2018

Koninkrijk der Nederlanden

[CHAIN COMPARISON OF THE MEAT SECTOR IN UKRAINE AND NETHERLANDS]

Content:

Abbreviations

CIS	Commonwealth of Independent States
CWE	Carcass weight equivalent
EBRD	European Bank for Reconstruction and Development
EFTA	European Free Trade Association
FAO	Food and Agriculture Organization
FAT	Fixed agricultural tax
FTA	Free trade agreement
GDP	Gross domestic product
GNI	Gross national income
GUS	Central Statistical Office (Poland)
HACCP	Hazard Analysis and Critical Control Points
Ho/Re/Ca	Hotel/Restaurant/Cafe
IFC	International Finance Corporation
IMS	International Meat Secretariat
ISO	International Organization for Standardization
Kg	Kilogram
MAPFU	Ministry of Agrarian Policy and Food of Ukraine
MPS	Market price support
NPC	Nominal protection coefficient
OECD	Organisation for Economic Co-operation and Development
PPP	purchasing power parity
PSE	Producer support estimate
ROI	Return on investment
RTC	Ready to cook
SCT	Single commodity transfers
SPS	Sanitary and phytosanitary (measures)
UAH	Ukrainian hryvnya
USD	United States dollar
VAT	Value added tax
WTO	World Trade Organization

I. Introduction and objectives

Currently many Ukrainian AgriFood companies meet the European and Global standards for food safety. They have already exported to the EU, namely 16 milk production entities. Experienced Dutch suppliers of food processing equipment, packaging lines, storage technology and logistics may support Ukrainian AgriFood companies that are in the process of transition.

Dutch suppliers formed a consortium of Dutch companies that have a lot of experience in doing business abroad, most of them are in Ukraine. Participants of the consortium are complementary in their scope of activities. They strongly believe that by joining forces – and under the flag of Holland Branding – they can reach much better marketing and commercial results. As a group, these companies together with the Dutch government formed a Public-Private Partnership with focus on food safety, food security and chain management to position themselves on the Ukrainian market. Partners for International Business (PIB) FoodTechLink Ukraine has been formalized on 25 March 2015 by signing a covenant between the Netherlands' Ministry of Foreign Affairs, the Ministry of Economic Affairs, the Netherlands Enterprise Agency and a consortium of Dutch companies. The cooperation will last for 3 years and will give Dutch equipment suppliers the opportunity to compete for large projects in the Ukrainian food processing industry. This means the installation of complete processing and packaging lines, inclusive temperature controlled storage facilities and wastewater treatment installations. These processing lines meet the regular standards of food safety in the EU, confirmed by HACCP, BRC and IFS certificates.

PIB FoodTechLink Ukraine focuses on the most promising food processing sectors in Ukraine:

- Fruits & Vegetables
- Industrial Bakery & Confectionery
- Dairy
- Meat

Over the studied period, the Ukrainian meat sector rapidly consolidated and integrated. Most of the successful producers controlled all of the elements of the value chain: from production of feed components and compound feed to processing and even retail trade.

The three meat subsectors, beef, pork and poultry, differed significantly. Beef production and cattle rearing were underdeveloped and continued to decline, although it was the only subsector with a positive trade balance. This was also the subsector in which household farms accounted for the highest share of production. Commercial pork production developed rapidly but the pork trade deficit remained high despite some decline mostly due to the strong demand

for lower-priced pork trimmings from meat processors. The share of households involved in pork production was still very significant, although declining. In 1990, meat production (in slaughter weight) in Ukraine, according to the official data of the State Statistics Service, amounted to 4.4 million tons, over the next five years this Chart decreased to 2000. By 2017, the total volume meat production in Ukraine increased by 14%, however, it did not reach level of the 1990 year.

The production of beef and veal, according to the State Statistics Service, in all categories of farms decreased more than 5 times in 1990-2017 years, amounting to 287 thousand tons in 2017. Moreover, meat production in agricultural enterprises has decreased by 19 times, while in households, on the contrary, it has increased by 68%. Accordingly, the structure changed: agricultural enterprises made 91% of beef and veal production in 1990 year, then in 2017, the share of this category of households in the structure of production was 34%. The main reason for this reduction was the overall low efficiency of production, and therefore, profitability. It is worth noting that in the segment of beef, the economy is closely linked to the situation on the milk market, as about 95% of the production of this meat is provided by dairy farms. In 2018, according to FAO / EBRD Project Support Working Group Proposals for Supporting Public Dialogue in the Meat Industry, an increase in beef production is expected to increase by 1%, despite fewer livestock Charts. The reason for this is the preservation of demand both from the domestic and from the exporters.

According to the State Statistics Service of Ukraine, the volume of production of pork in slaughter weight in 2017 decreased by 2 times compared to 1990. In this, production in agricultural enterprises decreased by 49.3%, and in households by 52.7% % as compared to 1990. The total population declined from 2014, and as of the beginning of 2017 was the lowest during the last eight years as a result of the low profitability of production for Ukraine in 2015-2016, the loss of parts of the country's territory and the spread of African plague pigs (AFS).

The situation on the poultry market is different. In this segment, according to the results of 2017, there is a 1.6-fold increase in the volume of production compared with 708.4 thousand tons in 1990. In particular, production in agricultural enterprises increased 2.7 times, and in households in similar the period, according to the State Statistics Service, decreased production by almost 50%. The share of this type of meat production in agricultural enterprises during this period increased to 85% due to the emergence of modern efficient producers - MHP, Agromars and others - which ensure not only the need for the domestic market but also successfully ship poultry products abroad.

World meat imports are forecast to increase despite anticipated high meat prices until 2021. Meat imports by developing countries will be driven by population and income growing

and high income elasticity to demand. Led for the most part by an expansion of poultry and beef shipments, world meat exports will increase to respond to the growing demand.

Meat export growing is expected to originate largely from North America and South America, which will account for nearly 70% of the total increase in all meat exported by 2021.The two largest contributors to growth export are Brazil and the United States of America, both of them will strengthen their dominance in global meat trade.

If Ukraine increases its standards of safety, quality and animal welfare & health to the highest international standards, Ukraine has an opportunity to become a world player in the global production of meat. In particular, Ukraine's export opportunities for beef are 2 billion dollars a year. That is why the Dutch consortium of suppliers should pay attention to the domestic meat sector as a reliable consumer of equipment and technologies in the field of production, processing and logistics of meat products.

II. A knowledge comparison

The Netherlands is the world's second largest exporter of agricultural products, after the USA. The Dutch agricultural sector is diverse; it covers a wide range of livestock and plant-cultivation sectors that include, for example, arable and dairy farming, cultivation under glass, tree-growing and pig farming.

Dutch poultry, livestock and meat industry has succeeded in maintaining its lead over international competitors by continually investing in the renewal of agricultural production chains. Farmers and growers are full partners in the agricultural production chain. Their primary task is to produce meat with an optimum price/quality using innovative, socially responsible and sustainable methods. Meat industry in the Netherland is famous for its cluster/cooperative system. Professional development across the value chain is a significant area of focus which is currently being supported by a diverse range of companies throughout the sector including farmers. The agricultural conditions in the Netherlands help to strengthen the country’s meat industry. For instance, climate and fertile soil are extremely beneficial for agriculture. High prices for land and labor have forced to improve production and work efficiency. Through a combination of these factors the Netherlands have been able to become a successful producer.

Continuous improvement is necessary. Dutch meat entrepreneurs have small margins, as soon as you lose on costs or don’t innovate swiftly enough you lag behind competitors. All industry functions as a single mechanism, every stakeholder has its own place and role – farms cooperate financial institutions and research centers.

In the Netherlands the transfer of knowledge in the meat sector is based on the development of the mega cluster Food Valley, which includes more than 8,000 scientists, develops and preserves knowledge at the Wageningen University Research Center and interacts with other agro clusters (Venlo). This is due to the beneficial cooperation of science, business and government in the form of a "golden triangle". Most of the achievements, innovations and knowledge generation processes are carried out within the activity of the Food Valley. Also, the transfer of knowledge from one generation to the other and the participation of business in scientific developments play an important role.

The accumulation of knowledge in Ukraine is at a much lower level. The main carriers of information about technology are foreign suppliers of equipment, packaging and ingredients. The major part of the meat slaughtering, sausage stuffing and thermal processing equipment installed at Ukrainian meat processing plants originates from Convenience Food Systems, Matimex, SCHALLER, Meyn, AUTOTHERM, Travaglini, Big Dutchman, Steiner. Most Ukrainian companies prefer used equipment (it’s cheaper). In the business of meat ingredients, the main

positions are played by such companies as Chr. Hansen, Apogei, Stern Ingredients. In the packaging – Aventin, Immer Group, Belkozin. Technologists and engineers of the companies bring to the plants formulas and adjust the technological processes. In recent years, due to the crisis in the meat boning market (most of the qualified staff went to Poland and other EU countries for high-paying jobs), suppliers of meat boning lines conduct staff trainings in this area. A separate point of dissemination of knowledge is the training of technologists for the production of different recipes of sausages and frankfurters.

Specific Ukrainian knowledge on meat processing is being processed in the following state institutions:

- National University of Food Technologies
- Ukrainian Meat and Dairy Institute
- Odessa National Academy of Food Technologies
- Regional specialized educational institutions of the I-II level of accreditation

Unfortunately, this knowledge gained massive updates and practical approbations at the business level in the early 1990s. Later, due to the uncontrolled processes of food safety and attempts of the business to minimize production cost, the connection with Ukrainian science was lost. Only in the recent 4 years individual institutions have begun processes of interaction with the meat processing segment and equipment suppliers in the form of technological training and practice for young professionals.

The situation is much better in growing animals and birds. In addition to the veterinary and technological support from leading suppliers (Boehringer, Pfizer, Bayer, Hog Slat etc), Sumy National Agrarian University, Bila Tserkva National Agrarian University, National University of Life and Environmental Sciences of Ukraine, Lviv National Agrarian University and a number of vocational schools provide real expertise. It is worth noting the active position of specialized livestock associations and projects of international technical support of agriculture which adapt the best European and North American experience to Ukrainian specifics.

That is why, unlike the dairy sector in Ukraine, processing enterprises are a more backward link in the field of knowledge and technology than industrial farms for the growing of pigs, poultry and cattle. Table 1 also presents other forms of knowledge transfer in the field of livestock breeding and meat processing that are present in Ukraine.

Table 2.1. Forms of knowledge transfer in the meat sector of Ukraine

Form	Importance for the market (from 5 to 1)	Explanation
Extension service organizations	4	Suppliers of equipment, packaging, technologies, veterinary medicines, feeds and other ingredients actively conduct training for employees to improve their sales and use of their products.
Training and business tourism	5	Ukrainian enterprises are actively practicing study tours at their own expense to the United States, Canada, EU countries in the slaughterhouse and leading farms in order to gain new knowledge, get acquainted and purchase of the latest equipment.
Experience of transnational companies	3	There are several transnational players in the meat market of Ukraine (Foodworks, Vion Food), which passively spread knowledge of the industry among domestic market participants.
Experience exchange between players	2	Enterprises of the sector get new experiences during informal meetings, conferences and HR migration.
Science	1	Providing new knowledge by research institutions of Ukraine is not a key factor in the growth of the sector

Source: Survey of 118 industry enterprises conducted by UFEB from February 2 to February 17, 2018

It is worth noting that the survey participants failed to identify private initiatives in the field of education and knowledge transfer. This means a gap in the Ukrainian market. Association of Ukrainian Pig Breeders and IFC is noted in the field of specialist training. FAO and EBRD projects are separately working in the area of knowledge dissemination about African swine fever and other animal diseases.

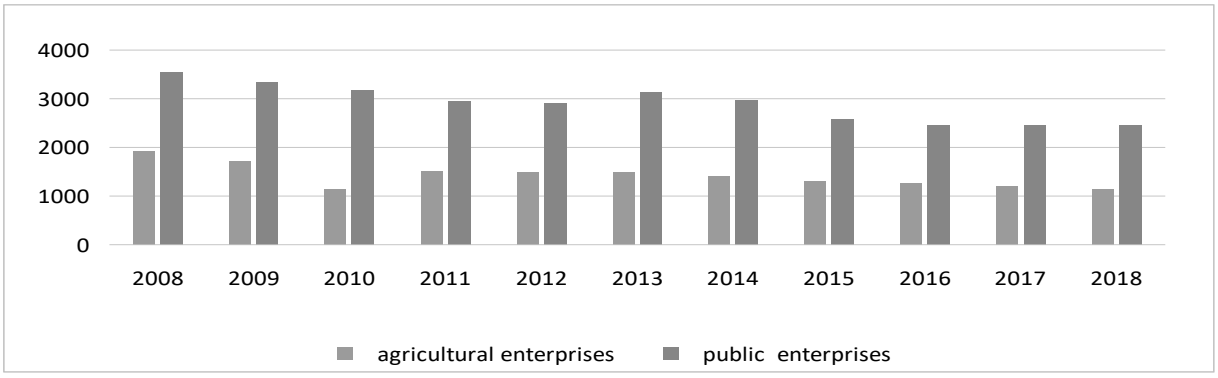
There is also no research structure that would comprehensively explore the production of meat in Ukraine. The research is conducted by the Ministry of Agrarian Policy of Ukraine, FAO, EBRD, IFC, industry associations and market players (Nielsen, GFK, Pro-Consulting).

III. White and red meat sector. Size, structure and organization

Ukraine is an agricultural country. Its resources had actively used in food production in the Russian Empire, as well as in the USSR. In 1991-1997, after the economic independence and consequently abrupt changes in the form of management, uncertainty with the right to ownership of land and the dispersal of the main means of production, there was a sharp decrease in the number of pigs, cattle and poultry. Since the beginning of the 2000, the situation has begun to change, particular in poultry and pig farming - the number of farms has begun to increase. After the devaluation of 2007, there was a particularly significant increase pigs and poultry. Import meat from Poland, Germany and the United States became economically unprofitable. But the livestock population did not stop its quantitative fall. The reason for this is the age of the landlord on the land. Micro-sized agriculture is engaged by people aged 50-60. Incentives for small-scale farming are not created by the state. As a livestock farming accounts up to 50% of production, it is precisely the cultivation of land, which is a serious blow to the industry, leading to a shortage of products and rising prices in 2017.

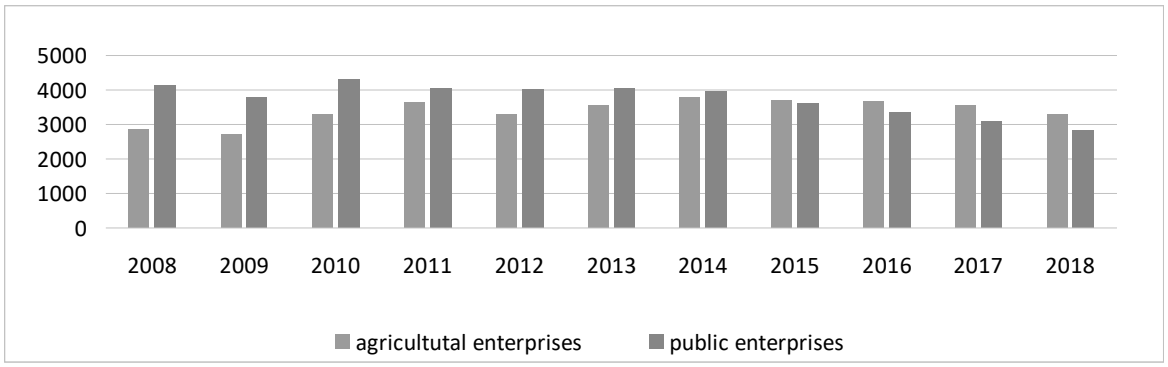
Particularly in cattle falling consists to 8% annually. If in 2008 (as of January 1st) there were more than 5.4 million heads of cattle, then in January 1st, 2018, this number amounted to 3.6 million heads. The falling was observed both in the livestock population and in the enterprises.

Chart 3.1. Dynamics of the cattle population 2008-2018



Source: State Statistics Service of Ukraine

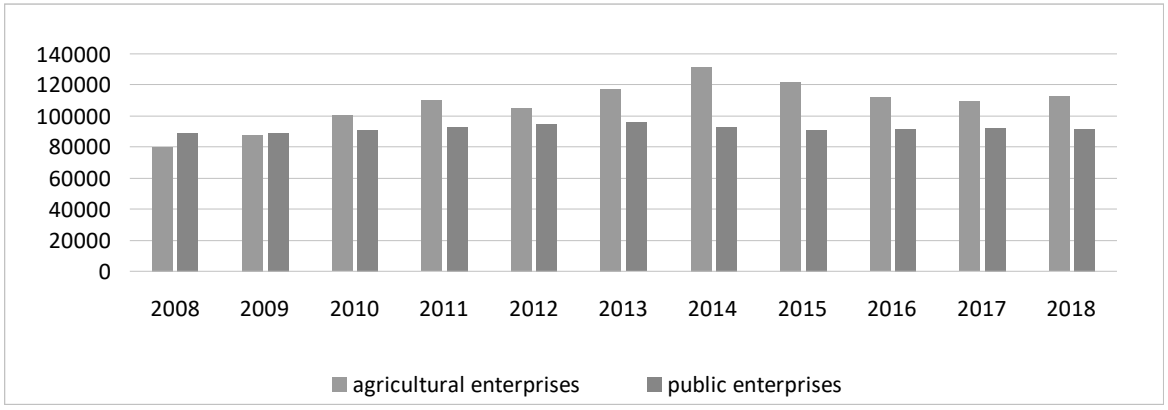
Chart 3.2. Dynamics of the pigs population 2008-2018



Source: State Statistics Service of Ukraine

Regarding number of pigs - the situation in Ukraine in 2008 is changing towards growing industrial pork. The ratio of pigs on farms and in the peasant sector is 53% and 47%.

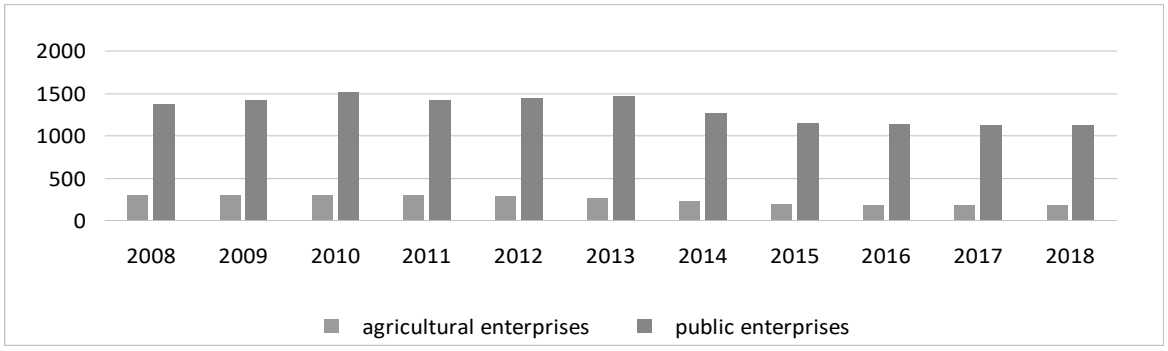
Chart 3.3. The dynamics of the poultry population in 2008-2018



Source: State Statistics Service of Ukraine

Poultry stock rate shows the largest growth in Ukraine. This tendency is provided by the giant industrial cultivation of hens in the complexes of MHP, Agromars, Ovostar, Avangard and Pan Kurchak.

Chart. 3.4. The dynamics of sheep and goats in 2008-2018



Source: State Statistics Service of Ukraine

Production, processing and distribution are combined into a single balanced chain only in the field of chicken production in Ukraine. There are oligopoly vertically-integrated companies such as MHP, Agromars. In other industries, the market is fragmented and not structured. Often there is a shortage and surplus of live pigs and cows, which adversely affects sustainable pricing and disturbs the market balance between farmers, the population, processing companies and consumers.

For a more detailed analysis of the market white and red meat should be analyzed farms where animals are kept. There is different situation in the production of small and large cattle. Also, in this analysis, only registered farms with an identified number of livestock are taken into account. Domestic animals is not taken into account in this statistics.

Table 3.1. Ranking of the cattle farms by number of livestock to the 1st January, 2018

Number of cattle head in the enterprises	**Number of enterprises**		**Number of livestock, thousand**	
	Units	**% of the total number**	**Units**	**% Of the total number**
5-29	568	12,2	3,4	0,29
29-49	1184	25,5	25,8	2,21
50-99	431	9,3	31	2,66
100-499	846	19,7	231,2	19,85
500-999	612	13,2	314,3	26,98
1000-1999	218	7,4	263,1	22,58
2000-2999	65	1,4	155,9	13,38
3000 and more	32	0,6	140,3	12,04

Source: State Statistics Service of Ukraine

Enterprises growing cattle in Ukraine are seeking consolidation. To be profitable in Ukraine, the dairy farm should have at least 150-200 heads of dairy cows. The number of such enterprises in Ukraine is 846. Also, the number of enterprises has increased significantly more than 1000 heads - their total number is more than 315 at the moment. Such farms are industrial milk and beef suppliers, most of them operating on the American model.

Cattle inventories in Ukraine underwent some changes during 2008–2018. In the central and eastern regions of Ukraine, the number of cattle decreased faster than in western regions. In general, cattle inventories to a large extent followed the trends observed in the dairy sector. Vinnytsa, Khmelnytsk, Lviv and Poltava regions were a key players in 2018 as their combined share of total cattle herds comprised about 25 percent.

Table 3.2. Ranking of pig breeding enterprises by the number of livestock to the 1st, January 2018

Number of cattle head in the enterprises	Number of enterprises		Number of livestock, thousand	
	Units	% of the total number	Units	% Of the total number
10-29	430	7,9	2	0,1
30-59	1346	24,8	40,9	1,3
60-99	597	11	46,6	1,4
100-499	1856	34,3	443,7	13,3
500-999	576	10,6	402,5	12,2
1000-1999	339	6,3	468,2	14,1
2000-2999	103	1,9	250,3	7,6
3000 and more	176	3,2	1644,1	50

Source: State Statistics Service of Ukraine

The pig-breeding enterprises of Ukraine passed the stage of consolidation more than 3 years ago. 176 largest enterprises hold more than 50% of the entire industrial herd of Ukraine. Enterprises with more than 1000 heads make up almost 72% of pigs grown on farms. Pig inventories were concentrated in the central and eastern regions of Ukraine.

It was a new trend explained by the opening of new large pig farms. Until 2005, the raising of pigs was spread rather evenly throughout the country. In 2017, it looked as if large pig farms were being built around the feed-base, which was better in the central and eastern regions than in the western part of the country. They were also located close to the large markets. The largest numbers of pigs were registered in Dnipro, Kyiv and Vinnytsa region, which accounted for 31 percent of the total pig herds in Ukraine.

Table 3.3. Ranking of poultry farms by number of livestock to the 1st January, 2018

Number of cattle head in the enterprises	Number of enterprises		Number of livestock, thousand	
	Units	% of the total number	Units	% Of the total number
50-99	138	17,5	3	0
100-499	132	16,8	25,9	0
500-2999	145	18,5	229,7	0,3
3000-4999	51	6,5	198,4	0,2
5000-9999	41	5,2	292,7	0,3
10000-24999	46	5,8	723,6	0,7
More than 25000	234	29,7	112365	98,9

Source: State Statistics Service of Ukraine.

Poultry farms are the most enlarged - the degree of centralization is 98.9%. This business in Ukraine is export-oriented and for the competitiveness on the foreign market the scale of business is necessary.

Kyiv and Cherkasy regions accounted for about a quarter of all chicken in the country. Another two leading regions Dnipro and Donetsk accounted for another 16 percent of all chicken in Ukraine. Donetsk region had a large concentration of egg farms. In 2017, the three main regions produced 58 percent of all chicken meat. Chicken production was mostly concentrated around large consumption centers. However, considering the development plans of various companies, we expect that Vinnytsa region also become one of the leaders in chicken production, as it has the advantage of feeding supplies and could better serve Western Ukraine.

Table 3.4 Ranking of goats and sheep breeders by the number of livestock to the 1st January, 2018

Number of cattle head in the enterprises	**Number of enterprises**		**Number of livestock, thousand**	
	Units	**% of the total number**	**Units**	**% Of the total number**
under 49	625	44,9	2,1	3,4
50-99	194	13,9	4,3	4,4
100-499	405	29,1	38,2	29,7
500-999	94	6,7	42	21
1000-1999	55	4	50,8	24,2
More 1999	19	1,4	45,6	17,3

Source: State Statistics Service of Ukraine

Since sheep and goats are engaged in small structures with disabilities, they are characterized by a rather fragmentary nature. It is also worth noting that only 15% of the total number of sheep and goats is in agricultural enterprises. Others kept private farmers. Structure with disabilities, they are characterized by rather fragmentary character.

This practice of maintaining livestock inventories remained inplace for more than ten years, usually in the form of verbal orders and was partially abandoned only in 2008. In fact, it was not fully abandoned until the present time, as in order to lease land, agricultural companies often had to conclude verbal deals with the local governments where they pledged to maintain livestock inventories. In some cases, companies did this not regulary. This practice was intended to keep the local population loyal as peasants do not favourably view the closure of livestock farms.

Because livestock was a money-losing business, nobody wasn’t interested in investing it. The supply of meat and milk remained an abundant and processors took advantage of the

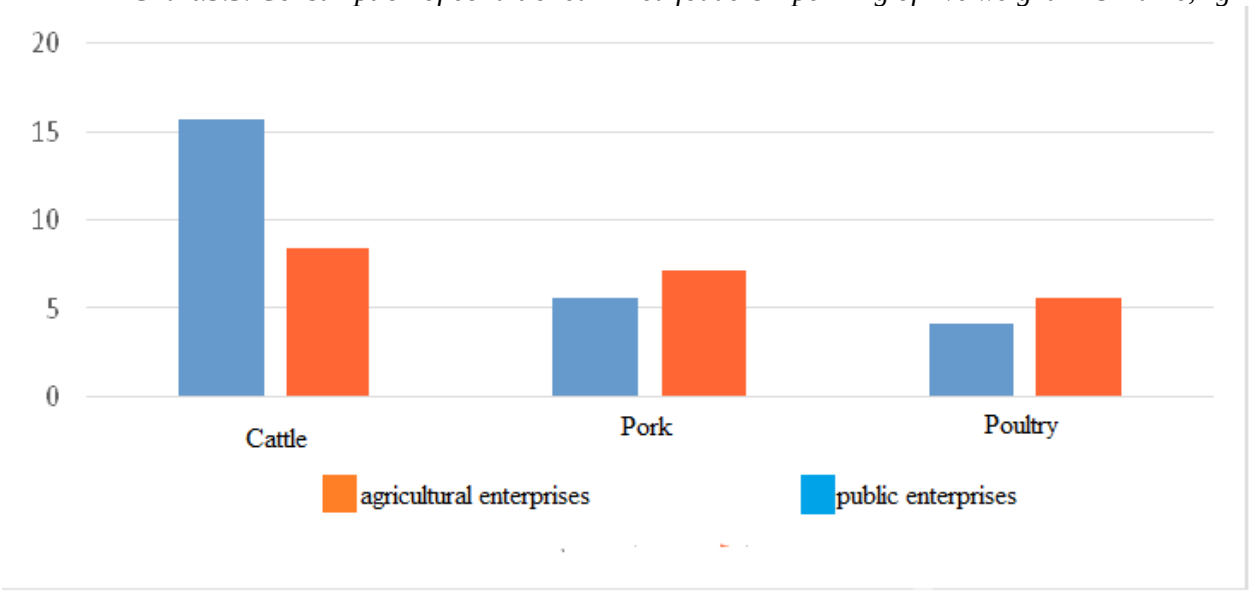
situation. Buying raw material cheaply, exporting excess produce (mainly frozen beef) and enjoying high profits. Also processors were not motivated to invest in their facilities as the supply of raw materials was plentiful and sales were easy owing to low prices.

The productivity of the livestock sector in Ukraine gradually improved in 2008-2018. Poultry is the most efficient subsector in the meat industry due to the application of optimal feed conversion ratios and days-to-slaughter rate by the leading companies. According to the management of MHP company, its performance in the poultry subsector was better than that of similar companies in Brazil and the United States of America. Its average days-to-Ukraine slaughter rate was reported at 35 to 42 days and it has captured almost half of the chicken meat market.

The situation was not as good in the pork subsector and far from good in the cattle subsector, mainly because smaller farms played a more important role in these subsectors. However, the leading companies in the pig subsector were already achieving feed conversion rates similar to those achieved in the EU countries and the United States of America.

In the cattle subsector, the situation grew worse because, with slowing exports, the domestic demand for more productive meat-type breeds of animals weakened. Therefore, the share of dairy breeds of cattle in total cattle production increased, which negatively affected feed conversion rates.

*Chart.3.5. Consumption of conditioned mixed fodders * per 1 kg of live weight in Ukraine, kg*



Source: FAO

The cost of feed in farm households and farms is fundamentally different because of different types of fattening and retention periods. In particular, this difference is noticeable on the example of cattle. In the farms of the population, except grains, grapes are used, which

provides weight gain. In general, in Ukraine, for industrial cultivation, more than 6 million tons of conditioned feed are produced in more than 740 feed mills

The rapid development of Ukrainian agribusiness in 2008-2017 resulted in a significant shortage of human resources in nearly all sectors. Partially the shortage in the agricultural sector was a result of relatively low salaries compared with salaries in other sectors of the economy, difficult working conditions and an unwillingness of competent specialists to live in rural areas. The gap between salaries in the agricultural sector and average salaries for all sectors in the country was very significant, varying from 60 percent to 80 percent on average. The situation in the livestock sector was similar. Therefore, agricultural companies put much emphasis on the automation of processes and the limitation of the human factor in production in order to decrease their vulnerability to a human resource deficit. Polls conducted among the graduates of agricultural universities in Ukraine confirmed the unwillingness of young people to work in agriculture. Only about 10 percent of the respondents planned to work in agriculture in 2016.

The most recent poll among agricultural producers carried out by UCAB showed that the jobs most problematic to fill for livestock companies are those of zoo-technicians, veterinarians and agrimotor drivers[1]. About 38 percent of the companies polled urgently needed mid-level managers with a technical background, while there was no major problem with finding top- level managers as well as economists, accountants and analysts.

One of the key professions servicing the meat sector is the veterinarian. Besides his/her vital role at the farm level, a veterinarian is also responsible for the food safety of animal products in Ukraine. As in 2017, there were 16 450 veterinaries in the State Veterinary Service and 5 200 private licensed veterinarians.

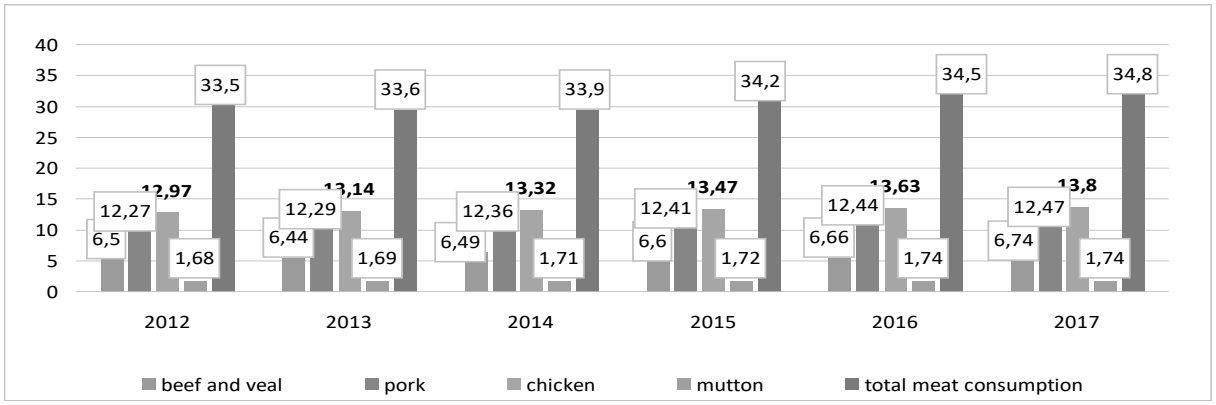
Considering the current livestock number, recalculated into conditional head of cattle 23 , there were about 381 cattle per veterinarian in Ukraine. However, taking into consideration the fact that only part of a veterinarian's work is involved in agriculture, the number was about 780 cattle per veterinarian in Ukraine. This number is lower than the number of cattle per veterinarian in other EU countries. The main problem of Ukrainian veterinarians is a lack of knowledge about modern agribusiness practices.

[1] 9 International conference Doing Agribusiness in Ukraine
http://ucab.ua/ua/pres_sluzhba/novosti/viznacheno_osnovni_trendi_rozvitku_apk_na_2018_rik

IV. Meat and meat products production

In the last 30 years, worldwide population growth has contributed by 60 percent to the overall growth in meat consumption, the remaining 40 percent of growth in world meat consumption can be attributed to an increase in per capita income and per capita consumption growth . Meat and meat products are considered to be the most important types of food stuffs. In the nutrition structure of developed countries, meat products amount to 34-37% in terms of calorie consumption and 63-69% in terms of protein consumption.

Chart 4.1. World consumption of meat per capita in 2012-2017 years (kg)



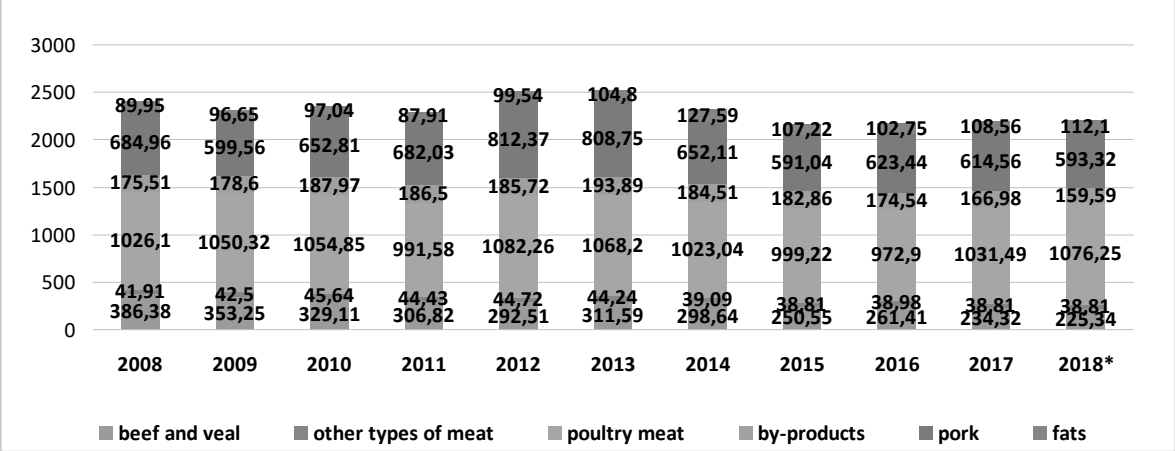
Source: http://www.oecd-ilibrary.org/agriculture-and-food/oecd-fao-agricultural-outlook-2017-2026/per-capita-meat-consumption-by-country-and-region_agr_outlook-2017-graph98-en

After the drop at the beginning of 1990's meat consumption started to grow slowly from the beginning of 2010's and reached in 2012 54kg per capita, what is lower than the recommended by the Ministry of Health of Ukraine level of 75 kg per capita and lower than meat consumption in EU countries and in the USA (The Netherland – 89.0 kg, Germany – 92.0 kg, USA – 118.0 kg, Hungary –76.0 kg, Brazil – 93,2.0 kg, Czech Republic - 74.0 kg, Russia – 59.0 kg, etc).

But with the decline in the welfare of Ukrainians, consumption has dropped significantly due to poor purchasing power. Currently, meat consumption is shown in Chart 5.2. This Chart should be taken into account, as it takes into account official statistics, the population of Ukraine - 44 million people (excluding the temporarily occupied territories). Meat consumption in Chart 5.2 is indicated in thousands of tonns to understand the volume of the domestic market, taking into account the «grey» movement to temporarily occupied territory. After moving meat products to temporarily occupied territory, it partially falls into the Russian Federation. Another part of consumption is «grey» exports to the Republic of Belarus, where it continues to export meat to the Russian Federation as well. To estimate the volume of this part of the domestic market in concrete Charts is not real, the experts in percentage terms, this share of domestic

consumption (export to temporarily occupied territory and Belarus) is determined at the level of 25-30% of the total consumption. Therefore, the structure of domestic consumption of meat and the capacity of the domestic market should be considered in the light of these factors.

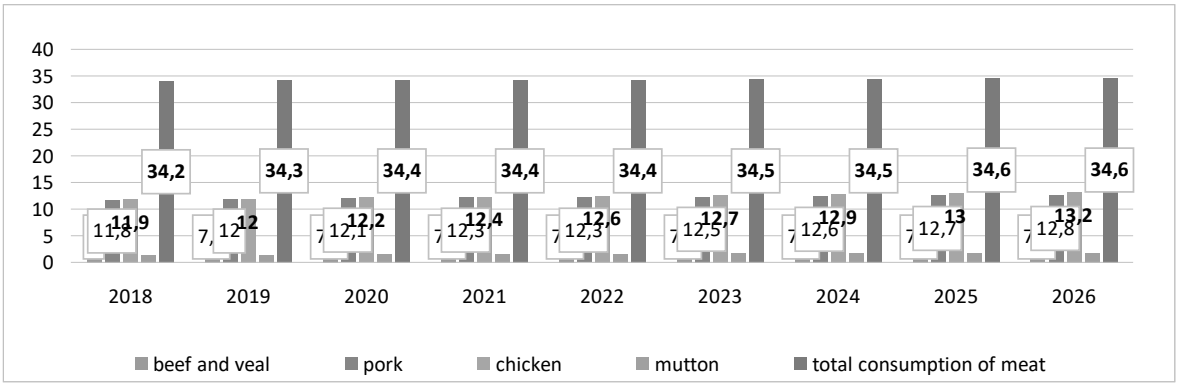
Chart 4.2. Structure of meat consumption in Ukraine in 2008-2018 years, (thousand tons)



Source: State Statistics Service of Ukraine

Forecasts of consumption of all types of meat without to temporarily occupied territory and «grey» exports to Belarus appears stable over the next years and remains at the level of 34-35 kg/person. This is connected with the negative forecasts of the World Bank regarding the development of purchasing power of the Ukrainian population. In the case of equalization of incomes to the EU level for consumption, the high export prices (which is already happening with the consumption of chicken and is forecasted in the segment of pork and beef) will be offset by high export prices.

Chart 4.3. Forecasts of consumption of all types of meat in 2018-2026 years kg/person



Source: UFEB

The types of meat products manufactured in Ukraine can be split into the following groups.

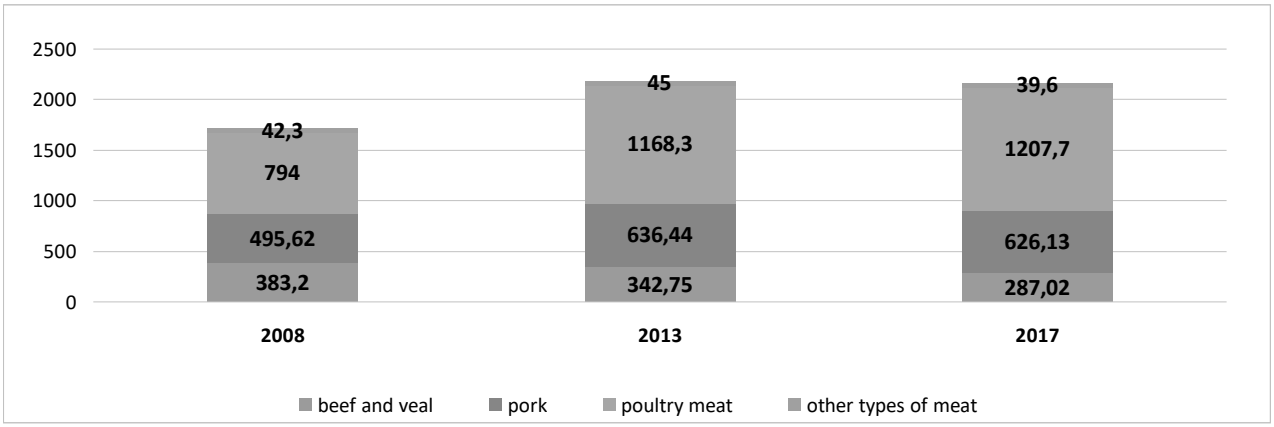
Products received after animals and poultry slaughter (sold for further processing):

- chilled and frozen meat (beef, veal, pork, poultry meat, mutton and goat, rabbit meat, horse meat, etc.), including meat in small packs (0.5-1 kg);
- 1st category by-products: tongue, liver, heart, cattle and poultry brain;
- 2nd category by-products: kidneys, spleen, lungs, cattle and poultry legs;
- blood, bones, horns, etc.

Processed (animal) meat:

- sausages/ frankfurters (cooked sausages, semi- and hard-smoked sausages, smoked products, etc.);
- semi meat -products;
- canned meat (including canned meat with vegetables, various pastes);
- baby food.
- smoked meat.
- pastes and meat loafs;
- delicacies group.

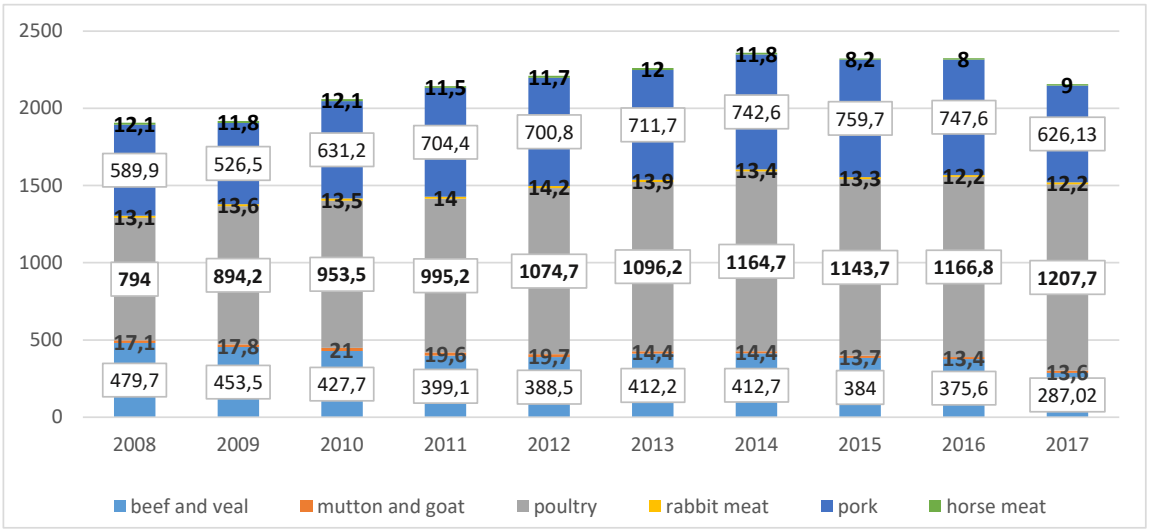
Chart 4.4. Structure of meat production in slaughter weight in 2008, 2013, 2017 years, (thousand tons)



Source: State Statistics Service of Ukraine

The production of meat in Ukraine has increased in the last 10 years. The increase was due to poultry (chicken and turkey) - 52% from 2008 to the end of 2017. Significant growth, which predicted pork, did not happen due to the African swine fever and the loss of the Russian market. Beef production has significantly decreased (by 19%), also due to the loss of the Russian market.

Chart 4.5. Volume of meat production for 10 years of different types, structure, (thousand tons)



Source: State Statistics Service of Ukraine

The structure of meat production over 10 years shows that the largest decline in production occurred in 2015: during this period, gray exports to the Russian Federation and the Autonomous Republic of Crimea closed. The market reacted quite painfully to this closure (Chart. 5.5.).

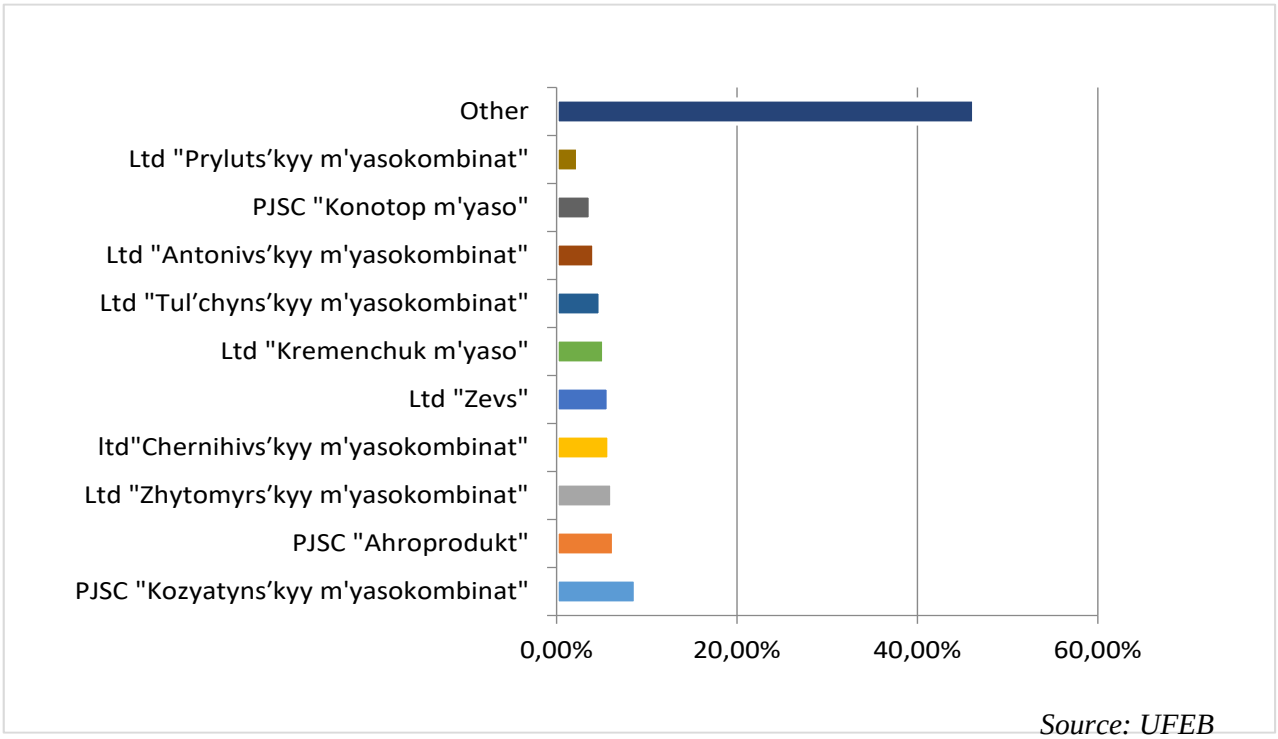
Table 4.1. Structure of meat and meat products production in Ukraine by types of consumption (thousand tons)

Type of meat	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Beef and veal fresh	128,00	94,30	87,20	64,50	63,60	52,30	48,40	50,10	54,60	57,40
%, y-o-y		-26,30%	-6,80%	-26,03%	-1,40%	-17,77%	-7,46%	3,51%	8,98%	5,13%
Beef and veal frozen	39,40	26,90	24,10	16,80	14,20	18,40	21,20	32,40	27,40	31,13
%, y-o-y		-31,73%	-10,41%	-30,29%	-15,48%	29,58%	15,22%	52,83%	-15,43%	13,61%
Pork fresh	157,00	130,00	164,00	202,00	86,80	124,00	143,86	121,22	132,10	134,10
%, y-o-y		-17,20%	26,15%	23,17%	-57,03%	42,86%	16,02%	-15,74%	8,98%	1,51%
Pork frozen	14,20	5,40	7,50	8,60	7,40	9,40	8,50	7,60	10,20	10,12
%, y-o-y		-61,97%	38,89%	14,67%	-13,95%	27,03%	-9,57%	-10,59%	34,21%	-0,78%
Sausages	335,50	272,20	280,90	290,00	278,40	271,40	230,40	224,50	230,60	214,70
%, y-o-y		-18,87%	3,20%	3,24%	-4,00%	-2,51%	-15,11%	-2,56%	2,72%	-6,90%
Semi-ready products (incl. poultry)	93,90	73,30	95,70	97,70	102,00	98,60	97,40	103,10	104,20	101,80
%, y-o-y		-21,94%	30,56%	2,09%	4,40%	-3,33%	-1,22%	5,85%	1,07%	-2,30%
Poultry fresh	572,00	649,00	689,00	741,00	724,00	810,00	818,00	867,00	914,00	907,00
%, y-o-y		13,46%	6,16%	7,55%	-2,29%	11,88%	0,99%	5,99%	5,42%	-0,77%
Poultry frozen	82,30	90,10	91,20	84,60	72,40	81,70	100,30	98,70	101,40	102,60
%, y-o-y		9,48%	1,22%	-7,24%	-14,42%	12,85%	22,77%	-1,60%	2,74%	1,18%
Offal and canned meat, other	179,00	181,00	211,00	218,00	194,00	191,00	209,00	214,00	224,00	208,00
%, y-o-y		1,12%	16,57%	3,32%	-11,01%	-1,55%	9,42%	2,39%	4,67%	-7,14%

Source: State Statistics Service of Ukraine

The structure of the meat market, taking into account the processing of canned products, by-products, semi-finished products, smoked sausages and sausages, shows the decline in beef production and the growth of chicken production in the 10-year perspective. Analytical centers confirm the continuation of such growth by 2024.

Chart 4.6. Top 10 producers of beef and veal (chilled and frozen) in Ukraine, %

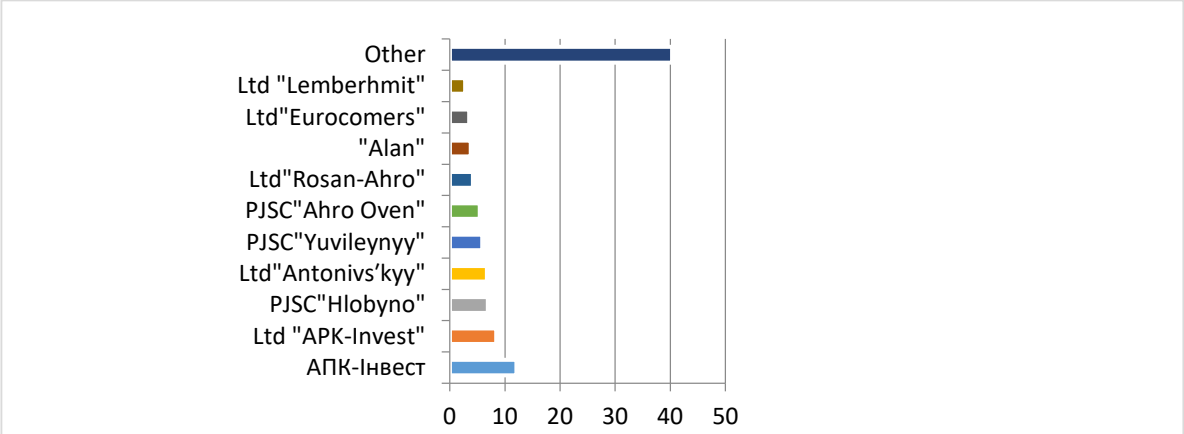


Source: UFEB

There are also positive expectations for the restoration of production of chilled pork. By-products and canned products fluctuate within 200 thousand tons, which indicates changes in the structure of consumption and export of products. Accordingly, all surpluses are processed into long-term storage products. The production of beef in Ukraine is represented by the following companies (Chart 5.6.). The market is not monopolized, but it is poorly developed. Major players do not have a market share of over 9%.

In general, more than 80 big producers and more than 120 small slaughter shops are represented on the beef market. Most of them buy livestock in the households or in dairy farms. Only 18 of them are vertically integrated – they have their own feedlots and small shops (like Ukrlandfarming, or Terrafood). With regard to the pork processing market, it is much shredded than the beef market. According to UFEB estimates, there are more than 40 enterpriseswith an annual income of more than 200 million UAH and about 300 average beacons and slaughteries.

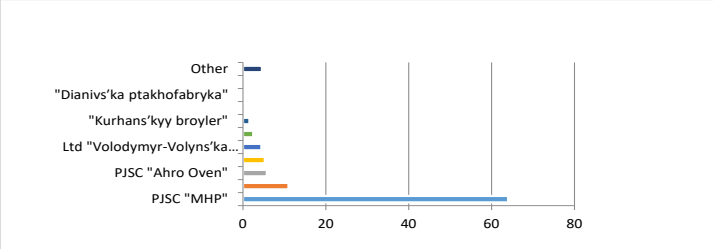
Chart 4.7. TOP-10 producers of pork (chilled and frozen) in Ukraine, %



Source: UFEB

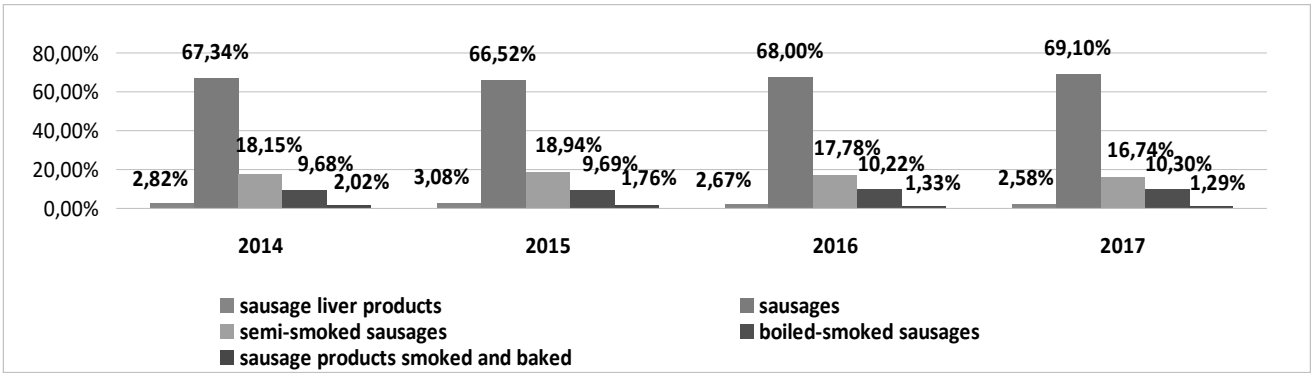
In the last 2 years, pork production has been growing by APK Invest and Hlobyns′kyy myaso kombinat. They have their own raw material bases (up to 500,000 pigs / year in total) and modern slaughterhouses. This will help them in 2018-2019 to get up to 25% of the market for chilled and frozen pork in total. As for the poultry market, the situation is fundamentally different from previous surveys. On the market there is a pronounced monopoly, represented by a vertically integrated holding MHP. According to the latest data, they have 64% of the chicken market in Ukraine.

Chart 4.8. TOP-10 producers of chicken (chilled and frozen) in Ukraine



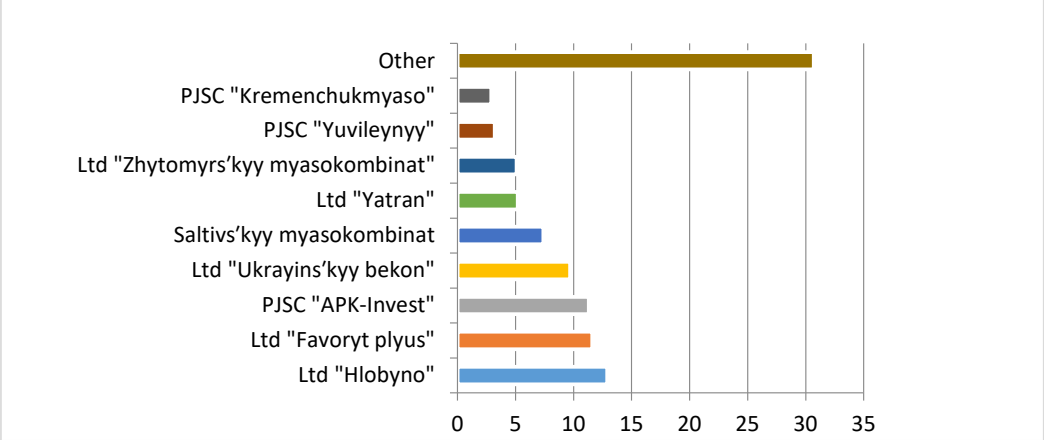
Source: UFE

Chart 4.9. The structure of sausage production in Ukraine in 2014-2017 years thousand tons



Source: UFEB

Chart 4.10. The main producers of sausage products in 2017 year



Source: UFEB

The sausages market in Ukraine is represented by more than 130 companies. But in Ukraine about 75% of domestic sausages is produced by 21companies. Others work at the regional level or as auxiliary processing departments. More than 65% of the market are sausages, in the second place - semi-smoked sausages.

Table 4.2. Meat balance in 2008-2018 years

Meat total (thousand tonshter weight)																
Indicator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017*	2018*	1 month/year		The ratio to month. 2018/ 2017	The ratio 2008/ 2017	The ratio 2018/ 2017
												2017	2018			
Stocks at the beginning of the period	179,37	188,30	175,96	178,17	174,74	183,63	187,42	177,49	178,94	185,90	179,70	186	180	97%	96%	4%
Processing	715,12	1 744,28	1 877,21	1 960,16	2 031,48	2 192,49	2 169,34	2 136,12	2 147,45	2 160,45	2 204,65	202	202	100%	79%	3%
Agricultural enterprises	911,12	971,47	1068,78	1 142,71	1 200,20	1 355,82	1 368,47	1 374,90	1 404,78	1 405,67	1 456,25	112	112	100%	65%	4%
Private enterprises	803,65	772,81	808,43	817,45	831,28	836,67	800,47	761,23	742,66	754,79	748,40	89	89	100%	106%	1%
Import	504,06	369,90	298,55	185,83	387,28	275,80	107,25	70,14	91,70	131,23	127,00	7	13	178%	384%	38%
- import: fresh or chilled meat	73,87	42,55	14,45	13,17	42,91	18,44	1,45	0,23	0,31	0,35	0,50				21106%	61%
- import: frozen	403,45	321,52	276,01	159,33	329,74	244,73	101,45	67,37	88,75	126,81	121,55				318%	37%
- import: proceed meat	26,74	5,82	8,08	13,34	15,02	12,64	4,35	2,54	2,64	4,07	4,95				657%	88%
Export	26,53	38,59	47,62	81,64	130,00	182,35	214,12	231,49	290,67	332,86	355,00	15	23	151%	8%	22%
- export: fresh or chilled	0,48	0,06	1,00	6,49	10,92	14,01	15,56	34,65	34,03	39,68	43,55				1%	28%
- export: frozen	24,72	37,82	45,68	73,07	114,14	164,89	195,53	193,85	253,22	289,20	307,18				9%	21%
- export: proceed product	1,11	0,72	0,94	2,08	4,94	3,46	3,04	2,99	3,43	3,99	4,27				28%	24%
Supplies to the Crimea							14,00	49,60								-100%

Consumption	2 139,35	2 045,64	2 082,41	2 024,87	2 231,87	2 232,78	2 012,9	1 879,60	1 896,73	1 919,18	1 933,71	193	195	101%	111%	101%
Losses, other expenses	44,38	42,28	43,52	42,92	48,38	49,37	45,53	44,13	44,78	45,83	46,63	4	4	103%	97%	4%
Meat stocks at the end of the period	188,30	175,96	178,17	174,74	183,63	187,42	177,49	178,94	185,90	179,70	176,01	183	172	94%	105%	-5%

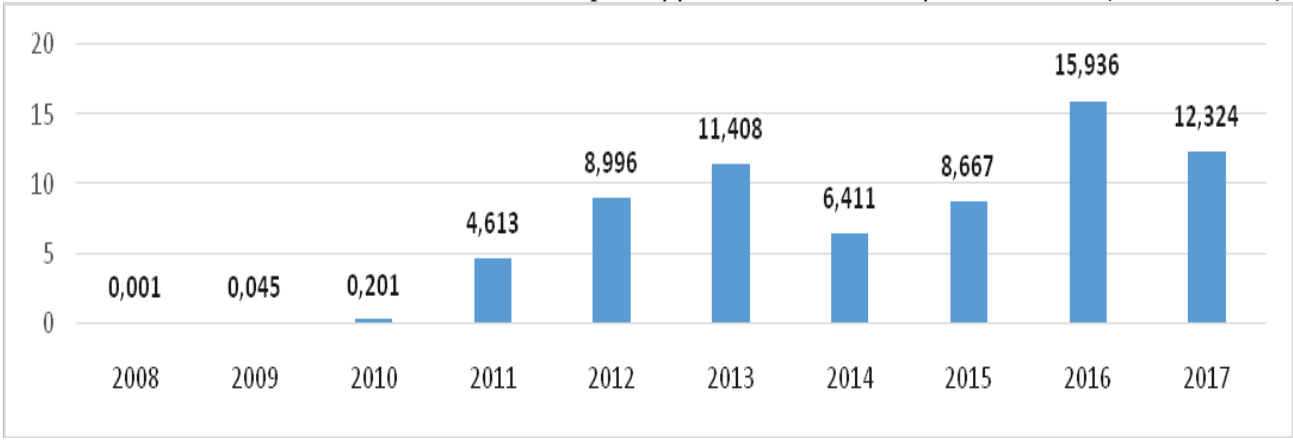
V. Import and export of meat (beef, pork and poultry)

Prognosing the short/medium term in the future. Data about specific imported and exported products such as live animals for breeding, live animals for meat, meat, processed meat, carcasses, etc.

In general, after 2008, Ukraine began to change its status from a net importer of meat to an exporter of meat products. This trend is associated with huge potential for production, increased demand in Asia and Africa, and changes in the trends of world meat production.

The volume of export shipment exceeds the import deliveries. According to the State Customs Service, in January 2018, exports of fresh or chilled beef were 0.708 thousand tons with a total value of 1.9 million USD. Belarus remains the main buyer of Ukrainian beef (fresh or chilled) - 0.705 thousand tons in physical terms and 1.9 million USD in monetary terms (January 2018 data). In general, from 2014, Ukraine sells the main part of beef to Belarus and Azerbaijan (for further supplies to Russia to circumvent sanctions).

Chart 5.1. Export of fresh and chilled beef in 2008-2017 (thousand tons)

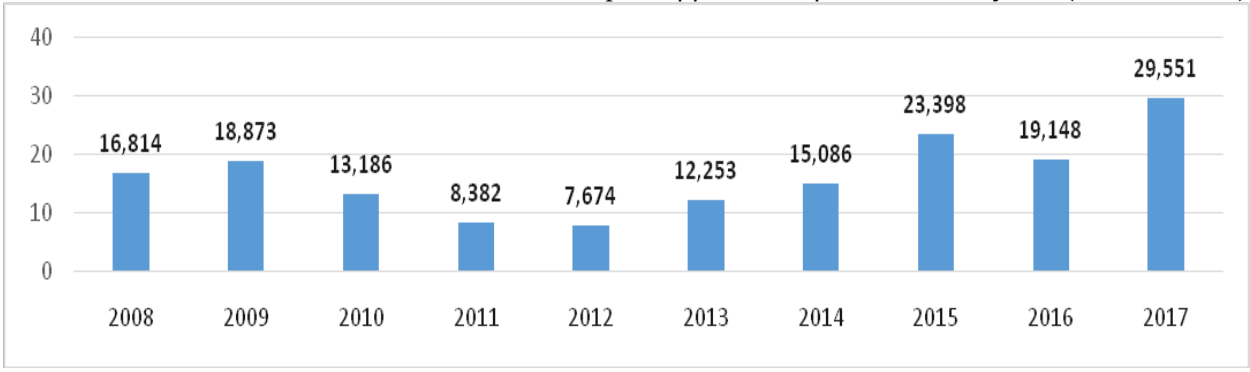


Source: State Statistics Service of Ukraine

Fresh beef export recovered after the loss of the Russian Federation, but still focused on the Russian consumer.

According to the data of State Customs Service, export deliveries of frozen beef in January 2018 amounted to 1,625 thousand tons ($ 137.5 million). It is 7.9% lower than the supply of Ukraine in January 2017 and 4 times higher than export in January 2016 (0,397 thousand tons). In general, shipments were made to the following countries: Azerbaijan (0.633 thousand tons - 48.5 million USD), Kazakhstan (0.390 thousand tons - 34.2 million USD), Georgia (0.162 thousand tons - USD 14.3 million).

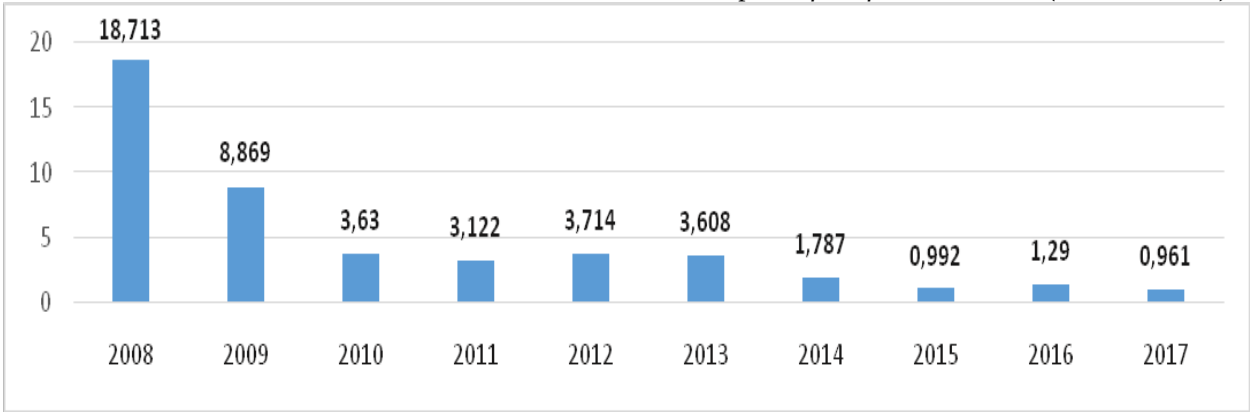
Chart 5.2. Export of frozen beef in 2008-2017 years (thousand tons)



Source: State Statistics Service of Ukraine

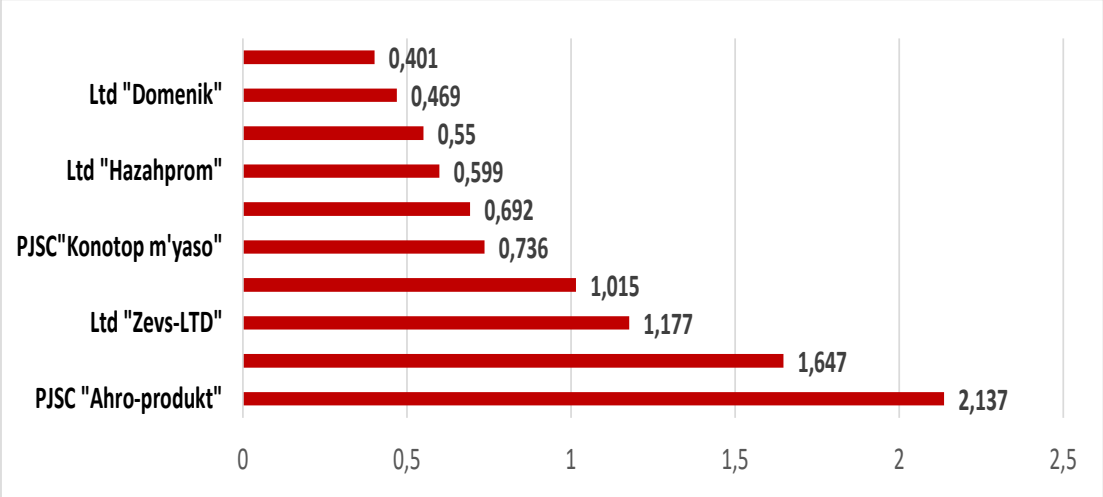
As to import, the dynamics is inversely proportional. Since 2008 (Chart 6.3), imports have started to decline significantly and are currently insignificant (961 tons), which does not affect the Ukrainian market. The main suppliers are Poland and Brazil.

Chart 5.3. Import of beef in 2008-2017 (thousand tons)



Source: State Statistics Service of Ukraine

Chart 5.4 The top-exporters of beef, fresh or chilled in 2017 (thousand tons)

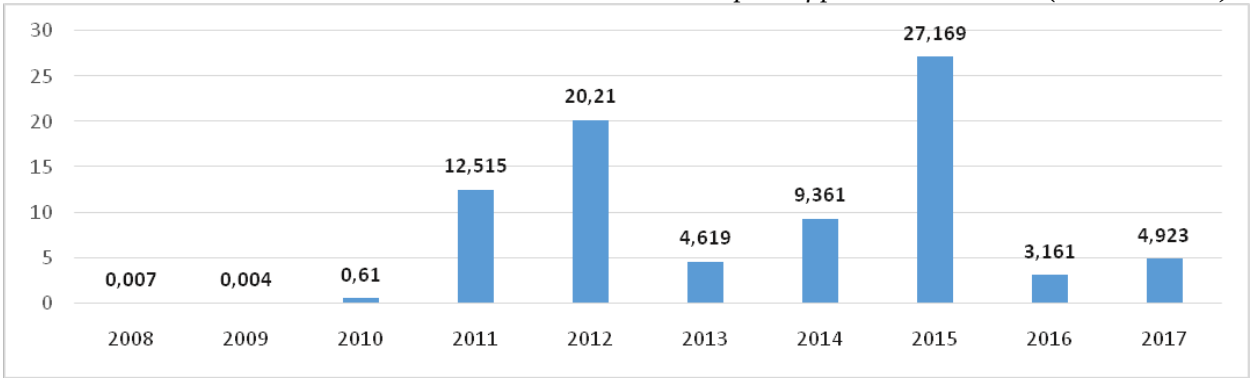


Source: UFEB

To Chart 6.4, the main exporters of beef are Ukrainian companies from the northern and western regions 2017 year.

According to the data of State Customs Service, pork export volume in 2017 was higher than in 2016. In general, shipments from Ukraine in 2017 increased by 34.7% to 4,686 thousand tons, if compared with 2016 (3,058 thousand tons). The main buyers are Georgia - 57,7%, Hong Kong - 22,7%, Kazakhstan - 8,6%, the share of other countries is 11%. In January of this year, export showed a significant decline, compared with previous years.

Chart 5.5. Export of pork in 2008-2017 (thousand tons)

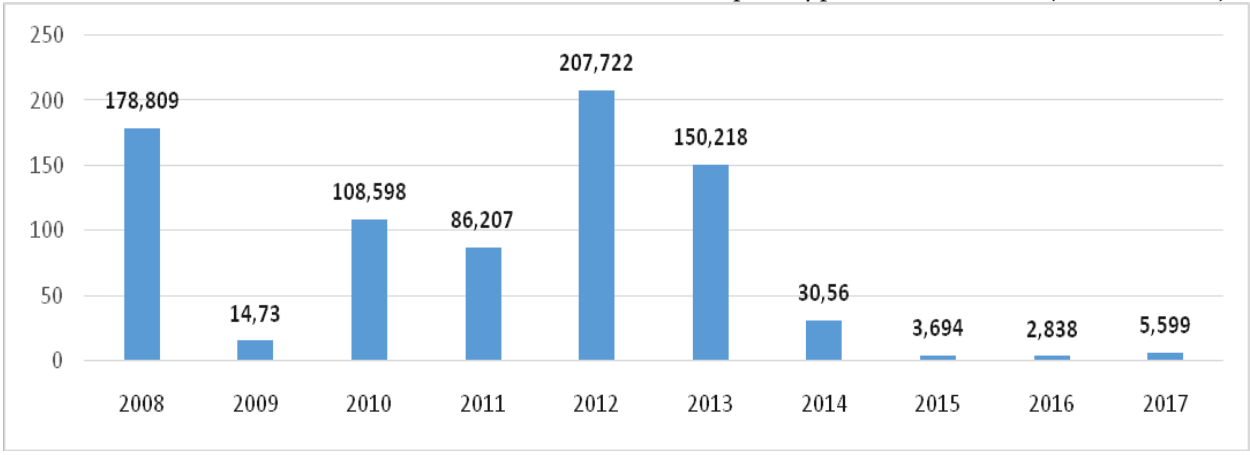


Source: State Statistics Service of Ukraine

Shipments from Ukraine decreased to 57.8% to 0.161 thousand tons against January 2017 (0.382 thousand tons) and to 45% compared with January 2016. Delivering were to Cyprus (0,055 thousand tons - 4 million USD), to Hong Kong (0. thousand tons - 3.8 million USD), Georgia (0,026 thousand tons - 1.7 million USD), Czech Republic (0,026 thousand tons - 946 thousand USD).

Imports of fresh, chilled and frozen pork for 2017 amounted to 5.102 thousand tons, which is 45.8% more than in 2016. In January of this year, the import volume of pork increased to 77.5%, to compare with January 2017 (0.285 thousand tons versus to 0.064 thousand tons). In general, supplies from the EU (0.160 thousand tons to 265 thousand USD), the Netherlands (0.100 thousand tons to 145 thousand USD), Canada (0.024 thousand tons to 49 thousand USD).

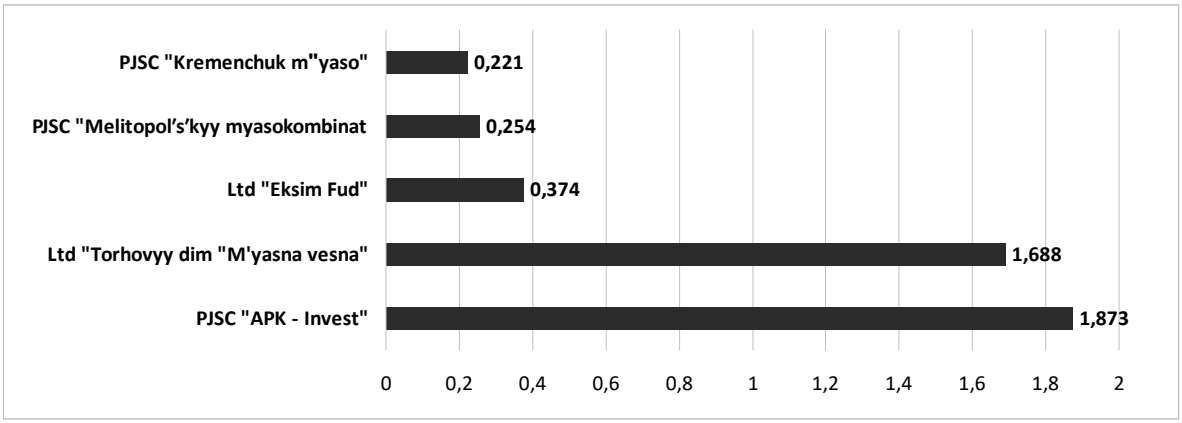
Chart 5.6. Import of pork in 2008-2017 (thousand tons)



Source: State Statistics Service of Ukraine

In general, the past 10 years, imports of pork have fallen significantly due to the devaluation of the national currency and the lack of opportunities to profitably import of pork.

Chart 5.7. The top-exporters fresh, chilled and frozen pork in 2017 (thousand tons)

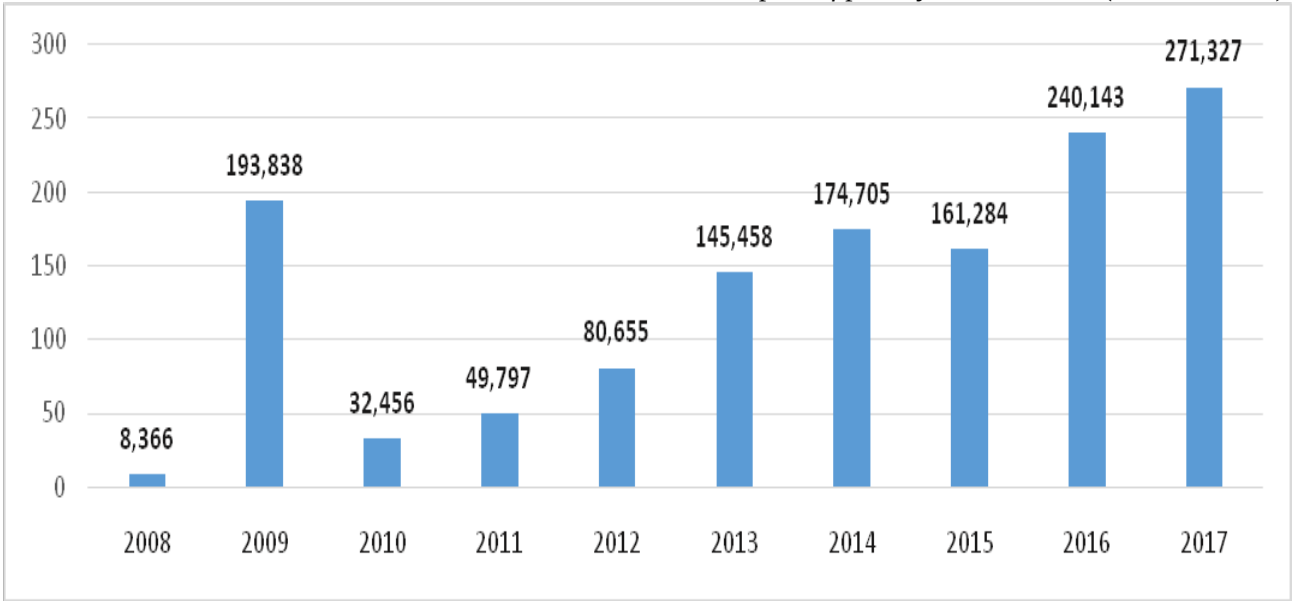


Source: UFEB

APK-Invest is the main exporter of pork in Ukraine (500 000 sows, Donetsk region).

Export deliveries of chicken meat over the past year increased from 42.2% (270.096 thousand tons) versus to 156,906 thousand tons in 2016. Egypt was the main buyer of Ukrainian chicken in 2017 (49,025 thousand tons) from the total value of 64.4 million USD. In the first month of 2018, 19.692 thousand tons of poultry meat was exported from Ukraine, which is 12.7% less than in December 2017 and 44.2% more than exports in January 2017. The main buyers of Ukrainian chicken meat in January this year were: the Netherlands - 4,394 thousand tons, Iraq - 3,891 thousand tons, OAE - 1,663 thousand tons, Poland - 1,609 thousand tons, Azerbaijan - 1,065 thousand tons.

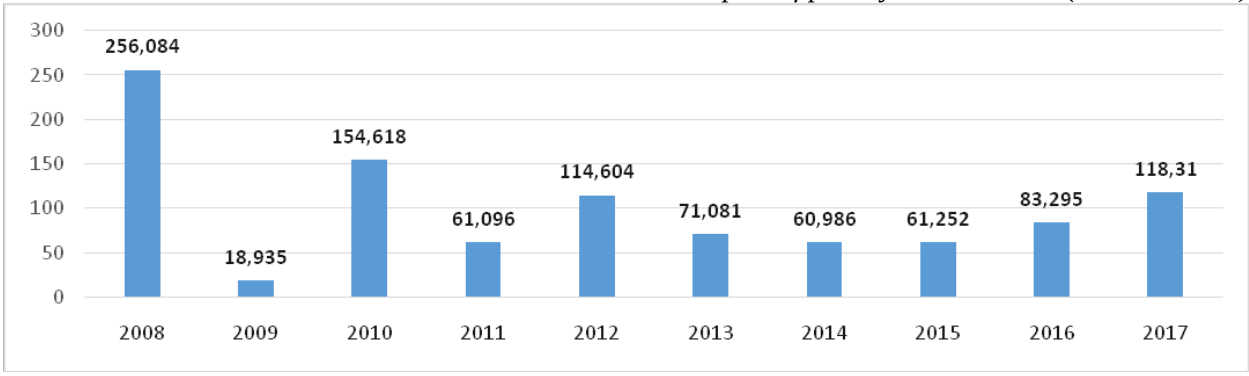
Chart 5.8. Export of poultry in 2008-2017 (thousand tons)



Source: State Statistics Service of Ukraine

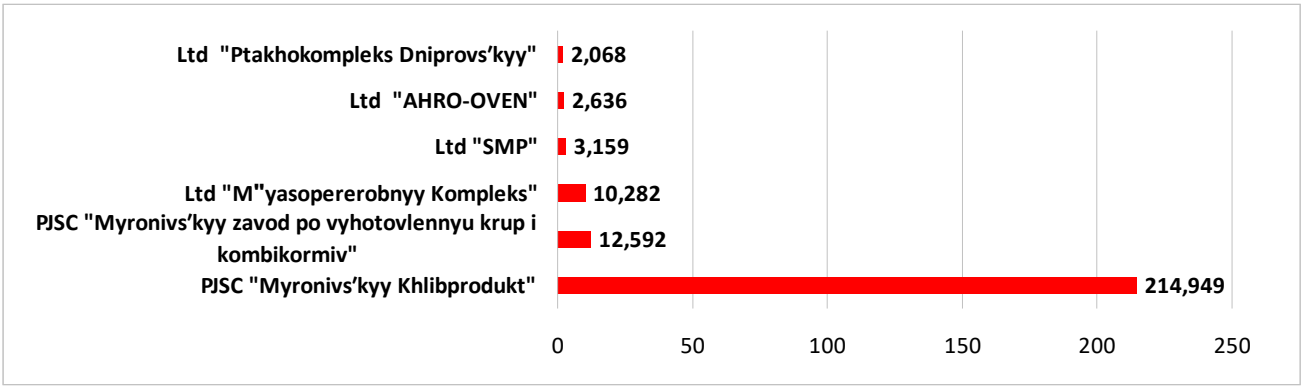
There is increasing import of meat and offal of poultry in early 2018.

Chart 5.9. Import of poultry in 2008-2017 (thousand tons)



Source: State Statistics Service of Ukraine

Chart 5.10. Top-exporters of poultry meat in 2017 (thousand tons)



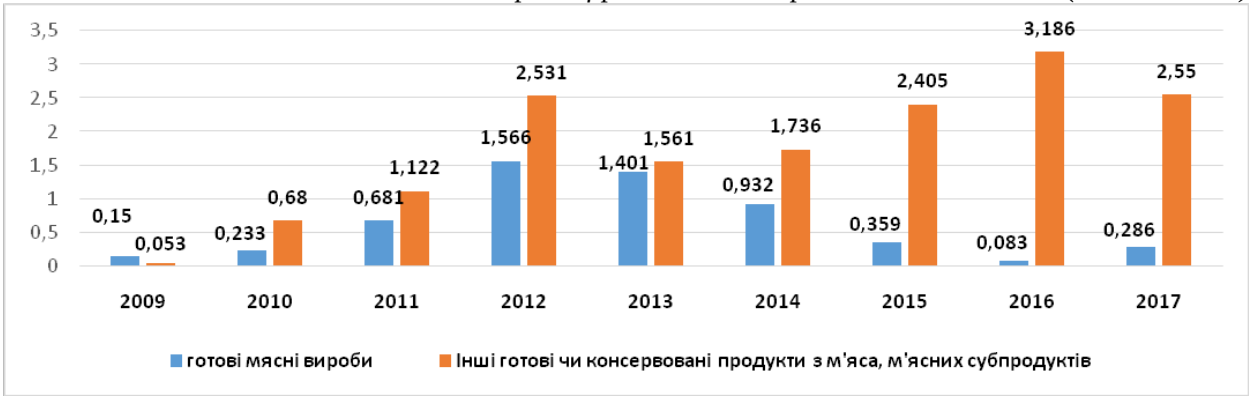
Source: UFEB

In January, imports of this segment of meat increased to 12,095 thousand tons (28.2% more than in January 2017 and 5.2% more than in December 2017).However during 2017 in Ukraine was imported 117.274 thousand tons of meat and edible offal of poultry. The largest

share of imports falls to countries such as Poland - 64.9%, Germany - 9.2%, France - 2.8%, Hungary - 2.3%, import of other countries is 20.8%. Myronivsky Hliboproduct is the main poultry exporter.

The export volume of finished product segment shipments is less than the current year. According to the State Customs Service, in 2017 Ukraine exported 0.283 thousand tons of sausage products. In January 2018, export deliveries of sausage products amounted to 0.014 thousand tons, which is 0.003 thousand tons more than exports in January 2017 and 67% less than exports in December 2017 (0.043 thousand tons). Azerbaijan (0,004 thousand tons - 193 thousand USD), Georgia (0,005 thousand tons - 854 thousand USD), Moldova (0,003 thousand tons - 250 thousand USD) were the main countries where supplies were made.

Chart 5.11. Export of processed meat products in 2009-2017 (thousand tons)



Source: State Statistics Service of Ukraine

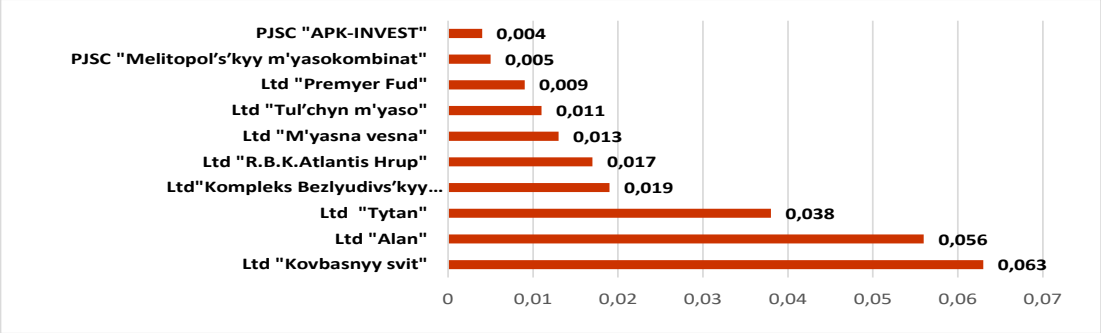
Chart 5.12. Import of processed meat products in 2009-2017 (thousand tons)

Source: State Statistics Service of Ukraine

According to the State Customs Service, in 2017, Ukraine imported 0.518 thousand tons of sausage products – to 22% more than in 2016. The volume of imports in January 2018 amounted to 0,028 thousand tons, which is 0,003 thousand tons more than in January 2017 (0,025 thousand tons) and 66% lower than the indicator for December 2017 (0,082 thousand tons). Italy (0,096 thousand tons - 237 thousand USD), the Czech Republic (0,023 thousand tons - 124,9 thousand USD), Poland (0,006 thousand tons - 25, 2 thousand USD).

The main countries suppliers of consumer production were Spain - 0,011 thousand tons, Italy - 0,006 thousand tons, Denmark - 0,005 thousand tons in this year.

Chart 5.13. The top-exporters of sausage 2017 (thousand tons)



Source: UFEB

Forecasts of meat exports are following:

- Meat production growing will be unlikely this year;
- The supply and demand balance is projected to remain scarce and covered by imports;
- Only export of chicken will increase, in other positions there will be a decrease;
- It is expected that prices will remain relatively high during the first half of the year.

Meat consumption in Ukraine in 2018:

- poultry - 48,1% (1,052 thousand tons);
- pork - 26% (548 thousand tons);
- other meat, by-products and fat - 14, 2% (310 thousand tons);
- beef - 11.4% (249 thousand tons).

VI. Production costs and prices

The break up of the USSR caused many problems for the livestock sector in Ukraine. A lack of markets, widespread poverty and highly inefficient production made this sector lag behind in post- USSR agrobusiness. The Government of Ukraine aggravated the problem by prohibiting private companies from decreasing livestock inventories, despite the fact that inefficient livestock production was causing huge losses to farmers.

This practice of maintaining livestock inventories remained in place for more than ten years, usually in the form of verbal orders was partially abandoned only in 2004. In fact, it was not fully abandoned until the present time, as in order to lease land, agricultural companies often had to conclude verbal deals with the local governments where they pledged to maintain livestock inventories. In some cases, companies did this spontaneously.

The supply of meat remained abundant and processors took advantage of the situation, buying raw material cheaply, exporting excess produce (mainly frozen beef) and enjoying high profits. Also processors were not motivated to invest in their facilities as the supply of raw material was plentiful and sales were easy owing to low prices.

Thus, the productivity of animals mainly took a natural course, as private owners tried to select the more productive animals and eliminate the unproductive ones. Still, the productivity of meat and dairy animals remained low compared with productivity in the EU and other developed countries, as modern technologies were not being adopted in the country.

While large companies largely ignored the livestock sector, households and farmers increased livestock inventories. This was initially due to the need to feed family members, as jobs were scarce and salaries tended to be low, not allowing for the purchase of meat. Some of the meat produced exceeded domestic needs and ended up on the market. The market meat sales provided a good additional source of income for many rural and suburban families and the livestock inventories in households continued to grow.

When meat supply and demand balances finally became relatively tight and meat prices increased, industrial companies took advantage of the emerging opportunities in the meat sector. First, major investments were made in the poultry subsector, where turn over was the fastest. This was followed by large investments in the egg business. Considerable investments were made in pig production, while the cattle raising segment lagged behind. In 2017, only 39 percent of cattle were kept by professional farmers and the remaining 68 percent by household farmers. In 1990, the situation had been the reverse: 86 percent of cattle were bred on large farms.

Cost of production (table 7.1) on the example of «Dniprovska Ptahofabryka», «Agro-Oven», «Niva Pereyaslavlia», «Svarog West Group», processing enterprises «Eurocommers», «LembergMit», «Antonivs′kyy myasokombinat». Data from the period October-December 2017.

Table 6.1. Comparison of production costs of live weight in Ukraine, 2017 year

Production costs of types of meat in EUR (1 EUR = 32 UAH)	beef, per/kg	pork, per/kg	poultry, per/kg
Total costs	**1,115**	0,851	0,455
Total direct costs	**0,751**	**0,571**	**0,275**
Animal purchases	0,123	0,043	0,013
Insemination	0,003	0,004	0,001
Animal health, hoof trimming	0,061	0,055	0,025
Feed stuff Purchases	0,545	0,459	0,229
Water supply	0,015	0,008	0,004
Other direct costs of fodder production	0,004	0,002	0,003
Total abourrelated costs	**0,302**	**0,224**	**0,156**
Personnel expenses	0,125	0,097	0,064
Rent/leasing machinery	0,056	0,046	0,024
Fuel, lubricants	0,078	0,036	0,032
Energy	0,013	0,019	0,021
Maintenance of machinery and vehicles	0,014	0,011	0,004
Depreciation of machinery and vehicles	0,011	0,008	0,007
Capital costs for machinery and vehicles	0,005	0,007	0,004
Total building costs	**0,035**	**0,035**	**0,017**
Main tenance of buildings and installations	0,008	0,008	0,010
Depreciation of buildings and installations	0,016	0,016	0,009
Capital costs for buildings and installations	0,019	0,019	0,008
Total land costs	**0,025**	**0,019**	**0,006**
Taxes and fees related to land	**0,001**	**0,001**	**0,001**
Other costs	**0,001**	**0,001**	**0,001**

Source: UFEB

The main costs of raising pets are related to feed. In the structure of cost, its occupies up to 62% in the structure.

Table 6.2. Sales price and profitability of live animals in 2017 year

Indexes	**beef per/kg**	**pork per/kg**	**poultry per/kg**
The average selling price of live weight at slaughter enterprise, euro	1,188	1,238	0,594
Cost, euro	1,115	0,851	0,455
Profit, euro	0,073	0,386	0,139
Profitability,%	6,50%	45,37%	30,58%

Source: UFEB

The profitability of cultivation is the largest in the pig industry, and the smallest in cattle. First of all, it is connected with cattle breeding based on dairy production on a residual basis. But compared to the Netherlands and other European Union countries, profitability is much higher.

Table 6.3. Comparison of processing costs of live weight in Ukraine, 2017 year

Production costs of types of meat in EUR (1 EUR = 32 UAH)	**beef,per/kg**	**pork per/kg**	**Poultry per/kg**
Total	1,547	1,768	1,059
Purchase	1,188	1,238	0,594
Logistics	0,020	0,020	0,010
Maintenance of machinery and vehicles	0,004	0,015	0,011
Watersupply	0,000	0,030	0,021
Fuel, lubricants	0,011	0,016	0,019
Energy	0,013	0,038	0,042
Personnel expenses	0,180	0,160	0,125
Utilization of waste	0,056	0,010	0,009
Packaging	0,030	0,160	0,160
Depreciation of machinery, equipment and vehicles	0,009	0,013	0,008
Depreciation of buildings and installations	0,007	0,011	0,009
Taxes and fees related to land	0,002	0,002	0,002
Realization costs	0,012	0,032	0,028
Other costs	0,015	0,023	0,021
Kill out percenrage	69,40%	78,10%	73,20%

Source: UFEB

It is important to compare the cost of processing with the understanding of the real slaughter out of live animals. If the slaughtering pigs weighs 100 kg, then the actual quantity of products to be sold will be over 78 kilograms.

Table 6.4. Prices of realization and profitability of production of living animals in 2017 year

Indexes	**beef per/kg**	**pork per/kg**	**poultry per/kg**
Average price of wholesale sales of 1 kg of meat on the bone (half-carcass)	2,381	2,581	1,750
Average selling price of meat on the bone at the slaughterhouse out of 1 kg of live weight, euro	1,653	2,016	1,281
Prime cost, euro	1,547	1,768	1,059
Profit, euro	0,106	0,248	0,222
Profitability,%	6,86%	14,06%	20,99%

Source: UFEB

The profitability of processing is much lower than cultivation.

The retail meat sector in Ukraine was rather inefficient. The key constraints included a long supply chain, a lack of recognized standards regarding quality and packaging, breaches in cold chain preservation, weak logistics and a lack of control over a significant portion of the meat, affecting the safety and quality of the products traded. Another serious concern related to heavy administrative control, as the government continued to control retail prices, frequently giving impetus to meat sales outside of organized retail channels where price control could not be enforced.

According to our estimates, only about 30 percent of meat in Ukraine was sold through retail chains, while a major portion of the remaining meat was traded through open market place and small shops.

According to official statistics, retail trade of meat and meat products reached 32.2 billion UAH in 2016, which was 47.8 percent more than in 2008. However, in terms of volume, sales of meat and meat products dropped by more than 5 percent. It should also be mentioned that in 2009 and 2014, retail trade of meat decreased due to the insolvency of many retail chains heavily affected by the global financial crisis and Ukrainian crisis, which has also affected their supplies in the first half of the year.

Retail chains in Ukraine continued to develop rather rapidly after recovering from the severe financial crisis. During the crisis, the retail sector enjoyed a significant degree of

consolidation – a key factor affecting the meat industry in general. Now, retailers tend to seek reliable supply sources, producers who can supply products of consistent quality year around.

The growing demand for quality by the retail chains motivated the introduction by producers of meat and meat products of international food safety and quality management standards such as Hazard Analysis and Critical Control Points (HACCP), International Organization for Standardization (ISO), etc.

As of today there are three key distribution channels for meat and meat products:

(I) producer – retailer;

(II) producer – wholesaler – retailer;

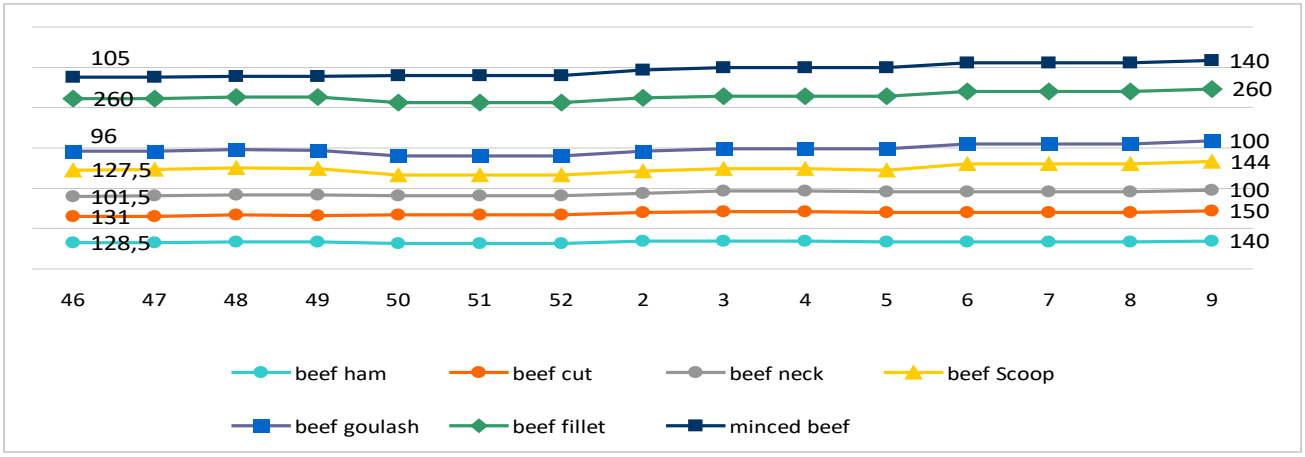
(III) producer – producer-owned distributor – retailer.

There is another interesting marketing channel developing rather quickly in the country: Producer – wholesale market – retailer/HoReCa. In this case, "wholesale market" is not a participant of the value chain but is a place where transaction takes place. A producer could sell directly to a retailer or HoReCa in a wholesale market through its own outlet or sell to a wholesaler who rents a stand in a wholesale market. It was expected that by the end of 2012 there would be at least three and possibly six wholesale markets with meat pavilions near the largest cities in Ukraine .Producers of inexpensive meat products usually tried to sell their products to wholesalers who redistributed them via open markets.

More expensive products were sold either via distributors or directly to retailers. While many large meat companies tried to sell significant volumes via retail chains, the largest meat producer of Ukraine, Myronivsky Hliboproduct, developed its own branded retail network using the franchising approach. This helped the vertically integrated company to preserve margins at all levels of the meat business and to be very price competitive.

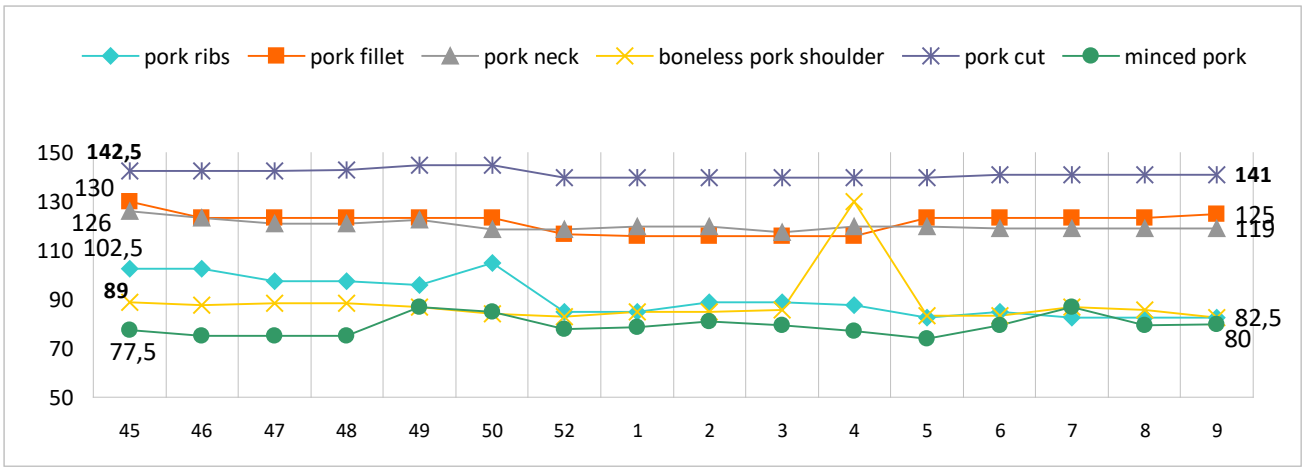
Packaged meat comprises about 32–35 percent of sales in the retail chains. Therefore, the total percentage of packaged fresh meat in retail sales represents around 10 percent. Usually, the packaged meat is shrink-wrapped. A significant share of chicken meat is packaged by the company-producer, while most of the beef and pork are packaged in the distribution centres of the retail chains or in the stores.

Chart 6.1. Prices for beef segments in 2017-2018 years (UAH / kg)



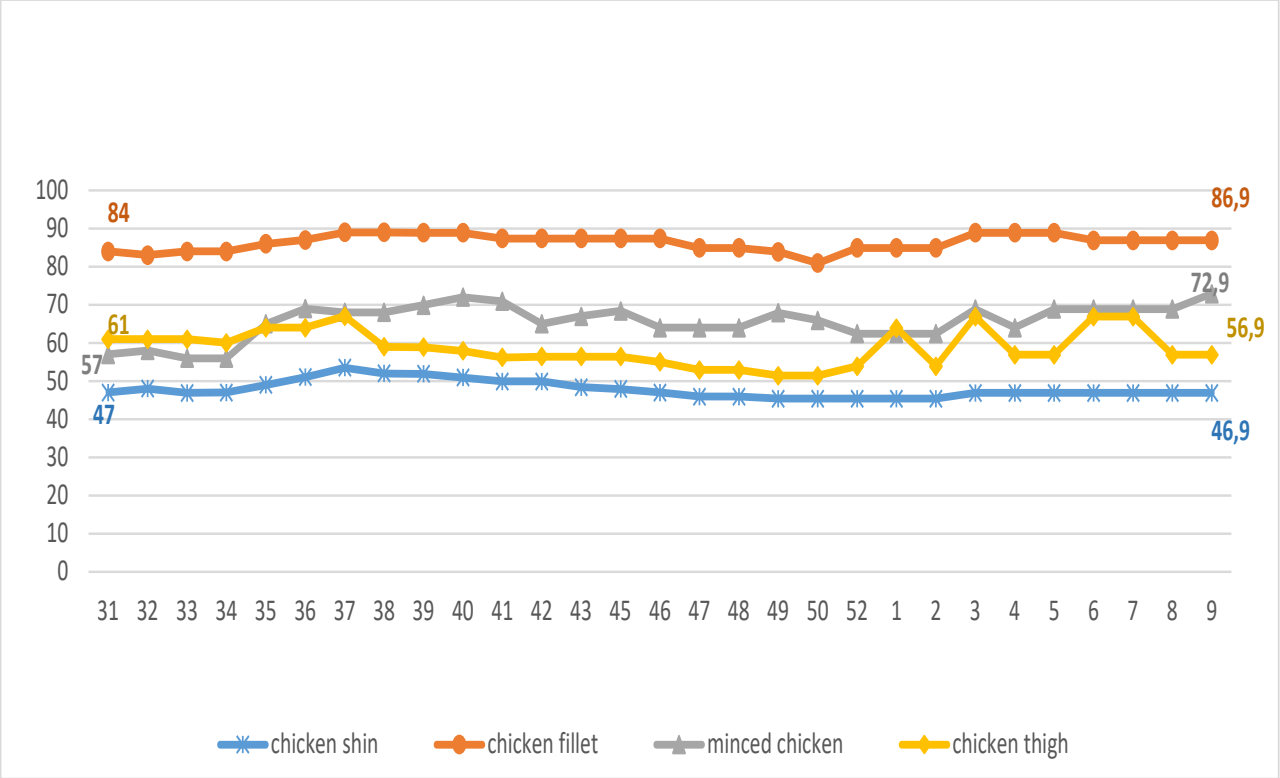
Sourse: Shuvar info

Chart 6.2. Prices for pork segments in 2017-2018 years (UAH / kg)



Sourse: Shuvar info

Chart 6.3. Prices for chicken segments in 2017-2018 gg. (UAH / kg)



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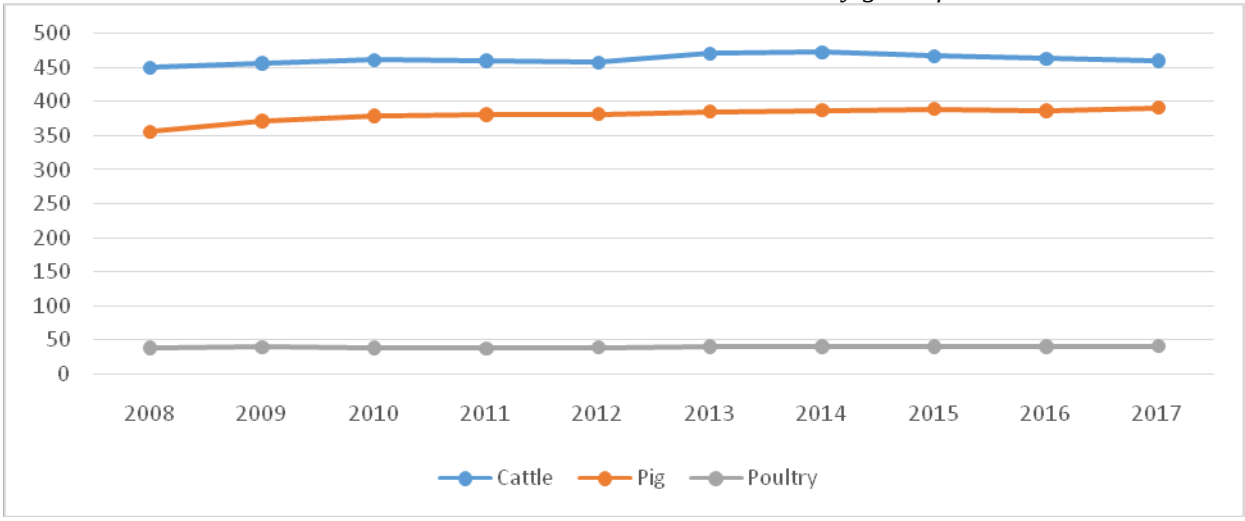
VII. Performance

Key indicators of meat production Ukraine and quality indicators are meat production per day, feed cost per kg, weight gain, average age at slaughter, use of antibiotics ect. At the same time evident tendency to withdrawal from the market inefficient producers, thus there is a tendency to increase meat quality and production performance against the background of the decrease in production in the whole Ukraine

From an analysis of average daily gains in weight of cattle and pigs in Ukraine from 2008 to 2018, it can be seen that the trends improved. In that period, the average daily weight gain of cattle increased by 4 percent and that of pigs by 7 percent. The indicators for the commercial farms are certainly much better. But at big farms the average daily weight gain is bigger in 22-28% at least. These numbers are based on countrywide information and included both household farms and commercial farms.

Chart 7.1. Daily gain of live animals in Ukraine



Source: State Statistics Service of Ukraine

The productivity of the livestock sector in Ukraine gradually improving in 2008-2018.

The improvement of the efficiency of cultivation is also indicated by the reduction of the retention days to the moribund condition of the livestock. The time spent keeping pigs decreased by 16.5%, and by 14% - the poultry. Cattle keeping time was reduced slightly (due to the lack of effective feeding technologies for young animals).

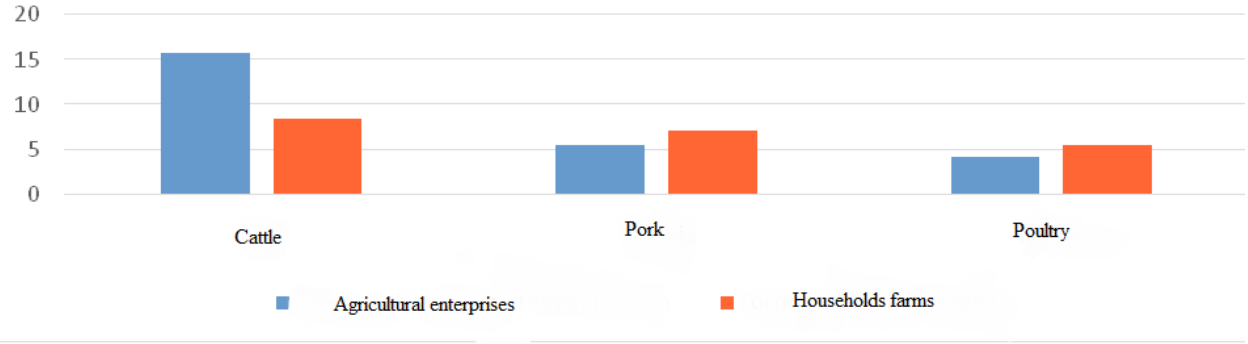
Poultry is the most efficient subsector in the meat industry due to the application of optimal feed conversionratios and days-to-slaughter rate by the leading companies.According to the management of MHP, its performance in the poultry subsector was better than that of similar companies in Brazil and the United States of America. Its average days-to-Ukraine slaughter rate was reported at 35 to 42 days and it has captured almost half of the chicken meat market.

Table 7.1. Days from birth to slaughter (average in Ukraine)

Animal specimen	2008	2009	2010	2011	2012	2013	2014	2015	2016
Cattle	327	328	319	316	311	310	307	309	306
Pigs	249	242	237	232	229	221	218	211	208
Poultry	62	60	57	54	51	49	47	43	41

The cost of feed in households and farms is fundamentally different because of different types of fattening and retention periods. Particularly noticeable difference in this example cattle. In the farms of the population, except grains, grapes are used, which provides weight gain. In Ukraine, for the industrial cultivation produced more than 6 million tons of conventional feed to feed more than 740 companies.

*Chart 7.2. Consumption of conditioned mixed fodders * per 1 kg of live weight in Ukraine, 2017*



Source: FAO

*conditional feeds - the energy equivalent of 1 kilogram of dry bran.

Table 7.2. Consumption of conditioned feed for growing 1 kg of weight 2008 – 2016

A ll types of farms	2008	2009	2010	2011	2012	2013	2014	2015	2016
Per 1 kg of live weight									
Cattle	13,45	13,1	12,95	12,7	12,6	11,9	11,95	12,2	12,05
Pigs	8,75	8,2	8	7,45	7,25	7	6,6	6,55	6,4
Poultry	5,8	5,55	5,35	5,2	5,1	5,15	5	4,85	4,9
Commercial farms									
Per 1 kg of live weight									
Cattle	16,7	16,4	15,8	16,2	15,9	14,9	15,2	15,3	15,7
Pigs	9,1	8,1	7,8	7,1	6,6	5,9	6,2	6	5,6
Poultry	5,1	4,9	4,8	4,7	4,4	4,2	4,1	4,3	4,2
Household farms									
Per 1 kg of live weight									
Cattle	10,2	9,8	10,1	9,2	9,3	8,9	8,7	9,1	8,4
Pigs	8,4	8,3	8,2	7,8	7,9	8,1	7	7,1	7,2
Poultry	6,5	6,2	5,9	5,7	5,8	6,1	5,9	5,4	5,6

The situation was not good in the pork subsector and far from good in the cattle subsector, mainly because smaller farms played a more important role in these subsectors. However, the leading companies in the pig subsector were already achieving feed conversion rates similar to those achieved in the EU countries and the United States of America.

In the cattle subsector, the situation grew worse because, with slowing exports, the domestic demand for more productive meat-type breeds of animals weakened. Therefore, the share of dairy breeds of cattle in total cattle production increased, which negatively affected feed conversion rates.

The prices of feed are the main factor in the development of livestock in Ukraine. After all, Ukrainian farmers always compete with traders in the price. The feed market is export-oriented, and the supplier of feed for feed always has a choice to sell for export, or to the domestic market.

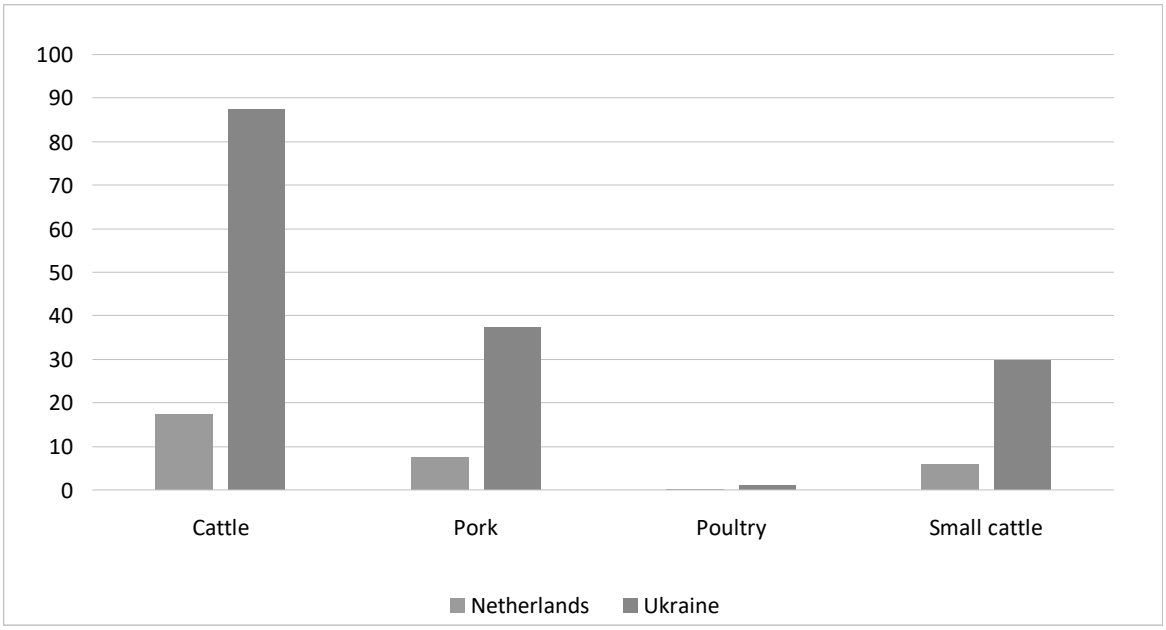
Table 7.3. Prices of major raw material feed in Ukraine 2008-2017 years

Prices for agricultural products, USD/t	2008 year	2009 year	2010 year	2011 year	2012 year	2013 year	2014 year	2015 year	2016 year	2017 year
Corn 4 th group. State standards - 2010 г. (demand, CPT, processing)	168,40	159,20	156,35	206,68	213,80	224,63	155,33	132,92	149,09	167,17
Fodder barley (demand, CPT, processing)	187,07	95,56	142,20	208,82	218,21	226,39	146,33	133,42	141,37	160,92
Fodder corn (demand, CPT, processing), UAH/t	194,46	119,20	164,06	213,71	207,52	202,90	146,27	124,05	159,25	161,39
Wheat bran (offer, EXW)	85,20	88,40	86,50	91,20	97,70	96,40	101,20	109,50	101,40	106,96
Sunflower oil cakes (offer, EXW)	280,62	144,62	225,44	250,83	248,89	326,43	230,14	222,87	213,59	179,29
Soy oil cakes (offer, EXW) EXW)	657,15	630,49	528,83	622,15	637,50	752,32	555,02	442,55	455,43	460,78

Average feed prices in Ukraine have fallen by 14-21% over the past 10 years. This trend is linked to an increase in grain production in Ukraine and a global decline in prices for basic feed.

Antibiotics and their use in Ukraine are difficult to investigate, since most of the market is not regulated in the formulation and in the legislative field. Most active ingredient can be bought freely.

Chart 7.3. Comparing the use of antibiotics in cattle 1 person in active substance grams/year



The difference in the use of antibiotics between the Netherlands and Ukraine reaches 5 times. Existing sanitary norms for the content of meat and meat products of certain types of antibiotics:

- Laevomycetin and tetracycline not more than 0,01 units/g;
- Grisin not more than 0,01 units/g;
- Bacitracin not more than 0,01 units/g;

Officially Ukrainian companies adhere to these norms regarding the residue of the active substance.

VIII. Characteristics of facilities and animals raised

Ukrainian beef sector is characterized by technological backwardness both in terms of genetic resources used and in terms of facilities and equipment. The main breeds are imported from the EU and North America. The stock of Ukrainian beef animals has survived on state nurseries and peasant farms.

Table 8.1. The structure of breeding livestock of beef breeds in Ukraine

Breed	**Share, %**
Aberdeen-Angus	25,0%
Volins'ka m'yasna	26,0%
Bos Taurus	4,0%
Light Aquitaine	0,2%
Sira ukrainska	2,8%
Simmental beef	7.0%
Ukrainska m'yasna	6,0%
Pivdenna m'yasna	11,0%
Poliska m'yasna	14,0%
Other	4,0%
Total	100%

Source: Association of milk producers of Ukraine

Regarding pig breeds in Ukraine, the trend is the following: the species of Landras and Durok, imported from the EU, are represented on industrial farms, and Ukrainian breeds are stored in private farms.

Table 8.2. Pig breeds in Ukraine

Breed	**Share, %**
Landras	22,7%
Durok	19,0%
Welsh breed	2,5%
Big white meat-type hog	21,0%
Mirgorodskaya breed	4,8%
Ukrainska stepova sira	6,1%
Ukrainska stepova bila	4,6%
Poltavska meat-type hog	6,2%
Ukrainska meat-type hog	8,2%
Other	4,9%
Total	100%

Source: Association of pig breeders of Ukraine

In Ukraine, the breeds of chickens practically don't remain. Most of used broilers are imported from the EU.

Table 8.3. Meat breeds of chickens in Ukraine

Breed	**Share, %**
Lehhorn	14,20%
Rosiys′ka Bila	12,30%
Khabbard Kros	11,10%
Brama	6,00%
Kornish	10,80%
Akrez	7,10%
Dominant	8,60%
Adlers′ka	7,80%
Moskovs′ka chorna	8,20%
Other	13,90%
Total	100%

Source: Union of Poultry Breeders of Ukraine

The most of Ukrainian meat processing enterprises prefer to use equipment of foreign origin. The major part of the meat milling and mixing, sausage stuffing and thermal processing equipment installed at Ukrainian meat processing plants is originating from Germany, sausage lines, equipment for poultry and pig come from the Netherlands and Austria, refrigerators - from Germany and Czech Republic. Equipment of Convenience Food Systems, Bertch, Laska, Matimex, SCHALLER LEBENS MITTEL TECHNIK, AUTOTHERM, Travaglini, Big Dutchman are widely presented in the Ukrainian market.

Ukrainian producers are represented by Barskiy plant

There are main trends in equipment for meat processing:

- increasing the level of automation and robotic system;
- providing of high safety level to avoid risks of loss product quality and safety in raw material processing.

  This includes a high level of sanitation and hygiene. These problems are solved with increasing production control and minimizing the influence of the human factor;
- providing of appropriate ergonomics machines which provide easy service, clearing, usability, operator friendly and reduces the risk of occupational injuries;
- reducing of energy resource consumption of equipment for reducing the cost of finished products.

The best sales of equipment fall in summer and autumn period that can be explained by preparation for mass slaughtering of livestock.

The market of packaging materials for meat products has been developed rapidly. Unpacked meat is sell mainly at the street markets. The consumption culture is being changed and improved, and more people prefer to buy meat and meat products in supermarkets. For the moment, major part of meat products sold in retails packed.

All manufacturers try to offer the irown handy package. Specially made composition of mixed gas can inhibit degradation processes in the product and keep its natural properties. The following types of individual packaging of meat and meatproducts are used:

- polystyrene trays and polymeric film (fresh meat);
- polymeric film for vacuum packing (processed fresh meat, sausages);
- special sausage casing.

IX. Health status

Animal diseases can have a negative impact on animal being, public health and the economy. This particularly applies to infectious diseases like, Q fever and swine fever. Farmers, vets and the government should work together to control these diseases.

The member states of the European Union (EU) have agreed which animal diseases are so serious that governments always need to be involved in fighting them. These diseases are known as 'notifiable animal diseases'.

Diseases that are notifiable:

- can spread quickly, also to other EU member states;
- can have a devastating impact on the animal population affected;
- can not prevent or control by conventional means;
- can cause serious economic damage to farmers and EU member states.

Table 9.1. Diseases of livestock and poultry

Disease	**Date of registration an outbreak of disease in Ukraine**	**Region of the spreading of disease**
Avian influenza	2008 year 2016 – 2017 years	Crimea; Kherson region; Chernivtsi region
Pasteurellosis	2003 year	Black Sea coast of Kalanchatsky district, Kherson region (massive death of wild waterfowl, 9000 carcasses).
Newcastle disease	1943 year	Lugansk region
African plague	Last in March, 2018	17 regions of Ukraine (more than 340 cases and 102 thousand infected pigs)
Swine flu	2009 year 2015 year	Western Ukraine
Anthrax	2006-2012 years	Cherkasy and Zaporizhzhya regions. Quarantined, vaccinated 214 heads of cattle. Conducted disinfection of infected premises.
Bluetongue	Not available	Officially free. There were no reported cases.
Aujeszky's disease	Not available	

Bovine spongiform encephalopathy (BSE)	Not available	
Leucosis (EBL)	2016- 2017 years	On February 28, 2017 remained 1 414 sick animal bovine leucosis. 2016 were detected 199 cases of leucosis.
Rabies	2016 year	In 2016 were detected 869 cases of bovine leucosis.
Bovine tuberculosis	2016 year	Zhytomyr region
Q fever	Not available	
Salmonellosis	2017 year	Odessa region, processed swine food
Leptospirosis	2017 year	Kyiv, Odessa, Kherson region, pigs and bovine
Campylobacter fetus ssp. venerealis and Tritrichomonas foetus	Not available	
Yersiniosis	Not available.	
Listeriosis	Not available	
Foot and Mouth Disease (FMD)	Last occurrence in 1988	Zhytomyr region

Source: State service of Ukraine for food safety and consumer protection

X. Legislation

Foodstuffs play a very important role in the human activity due to the fact that they are the basis of providing the required level of food security in each country, which is almost eternal problem as the world population is growing stronger and stronger over time. According to UN projections, the number of mankind will increase to 9.3 billion people to 2050 while crop production will increase only by 15%, and protein content reduced by 20%. So the problem of food security will not be reduced with the change in global political system or with scientific and technological progress of world civilization. Ukraine also faced the problem of malnutrition of the population. The purpose of this study (or chapter) is to present the main results of the comparison study of food safety in Ukraine and EU, fundamental determinant that shape it so that it could identify the main routes to increase levels of security, like:

- Environmental protection;
- Animal welfare and health;
- Food safety;
- Veterinary requirements regards to trade between EU and Ukraine and third countries;
- Identification and registration.

For EU food manufacturers, the outlook also seems to be positive. As Ukrainian legislation is progressively been brought in line with EU standards, EU exporters will encounter less technical trade barriers. Similar regulation will help to reduce costs for EU food business operators and will create favourable conditions for investment. That having the risk of proper implementation and enforcement of new Ukrainian food legislation remains a concern for EU business.[2]

Food safety

In 2014-15, the food safety system modification process was sped up by political developments related to the signature of the EU-Ukraine Association Agreement, which has been fully in force since 1st September 2017. However, most of the Association Agreement had already been operational by that time with many political and sectoral parts of the agreement being provisionally applied since 1st September 2014. Its section on trade, known as the Deep and Comprehensive Free Trade Area (DCFTA), has been provisionally applicable 1st January 2016.

Since then, Ukraine has introduced significant changes to the Ukrainian sanitary and phytosanitary regulation, recognising that food safety is one of its priorities.

[2] https://www.lexology.com/library/detail.aspx?g=fd0d4f2c-ce3f-4f31-ad91-84cc970743db

Food safety standards, officially entitled “Sanitary and PhytoSanitary Measures (SPS)” are required to facilitate trade in agricultural and food commodities and plants covered by SPS regulations, and safeguard human, animal and plant life or health. Ukraine commits to do this comprehensively through alignment with a mass of 255 product specific EU regulations.; the big advantage of EU-based regulations is that it assures not only high health standards, but also access to European and international markets.

In the Ukrainian legal system the regulation of food distribution had its own history. For a long time it was based on the Soviet approach, where the state determined the standards of food production and controlled its observance.With the accession to the WTO in 2008, Ukraine joined the international WTO agreements, including the Agreement on Agriculture, the Agreement on Sanitary and Phytosanitary Measures and began appropriate harmonization of its legislation with the requirements of international law.[3]

It should be noted that the reform was launched before the AA entry into force as a result of the adoption in 2014 of Law “On amendments to some legislative acts of Ukraine concerning food” designed to harmonize Ukrainian legislation with the EU in the field of safety and food quality, ensuring a high level of protection of human health and consumer interests and the creation of transparent conditions for economic activities, increasing competitiveness of domestic food production and reducing their prices.

The EU sets forth the rules of procedure of the Sub-Committee on SPM management in Council Decision 2017/189 of 16 January 2017. Ukraine approves the organization of work of the Sub-Committee and its working group in Resolution of the Cabinet of Ministers of Ukraine № 646 of 8 July 2015. Coordination of work is performed by the Government Office for European and Euro-Atlantic Integration of the Secretariat of the Cabinet of Ministers of Ukraine, Agriculture Ministry is the Ministry responsible for the organization of the Ukrainian working group of the Sub-Committee, its head – Deputy Minister of Agriculture and Food of the European Integration.

However, following amendments to the Law of Ukraine no. 771/97-BP, the State Register now also comprises additives which have been approved in the EU as safe for human consumption. That allows food additives compliant with Regulation (EC) No 1333/2008 to be regarded as permitted under the Ukrainian law.

On 18 May 2017, the Ukrainian parliament adopted the Law of Ukraine no. 2042-VIII of 18 May 2017 «On the state control over compliance with the legislation on food, feed, by-products of animal origin, health and welfare of animals», which has been developed with an

[3] https://arzinger.ua/ru/press/publications/112698/

objective to harmonise the Ukraine food safety system with the EU rules set by the Regulation (EC) No 854/2004, Regulation (EC) No 882/2004 and Regulation (EC) No 669/2009. The document contains in particular a set of requirements for the organisation of state control of food, feedstuff and animals by representatives of a single controlling authority, which will perform checks of food products – a necessary pre-requisite for Ukrainian exports to the EU. Importantly, the adoption of this law will introduce a system of control of food safety in Ukraine which is supposed to be similar to the European one.

The law is one of the obligations for Ukraine under the Association Agreement and its adoption has been positively seen by the European Commission. It is expected that the implementation of the law, which will enter into force on 4 April 2018, will facilitate the activity of food business operators.

Environment

The Nitrates Directive is a main area of legislation that puts major constraints on livestock production in the EU. This Directive, with an explicit overall objective aimed at water quality, includes specific measures related to the agricultural sector that are to be implemented by Member States. This policy area targets specific environmental objectives, but also identifies the tasks that Member States need to implement. Many intensive farming systems are affected by this Directive. In several countries, up to 80% of the dairy producers face constraints from the Directive. Some 10% of the beef producers in the EU produce excess nitrogen from livestock manure. The amount of nitrogen from livestock manure at such farms exceeds the equivalent of 170 kg nitrogen per hectare, although some derogations are allowed for grassland in Germany and the Netherlands that allow for 250 kg nitrogen per hectare.

Implementation of this Directive requires livestock farmers to manage soils (e.g. establish cover crops in the autumn), livestock management (e.g. reduce overall stocking rates on livestock farms), manure management (e.g. increase the capacity to store manure and take measures to dispose of excess amounts of manure in non-growing periods) and farm infrastructures (e.g. fence off rivers and streams from livestock).[4]

Implementation of the European Directive on national emission ceilings for certain atmospheric pollutions (including ammonia) include the implementation of measures to reduce emissions of ammonia at farm level. Such measures mainly affect dairy and beef producers in the north-west of the EU.

[4] https://www.kmu.gov.ua/storage/app/media/uploaded-files/EU%20Law%20Developments%20Review%20for%20Ukraine%20No%2014.pdf

Directives to protect birds and habitats put considerable constraints on European farmers, but compensation programmes are widely available to support farmers taking measures appropriate to protect birds and habitats in rural areas. Areas protected under these two directives are designated as Natura 2000 area Implementation of the Nitrates Directive and the Integrated Pollution Prevention and Control Directive (IPPC Directive) are the main areas of environmental legislation affecting the production of pigs and poultry in the EU. Measures need to be taken to control pollution from installations for the rearing of poultry and pigs. The IPPC Directive applies to larger pig and poultry farms with a capacity of more than (I) 750 sows, (II) 2,000 production pigs over 30 kg, (III) 40,000 poultry. The aim is to apply the best available techniques to prevent or reduce emissions to air, land and water from these activities. A production permit is required, including an assessment of environmental impact. A fee is charged to cover the costs of the assessment. An odour or noise management plan is required if there is a potential of odour or noise complaints.

The State Ecological Inspection Service (SEIS) of the Ministry of Environment and Natural Resources of Ukraine (MENRU) is responsible for radiological and environmental control. Erosion of black soils is a main concern to farming in the Ukraine. Furthermore, land is degraded from uncontrolled and high use of fertilizers and pesticides and the use of low level technologies. Both surface and groundwater are contaminated.

The Law on Protection of the Natural Environment is the main area of environmental protection. Among others, it regulates the use of mineral fertilizers. There is very little legislative control over the management of nutrients and pesticides. Mainly for economic reasons, the use of nutrients and pesticides has declined considerably since the early 1990s. Benefits to the environment are a major side effect.

Animal welfare

The EU has extensive animal welfare legislation. This is based on the five freedoms (Brambell, 1965):

1) freedom from hunger and thirst,
2) freedom from discomfort,
3) freedom from pain, injury or disease,
4) freedom to express normal behaviour;
5) freedom from fear and distress, and on the recognition that animals are sentient beings (EU, 2010; EC, 2012).

Council Directive 98/58/EC is the basis for the protection of animals kept for farming purposes. For several species, detailed Directives have been issued. Legislation has been issued

for the farming stage, transporting, slaughtering and killing. The most important standards are for natural behaviour, space, feed and water supply, lightning, surgeries, veterinarian aid and good stockman ship. Legislation is still partly in the process of implementation, for example group housing of pregnant sows (female pigs). European legislation forms the basis, partly complemented by national top-ups. Market standards are being developed based on legal standards.

Ukraine has been awarded an 'E' ranking for animal welfare by the World Animal Protection index for animal welfare. This is similar to that of China, Nigeria, Thailand, Turkey and Venezuela. The Ukrainian Law on the Protection of Animals from Cruelty (o. 3447-IV) was adopted in 2006 with the aim of protecting animals from suffering and death as a consequence of cruel treatment, to protect animals' natural rights, and to reinforce morality and compassionate behaviour in society. The law covers farm animals, domestic animals, wild animals, animals used in research, and animals in zoos and circuses. Despite this positive framework, the responsible competent authorities have failed to introduce sufficient secondary legislation in order to meet their obligations. There is no official state body with the competence to check whether animal owners or legal entities obey national law in the field of animal welfare

Article 64 (1) of the Association Agreement, Ukraine has an obligation to align its law with the EU acquits on animal welfare. Article 64 (4) states that Ukraine shall submit a comprehensive strategy to the European Commission on sanitary and phytosanitary law, including on animal welfareIn March 2015, Ukraine's Ministry of Agrarian Policy and Food formally agreed to establish a Working Group with the task of approximating Ukraine's animal welfare law to that of the EU. The Director of the Ministry's Livestock Department agreed to this during a Round Table in Kiev in December 2014, organised by the Ministry of Agrarian Policy and Food, and CIWF. Ukrainian authorities have prepared drafts to align Ukraine's law with that of the EU on farm animal welfare. However, the progress on getting these approved by Ukrainian authorities and incorporated into their law has been slow.

Veterinary requirements

The veterinary certification requirements for the introduction into the EU of meat products in Regulation (EU) No 605/2010. Point II.2 of the model certificates, in Part 2 of Annex II to the Regulation, requires that raw milk comes from holdings registered in accordance with Regulation (EC) No 852/2004 and checked in accordance with Annex IV to Regulation (EC) No 854/2004.

Ukrainian law requires the SSUFSCP to maintain a positive list of eligible countries and positive list of eligible facilities for export of food products of animal origin into Ukraine. The

registers are to be published on the official website of the Authority. At this point the SSUFSCP website accommodates only a list of bilateral veterinary certificates and list of inspected foreign facilities (in Ukrainian). According to the Law 1602-VII, all countries and exporting facilities that have a history of supplying the Ukrainian market before September 20th, 2015, will be automatically included into the list of approved countries/facilities. No lists were officially published when this report was drafted. One shipment from a U.S. exporting facility that had a history of exporting to Ukraine was rejected due to lack of the registration procedure in December of 2015.

On April 1, 2014 the Ministry of Agrarian Policy and Food of Ukraine empowered Order 118 «On the Recognition of Equivalency of the EU Control System for Manufacture and Circulation of Animal Origin Products and Raw Materials». This Order recognizes the official EU production and control systems for products of animal origin and raw materials as equivalent to Ukraine's system of food safety and quality. This Order opens the way for product imports from facilities approved by the European Commission and included in the appropriate registers. A European number is recognized as a necessary and sufficient condition for such imports. For products that are not included in EU registers, the Order provides two alternative options:

Import from non-listed facilities can be allowed after individual inspection of such facilities by Ukraine's Veterinary and Phytosanitary Service with consecutive introduction into Ukraine's register of approved facilities; Recognition of the exporting country's competent authority equivalence after a system audit of the safety system.

All products subject to veterinary inspection must be accompanied by the original veterinary certificate at the point of entry. The SSCUSFCP will conduct all document verification at the point of entry. Sampling and testing may be conducted at the custom-bonded warehouse at the destination customs office. The requirements for products that are subject to state veterinary surveillance and control are governed by Order #71, which was adopted by the State Veterinary and Phytosanitary Service (SVPS) on June 14, 2004. The order contains a complete list of products under their control and lists the requirements for each product. Maybe add here that (draft) order 71 is being amended, but uncertain when this will happen.

Identification and registration

In the light of the Bovine Spongiform encephalopathy (BSE) crisis Union rules on the identification and traceability of bovine animals were re-enforced in 1997 -Regulation (EC) No 820/97 of the European Parliament and of the Council established a regime of individual traceability of cattle by means of:

• Individual animal identification of animals with two ear tags;

• Holding register on each holding (e.g. farm, market, slaughterhouse)

• Individual passport for each animal containing data on all movements

• Reporting all movements to a national database that is able to quickly trace animals and identify cohorts in the case of disease.

Regulation (EC) No 1760/2000 of the European Parliament and the Council which has been reviewed recently:

• introduces EID in cattle (voluntary bases)

• electronic exchange of information (reducing paper word)

• certain derogations for old animals

• modifications on beef labelling (voluntary)

• applicable in 2019

Imported animals (from Third Countries)be «EU re-identified» at the holding of destination at the latest within 20 days it gets into the EU system. The original identification (TC) must be registered in the database/holding register so origin can always be traced back. Derogation: no need to be «EU re-identified» if it goes directly to a slaughterhouse.

The Ukrainian CDB for animals was established in 2003 and is managed by the Agency for Identification and Registration of Animals (AIRA), which is since 2012, under the direct responsibility of the SVPS. The AIRA considers the CDB as being operational since 2004; however, apart some obvious errors in notifications (e.g. notification of the date of birth of a bovine animal in the future), the CDB accepts all types of possible notifications without a previous verification of their credibility or authenticity: the CAs met stated that some "plausibility tests" and automatic flagging in case of wrong notifications will be incorporated into the software in the future.

In addition, the Agency of Identification and Registration of animals, responsible for holding registration, animal identification and all operations related to the operation of the Central Database for bovine animals, is now under the direct responsibility of the SVPS. The Agency has a centralised structure, with a central office, regional offices, district offices and appointed agents.

The requirements for the implementation of the system of bovine identification and registration are laid down in Regulation No 342 of 17.09.2003 on "implementation of identification and registration of cattle": cattle must be identified by the local veterinary service within seven days of birth with a double ear-tag containing the two letter country code UA followed by a unique 10 digit number; the identification must be notified by the keeper or the local veterinary service to the AIRA's local office, which registers the identified animals in the data base .

Movements between holdings have to be reported within 30 days and the period for the notification of slaughtered animals is seven days. The deadline for entering the data notified on paper is 10 days.

Conclusions

The main difference between Ukrainian and Netherlands meat sector is a lack government policies and clusters. The impact of government policies on the development of the livestock sector and meat business in Ukraine is limited. The main reasons for this are:

- lack of available financing (for budget expenditure programmes);
- frequent changes in government policies;
- lack of transparency in the distribution of existing subsidies;
- lack of overall direction and strategy towards improving the competitiveness of livestock and poultry producers.

The main impact on the meat industry comes from international trade regulations and policies. To determine the risks and opportunities of the livestock sector in Ukraine a SWOT analyses has been made (table 12.1).

Table 12.1 SWOT analysis for Ukrainian meat sector

Strengths	**Weaknesses**
• Ample supply of inexpensive feed components; • Favourable tax situation for producers; • Relatively inexpensive labour; • Availability of large land plots at a relatively low cost.	• Technologies and breeding stock are imported, which makes them more expensive than in competing countries; • Lack of long-term strategy for state support and lack of financing for existing support programmes; • Food safety system in process of reform; • Very high costs of capital; • Low incomes of domestic consumers.
Opportunities	**Risks**
• Domestic market potential assuming growing incomes; • Domestic market potential assuming decrease in production by households and smaller self-sufficiency of households; • Vertical integration of large companies (accumulation of added value); • Investments into the industry from crop growing companies; • Potential exports to the EU; • Internalization of the business (expected purchase of foreign companies by Ukrainian leading producers); • Potential for optimization of most resources.	• Possible limitations for imports of produce from Ukraine for other countries; • Vulnerability of Ukraine's economy to global financial crisis; • Poor investment climate and difficult political situation in Ukraine; • Possible cancellation of current tax regime for agricultural producers; • Epizootic risks; • Lack of technologies and normal equipment.

The UFEB specialists conducted a survey on challenges and problems facing the industry over the next 5 years. The survey data of 118 enterprises is presented in the form of Chart 2 as a percentage of the largest number of responses.

The majority of respondents consider the fall in the purchasing power of the domestic market to be the biggest challenge for the industry. According to the State Statistics Service, it was almost 2.5 times in fresh meat and 2 times in ready-to-eat meat products. The lack of a complete animal identification system (due to the large number of livestock concentrated in farms of the rural population) is in the second place. 12% of all respondents are disturbed by the development of the black market for red and white meat which affects the development of the sector itself. Small producers slaughter unidentified cattle on the unregistered or semi-legal production facilities. The problem exists throughout the territory of Ukraine but the largest concentration of illegal slaughter shops is in Zhytomyr, Khmelnytskyi, Vinnytsia and Ternopil regions. These enterprises do not pay taxes and do not adhere to the basic rules of hygiene and slaughter rules. The gray and black market for these products in 2017was estimated at more than $300 million, according to the minimal calculations of the Association of Pigs Producers of Ukraine.

African swine fever, nodular dermatitis and avian influenza are among the most urgent challenges. 13% of respondents are convinced that this question is important. Representatives of the veterinary authorities of Ukraine do not control the situation because of lack of functional powers, in particular in the area of quarantine of the regions. The lack of cheap funding, qualified specialists, corruption and the utilization of veterinary waste is no less important.

During the last 4 years Ukraine has been particularly active in the search for new directions for the export of meat products, but no rapid gains in new markets have taken place. It turned out that this is a complicated matter that requires much effort and readiness to improve product quality and adapt to target markets. The issue of export also depends on the epizootic situation in Ukraine, since the avian influenza in 2017 almost led to a decrease in the volume of exports of poultry, and because of African swine fever Ukraine cannot export pork despite high economic competitiveness. The main players in the market are developing a law on the separation of meat from households and from industrial farms with a 4th level of biosecurity at export. After all, 98% of all cases - infection in households.

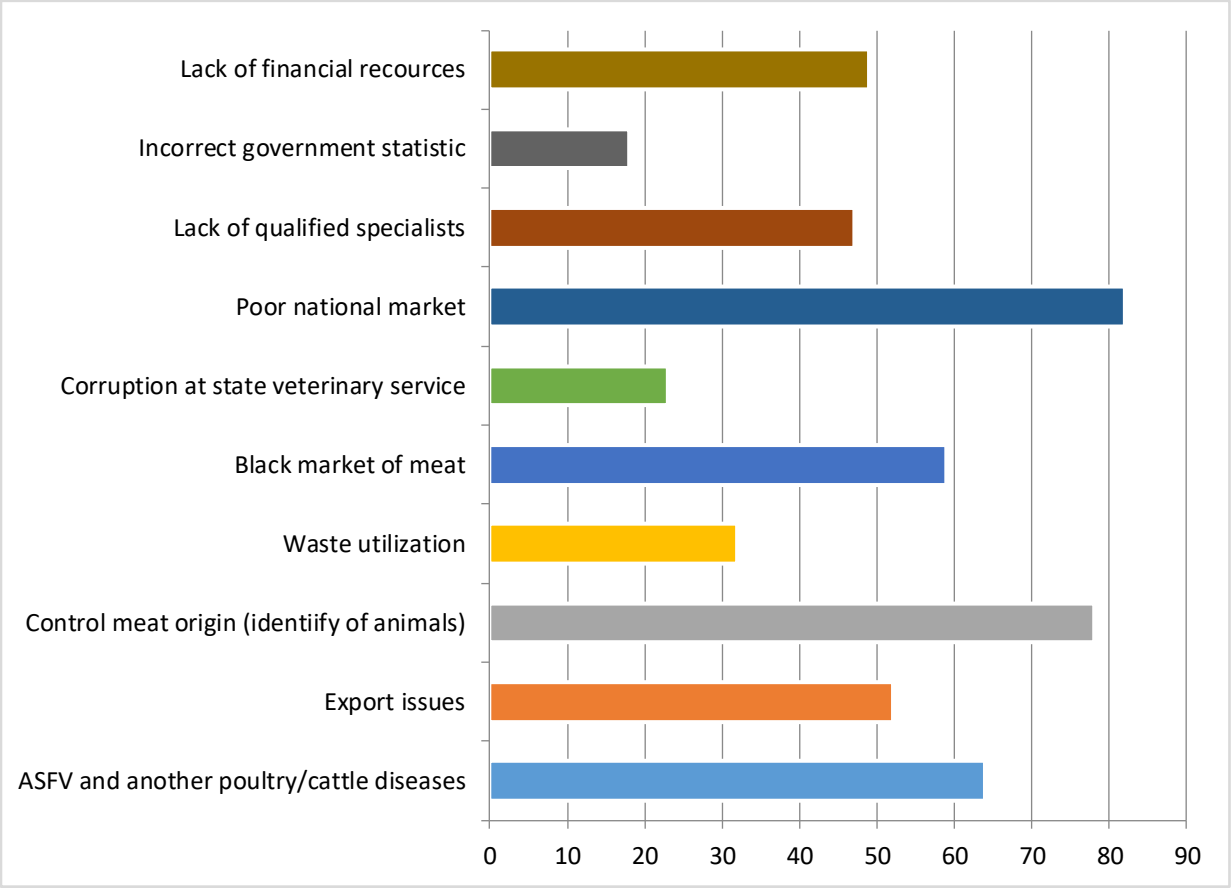
The issue of incorrect state statistics is also related to the lack of real identification of cattle farms. The ratio of the number of pigs grown on farms of rural population to the number of pigs grown on industrial farms is 54% to 46% which is a problem in the real assessment of the total population and productivity of the Ukrainian livestock.

The main gaps in knowledge in the meat sector were the following:

1. Boning of meat of pigs and beef carcasses ─ 32 respondents
2. Evaluate the fatness of the meat with the help of scanner systems before taking it ─ 27 respondents
3. Implementation of HACCP at the enterprises and personnel training ─ 27 respondents
4. Effective associations and cooperation with the authorities, lobbying of interests ─ 21 respondents
5. Cooperation with retail and development of own distribution ─ 19 respondents
6. Deep waste recycling for cosmetics ─ 8 respondents
7. Expansion of export chains to the end user ─ 22 respondents
8. Courses for technologists of enterprises ─ 7 respondents

42% of respondents have also expressed their readiness to discuss the possibility of cooperation with PIB FoodTechLink in terms of personnel training, improvement of the growth and development of institutional cooperation on disease control. Also mainly 60% of respondents needed to cooperate in technologies and equipment.

Chart 11.1: Top 10 challenges in the Ukrainian meat industry (red and white meat)



Source: Questionnaires of UFEB

Recommendations and benefits for potential clients

Based on the study, forecasts are made on the mid-term prospects of the meat sector. Despite the fact that meat production in Ukraine grew in absolute terms during 2008–2017, its contribution to the Ukrainian GDP decreased from 4.4 percent to 3.2 percent. During those six years, Ukraine increased meat production in terms of volume by 39 percent. All of the increase occurred on commercial farms, while production on smallholder (household) farms remained largely unchanged. Poultry was the fastest growing segment of the meat sector. Despite a sharp decline in import tariff protection following WTO accession and the negative impact of the global financial crisis on trade and consumers' incomes, which narrowed domestic profit margins in the short term, the meat sector managed to rebound and continue to grow.

The easing of border protection and enhanced competitiveness resulted in a boost to domestic production for both export sales and import substitution. Exports increased by 76 percent in 2017 compared with 2015 and domestic production rapidly continued to replace imports. Exports of meat and meat products from Ukraine declined during the period of this review owing mainly due to a reduction in beef exports due to lower domestic production and unstable export supplies to the Russian Federation, which frequently imposed sanitary-based meat import bans. In 2008, the situation changed rapidly and imports reached a new record high. Ukraine mainly imported pork and poultry meat, which accounted for 83 percent of all meat imports.

Supported by increasing incomes and urbanization, the Ukrainian fresh meat market during 2008–2017 grew quite rapidly. The share of commercially produced meat in the fresh market grew from 53 percent to 75 percent. The structure of the meat market in Ukraine changed considerably during 2008–2017, as poultry gained a significant market share of the overall meat market. The share of beef in the overall meat market dropped, while the share of pork remained more or less stable. However, the value of the fresh meat market did not grow as significantly due to a decline in average meat prices during the review period.

According to the authors' estimates, only about 45 percent of the meat in Ukraine is sold through retail chains, while a major share of the remainder of the meat is traded in bazaars (open markets) and small shops. The major problems of the retail meat trade include long supply chains, low meat quality, a lack of packaging, breaches in cold chain preservation, weak logistics and a lack of safety and quality control of a significant share of traded meat. Another serious problem of the meat trade is heavy administrative control, as the government continues to try to control retail prices, which frequently results in meat being sold outside of the organized retail sector where price control cannot be enforced.

Over the period studied, 2008–2017, the Ukrainian meat sector rapidly consolidated and integrated. Most of the successful producers controlled all of the elements of the value chain: from production of feed components and compound feed to processing and even retail trade.

The three meat subsectors, beef, pork and poultry, differed significantly. Beef production and cattle rearing were underdeveloped and continued to decline, although it was the only subsector with a positive trade balance. This was also the subsector in which household farms accounted for the highest share of production. Commercial pork production developed rapidly but the pork trade deficit remained high despite some decline mostly due to the strong demand for lower-priced pork trimmings from meat processors.

The share of households involved in pork production was still very significant, although declining. Further development of pork production is questionable due to the limitations of the domestic market and limited export opportunities. Commercial production of poultry, especially broiler meat, is the most advanced segment of the meat sector, and probably of all agribusiness in Ukraine. It is also one of the most concentrated subsectors of Ukraine's economy. Two large players basically control the market although a few smaller companies are still profitable. All of the leading companies in this subsector have a fully integrated production chain. Due in part to their efforts, chicken meat accounts for a high percentage of Ukraine's total meat consumption. Households play an insignificant role in the market of chicken meat.

Fair profitability of the poultry and pork sectors owing to increased vertical integration During the period under review, the profitability of the meat industry subsectors varied. Marginal income in the cattle subsector showed fluctuations from year to year, mainly due to variations in the prices of feed and fuel. The poultry and pig subsectors managed to cover direct costs each year, despite rising feed and labour costs. The positive results in the pig and poultry subsectors were primarily due to a higher degree of vertical integration of production.

Animal feed demand fully covered by domestic production Ukraine is one of the global leaders in the production of feed grains and oilseed meals, which was one of the main reasons for the recent surge of investments in livestock in 2005-2010. The Ukrainian livestock industry mainly uses three feed crops: corn, feed wheat and barley. Soybean and sunflower meal are also widely used in the Ukrainian livestock industry as compound feed components, while rapeseed meal is currently not as popular, despite the large production of rapeseed in the country. Ukraine currently fully meets its own feed demand and coarse grain prices in Ukraine depend mainly on the global grain market situation.

On the one hand, the rapid development and modernization of the meat sector led to a huge deficit of educated, technical professionals in the primary production industry. The companies interviewed, as well as industry experts, estimated that the commercial meat sector has been

losing up to 10–15 percent of its margins due to a lack of knowledge about modern agribusiness practices, poor investments and inability to quickly undertake management decisions, especially in the fields of animal health, feeding, genetics and reproduction.

However, the development potential of the meat industry in Ukraine is significant for the following reasons: a good supply of relatively inexpensive feed components (as Ukraine is a net exporter of feedgrain); a low tax burden (a system of tax concessions in agriculture); high potential for an increase in domestic market consumption, assuming that the economic situation will improve in the near future; and opportunities for the development of large-scale, integrated and efficient production chains which do not exist for the most part in EU agriculture.

The forecast for the future development of the meat sector in Ukraine is moderately optimistic, which suggests that Ukraine could become a net exporter of meat in ten years. However, this scenario is heavily dependent on the further positive development of the global economy and the economic and political situation in Ukraine as well as on continued market access to the Commonwealth of Independent States (CIS) and new market access to the EU and China markets (beef and pork).

Annex 1

Contact list of top Ukrainian meat companies

Branch	Name of the Company	Address	Contact person	M.tel	Type of products
Meat	LLC"Tulchynskyy meat-processing plant"	Kyiv, str. Zelenohirska 8	Karyakina Nataliya	0504100852	beef, sausage wares, semi-finished products
Meat	LLC "Globynskyy meat-processing plant"	Poltav reg., Hlobyne, str. K.Marksa, 228	Syeriy Vyacheslav	80503082082	sausage wares, meat products
Meat	NLC «meat-processing plant« Yatran»	25005, Kropyvnytskyy, str. Bratyslavska, 82	Zabrodskyy Ihor Viktorovych	80504573929	sausage wares, meat products, semi-finished products
Meat	Agroprodservis	Ternopil, str. Tarnavskoho	Kostyk Dmytro	(067) 352 44 96	beef, pork, sausage wares
Meat	Nyva Pereyaslavshchyny	08420, Kyiv reg., Pereyaslav-Khmelnyts′kyy, village Pereyaslavskoe, str. Pryvokzalnaya, 2	Mostipan Oleksandr	0503583790	pork
Meat	LLC «Lubnym'yaso»	Poltava reg., Lubny str.Industrial′na, 26	Naumenko Andriy Volodymyrovych	80504443607	pork beef
Meat	Eurocommerce	Chervonohrad, str. L′vivs′ka, 19	Oksana Mysak	032 494 99 00	meat products
Meat	LLC Antonivs′kyy m'yasokombinat	Kyiv reg., village Mala Antonivka, str. Oleksiya Tskomna, 1b	Andriy Tarasenko	80679409714	beef pork
Meat	LLC «Lemberh-MiT»	Lviv	Yuriy Pavych	0676721914	pork
Meat	Saltovskiy Meat-processing Plant	Krasnodarskaya str., 17-1B Kharkov,	DENYS PARAMONOV	0577118515	sausage, meat products
Meat	Konotopmeat	Sumy region, Konotop, str. General Thorah, 150	Sakhno Alexander	0504013388	sausage, beef
Meat	Kremenchukmeat	Poltava region, Kremenchuk, prov. Heroes of Brest, 48	Drozdova Irina	0675358676	sausage

Meat	Mirgorodsky meat plant	Poltava region, city Mirgorod, ul. Khorolskaya, 46B	Usenko Andriy	0673273267	beef pork
Meat	Myronivsky Hliboproduct	158, Ak.Zabolotnogo Str Kyiv,	Dmytro Los′	0504124610	chicken
Meat	Agro-Oven	Ukraine, Dnepropetrovsk, str. Molodogvardgeiskaya, 32, building №1	Antonenkov Serhiy	672182066	chicken
Meat	Volodymyr-Volynsky poultry farm	Volodymyr-Volynsky district, p. Fedorivka st. N.Uzhviy, 1	Ruslana Knyazyuk	678268900	chicken
Meat	Agro-Industrial Group «Pan Kurchak»	st. Yershova, 11 Lutsk, Ukraine	Olena Mykolayivna	0678281168	chicken, pork, sausage
Meat	Poultry complex Dniprovsky	st. Electrozavodskaya, 3, Zaporozhye	Batyuta Dmytro	504219131	chicken
Meat	Farm "Ular"	Lviv region, Pustomyty district, from Semenovka, st. Shevchenko, 498	Taras	0979458309	chicken
Meat	Poultry processing plant "Bershadsky"	Vinnitsa region, Bershad district, with Voitovka, ul. Lenin, 107	Oleksiy Volodymyrovych	0968626775	chicken
Meat	APK-Invest	1a Shopena street,Rivne village Krasnoarmiyskiy district Donetsk region	Raspopov Roman	623411360	pork, sausage
Meat	Agro-industrial company Rosan-Agro	L'viv city Pasichna, 135	Mamchych Serhiy	503702007	pork
Meat	MEAT PROCESSING FACTORY "ALAN"	Dnipro, street Startova, 26,	Makhota Dmytro	0673344401	sausage
Meat	Zhytomyr meat processing plant	Kyiv	Andrey Turyanskiy	0674053449	sausage
Meat	LLC "Volodar"	Ukraine Kyiv region, Volodarsky district. Lenina, 1	Serhiy Suhak	677154083	turkey
Meat	«Indelika»	22 Slavy Str, Rozhivka village, Brovary district, Kyiv region	Anton Chabanenko	673542804	turkey
Meat	M'yasokombinat «Yuvileynyy»	smt. Slobozhansky, st. Michurina, 5	Yehorov Pavlo	0676311708	sausage
Meat	Ltd "Zabiyaka"	Volyn region	Oleksandr Khveshchuk	501618700	sausage