,
- natural conditions as the only limitations to the production and trade and manufacturing associations as the only limitations to the investment,
- the policy of organising economy based on the principle of flexible response to signals from the global markets,
- finances benefiting from the demand for decentralization and independence from the state,
- labour market based on the principle of free movement of labour.

All of these processes change the perspective on the principles and the rules of behaviour, events and actions, from the national to the global, while making the national and global dimensions intertwine. Globalization is therefore an extremely important factor in shaping the model of agriculture and food economy in the 21<sup>st</sup> century, mainly through:

- constant downward pressure on prices,
- new models of economic growth of individual countries and regions,
- the rate and type of implemented changes and innovations,
- changes in international economic patterns and standards.

The global “opening” of agriculture and food industry results in removing the barriers hindering the allocation of production factors, the production itself and distribution of agricultural products as well as in the accelerated process of standardization of production methods, and partly of consumption patterns too.

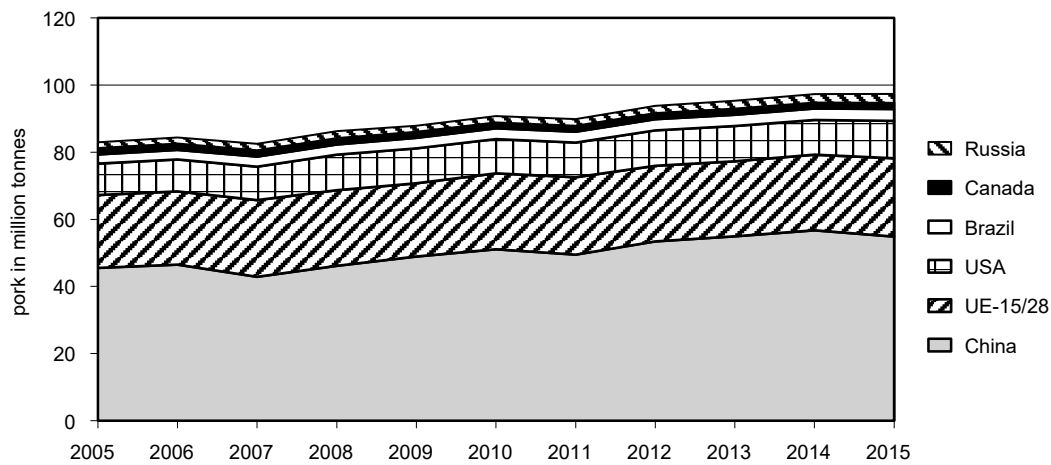
One of the most visible manifestations of globalization is the growth of competition between different countries and companies, i.e. the competition relating to prices, costs and quality of manufactured goods. Competitiveness is the ability of companies and the economy to create added value. The basic principle of competitiveness is to produce cheaper. This is particularly important in agriculture because of the limited impact of small and medium-sized agricultural producers on market prices level.

## CHANGES IN PORK PRODUCTION

There has been observed an intensive development of pork production and pork trade on a global scale. In the years 2005–2015, pork production in the world increased by 14.6% and amounted to more than 110.3 million tonnes in hot carcass weight, which accounted for 42.8% of the total volume of produced meat (USDA, 2008, 2016). The distribution of pig production is primarily shaped by demand conditions resulting from, among other things, culinary traditions and religious reasons. For this reason three main clusters of pork production cover North America (especially areas of large scale cultivation of corn and soy beans), Europe and Asia (south-eastern China). The largest producers of this kind of meat are: China, the EU-28, USA and Brazil. In 2015, these countries produced 92.9 million tonnes of pork, which accounted for 84.2% of the world production.

China is the largest producer and consumer of pork in the world, supplying the market with 49.7% of world production. In 2005–2015, pork production in China increased from 50.1 million tonnes to 54.9 million tonnes (Fig. 1). This rise was associated with a gradual transition from free range to industrial production and with increased foreign investment. Considerable importance could also be assigned to the population influx from rural areas to larger agglomerations which fostered the growth of consumption. An upward trend in pork production in China was stopped in 2007 due to epidemic diseases of that species and bad weather conditions. It is estimated, however, that in subsequent years there will be a further increase in pork production in China. Pig sector is of strategic importance in this country. Changes in pork prices affect the prices of other goods. Having this in view, the Chinese authorities take measures to stabilize prices in this market and support its development through grants and investments (Szymańska, 2015).

The EU-28 is second in the world in this regard, supplying to the market with 21.2% of the world pork production in 2015. A large impact on the economic situation in the EU pork market had the enlargement of the Community through the accession of new Member States in 2004. In the period following the accession, a there was reported increase in trading, especially between “the old” and “the new” Member States, resulting mainly from the removal of customs barriers. Over the next years, the pork production in the UE-27 increased to 23.3 million tonnes in 2015.



**Fig. 1.** The world's largest producers of pork in carcass weight equivalent  
Source: own elaboration based on USDA data.

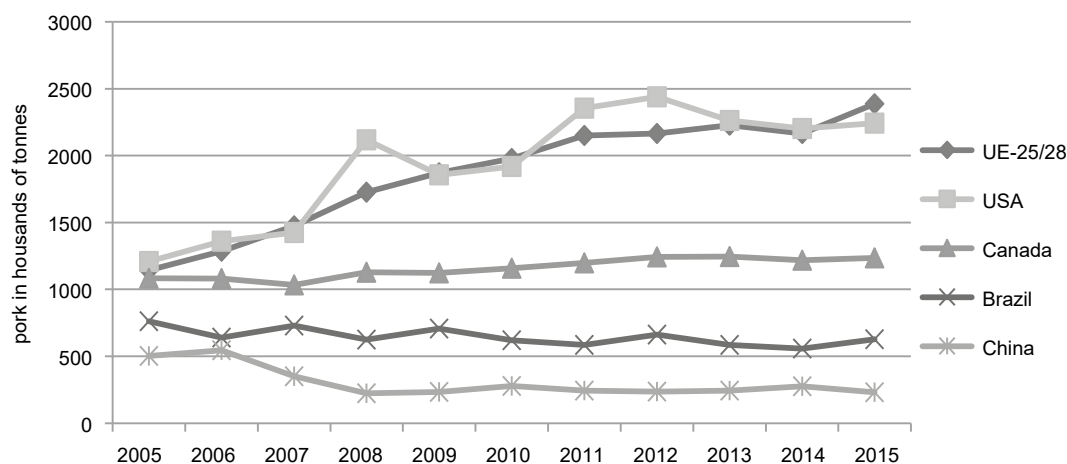
A very important pork producer in the world is the United States whose share in world production in 2015 was 10.1%. In the years 2005–2015, the production of this kind of meat has increased in the United States from 9.4 million to 11.1 million tonnes. Pig farming is concentrated in seven states: Minnesota, Iowa, Nebraska, Missouri, Illinois, Indiana and Ohio. Further growth in United States pork production is forecast for the coming years. Considerable development opportunities in this country consist in a large acreage of fields intended for feed growing, the right climate and good economic conditions. This country is also progressing in technologies, which leads to the introduction of further innovations. However, the increase in production of pork finds its limits due to higher labour costs, high expenditures for veterinary services and insufficient slaughtering capacity of meat plants. Another problem is the unstable level of pork consumption (Blicharski and Hammermeister, 2013).

In the global pork market, the position of Brazil is also steadily growing stronger. In the years 2005–2015, it increased its production from 2.7 million tonnes to 3.5 million tonnes, and its share in world production is 3.2%. The rapid increase in the production of live pigs in this country is associated with greater possibilities of selling the meat in Russia and increased demand in the domestic market. At the same time, Brazil keeps recovering its production infrastructure and increases productivity of farming.

## FOREIGN TRADE TURNOVER

Strong competition in global pork trade, be it on the global scene or in Europe, can be observed for years. In recent years, international markets have been seriously affected by political conditions and the occurrence of such diseases as African swine fever or porcine epidemic diarrhoea virus. In the years 2005–2015, the exports of pork meat increased from 5.0 million to 7.2 million tonnes, while the imports increased from 4.7 million to 6.7 million tonnes. The largest exporters of pork in the world include the US, the EU-28, Canada and Brazil (Fig. 2). Over the years 2005–2015 the export of pork from the EU-28 increased by 108.9%. The main recipients of the EU pork were the following three countries: Russia, Honkong and Japan. Competitive prices of the EU products and a favourable exchange rate triggered a greater interest in the EU products also in the US market. Of all the EU countries it was Denmark which exported the largest amount of pork, staying ahead of Germany and the Netherlands in this respect. However, Denmark is now facing a growing competition in Spain, due to the lower production costs of live pigs in the later country.

The pork trade between the EU-28 countries is also of great importance as it is more than three times higher than the sales outside the group and every year amounts to more than 5 million tonnes. More than 80% of shipments come from the six countries now being the major



**Fig. 2.** The world's largest exporters of pork in carcass weight equivalent  
Source: own elaboration based on USDA data.

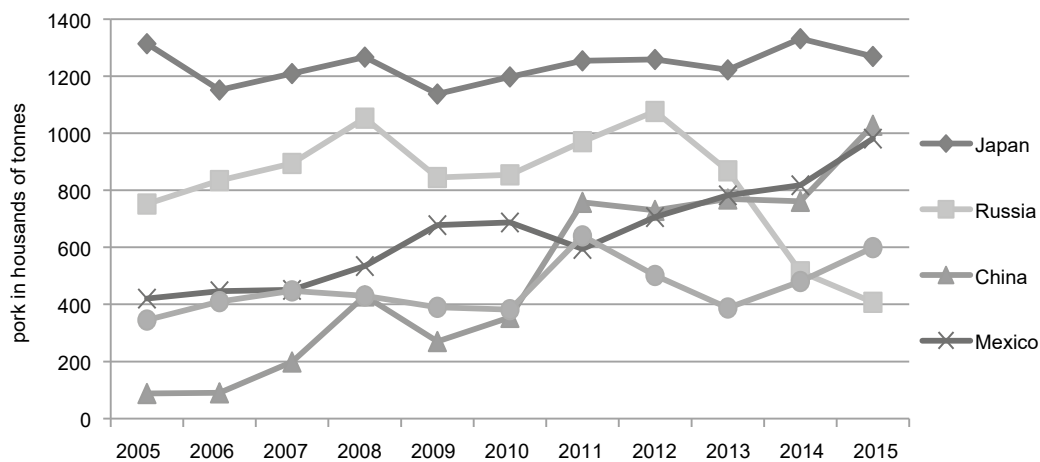
exporters of pork. In 2014, most pork was bought in the internal market by Italy (over 1 million tonnes), Poland and the United Kingdom. It has been estimated that in the coming years the EU will reduce its share in the foreign exchange because the stringent requirements concerning animal welfare and environmental protection reduce the competitiveness of the EU producers. Furthermore, the support schemes for the pork meat sector under the common agricultural policy is not significant.

The US export of pork meat increased by 85.3% in the years 2005–2015. In 2015, the country exported 2.2 million tonnes of this meat, mainly to China and Russia. A large increase in exports of pork was also recorded in Canada due to the country production development and low domestic consumption. In 2005, exports from this country amounted to 1.1 million tonnes of pork, and in 2015 was higher by 14.0%. It went mainly to the Russian market. Another major exporter of pork is China which directs their production mainly to Japan, South Korea and the EU-28.

Japan and China are also the largest importers of pork in the world (Fig. 3). In these countries their own production is not enough to cover the needs of the internal market. In Japan, in years 2005–2015 an annual average import of pork meat ranged from 1.1 to 1.3 million tonnes. It is difficult, however, to access the Japanese market because of the safeguard duties and high veterinary requirements. The dissimilarity and specificity of Japanese consumers is also of great importance

in this regard. When considering China, the import of pork used to be low since the domestic production fully satisfied the growing demand. The situation changed over the period from 2006–2007 due to lower domestic production and higher prices. In 2008, the provisioning before the Olympic Games in Beijing forced the import growth to over 700 thousand tonnes, but in the next year it dropped drastically only to increase afterwards. In years 2011–2014, the annual level of imports of pork averaged 750 thousand tonnes and in 2015 it increased to more than 1.0 million tonnes. This level is highly influenced by the growing interest of the people in China food safety. A series of scandals associated with pork meat heavily undermined the consumer confidence in domestic production and this is why Chinese consumers are increasingly choosing to buy a better quality of pork in international markets.

In Russia, there was a strong growth in imports of pork up to 1.1 million tonnes until the year 2012. Over the next years, due to the efforts to strengthen domestic production, the imports of pork meat decreased to 408 thousand tonnes. However, overall the Russian market is characterized by high volatility. Throughout the years 2005–2007, Russia maintained an embargo on the imports of Polish pork. Then in 2009, following the outbreak of swine flu, it stopped the import of this kind of meat from Mexico, several US states, nine South American countries and from Spain and the UK. In 2014, Russia re-imposed an embargo on the import of



**Fig. 3.** The world's largest importers of pork in the carcass weight equivalent  
Source: own elaboration based on USDA data.

pork from the EU-28, having detected cases of African swine fever (ASF) in feral pigs in Lithuania.

Large amounts of pork are also imported by Mexico and South Korea. In the years 2005–2015, the imports of pork meat to these countries increased by 73.6% and 133.6% respectively. Another major importer is the United States which purchased 504 thousand tonnes of pork in 2015. Among the European importers of pork, the most important ones are Italy, Germany and Great Britain.

### THE BIGGEST PIGS PRODUCERS AND PORK PROCESSORS IN THE WORLD MARKET

In the pork processing sector there are very large international differences in terms of practice, quality, and preferences which means that only a few manage to successfully develop business on a global scale. In most countries, both the production sector of the live bait of pork and the processing of pork is very chipped. More often, small farms abandon pig breeding and producing has been developed by subjects with a high level of production. Also, small slaughterhouses and processors are replaced by large, modern, and automated factories. Most of the leading companies developed their business in the last ten years mainly through mergers and take overs of smaller entities. However, in some countries,

such possibilities have already been exhausted and companies are now looking for growth opportunities outside the domestic market.

The global pork market leader is the Chinese company WH Group (Table 1). The company operates in China, the USA, Mexico and in key European markets. Globally, it integrates the production of live pigs, pig slaughtering, and processing along with distribution of pork meat and pork products. In 2013, the WH Group company recorded sales of over 20 billion dollars. It develops its activity in three major segments: packaged meat products, fresh pork, and live pig production. They are also involved in projects that are ancillary to the main business segments.

In Asia, there are three large companies working with growing pigs: CP Group in Thailand, Wen's Food Group in China and NongHyup Agribusiness in South Korea. They also include other companies: in the USA and Brazil and two in Europe. In 2015, they kept between 195 thousand to 408 thousand heads of sows. Similar location applies to meat companies. Besides the leader in the market, WH Group, there are three major companies in the USA, two in China and three in Europe. Annually, there have been between 15 to 28 million pigs slaughtered on average in these enterprises. Such corporations have significant potential capital, production, and technology. They usually have a transnational character and allocate capital where their achieved profits

**Table 1.** Largest pig producing and pork processing companies in the world

Pig processors companies			Pig producing companies		
Company	Country	Head slaughtered annually	Company	Country	Number of sows
WH Group	China	48.300,000	WH Group	China	1.111,000
JBS Foods International	Brazil	28.000,000	CP Group	Thailand	544,000
Smithfield Foods	United States	27.900,000	Wen's Food Group	China	500,000
JBS USA	United States	22.300,000	Triumph Foods	United States	408,000
Danish Crown	Denmark	22.000,000	BRF	Brazil	380,000
Tyson Foods Inc.	United States	19.900,000	NongHyup Agribusiness	South Korea	280,000
Tönnies	Germany	17.500,000	Cooperl Arc Atlantique,	France	250,000
Yurun Group	China	16.500,000	The Maschhoffs	United States	218,000
Vion Food Group Ltd.	Netherlands	15.700,000	Seaboard Corp.	United States	217,000
Shuanghui Development	China	15.000,000	Vall Companys Group	Spain	195,000

Source: WATTAgNet.com

are the highest. Given the scale of activity, they form relations on the pork market. The subjects are directly and actively involved in the processes of globalization. Their position on the world market increases as the matter of number, capital raising, share of world production, exports and technology transfer.

## SUMMARY AND CONCLUSIONS

Although these studies do not cover all the issues of the global development of the pork market, they do allow for formulating a number of conclusions

1. Globalization of the world economy and the associated processes of liberalization of trade and the flow of capital and technology have consequences for the development of the agricultural sector, including the pork market. It leads to an increased concentration and industrialization of agricultural production and the development of standardized goods. In addition, the policy of maximizing economic efficiency becomes the most important criterion in economic decision-making.

2. Global supply in the pork market is shaped by several major producers including China, the United States, the EU-28 and Brazil. Over the years to come, an increase in supply in developing countries is expected,

mainly in China, Brazil, and Russia. Part of the production is traded internationally and its volume is determined by the degree of self-sufficiency of the country in terms of supply of raw material. The largest pork exporters are the United States, the EU-28, China, and Brazil, whereas the largest import is recorded for: Japan, Russia and China.

3. The growth of the world population and the increased consumption of meat in developing countries leads to a higher global demand for pork. What follows is the development of international trade between different countries. At the same time, the costs of production of pork increases due to higher prices of feed, energy, fertilizers, and services. Therefore, it is essential for pork meat producers to meet these challenges while maintaining food safety and adequate quality.

4. The processes of globalization in the pork market are largely triggered by the development of international corporations. As a rule, these are formed through mergers and take overs of smaller companies in order to achieve economies of scale, expand the product range, and gain new markets. Having considerable capital at their disposal, production, and technology resources, these corporations highly influence the development of business relations in the world economy and significantly alter the conditions of competition.

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