

SOCIO-ECONOMIC FACTORS OF PROVIDING QUALITY OF LIVESTOCK PRODUCTS IN UKRAINE

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Abstract

In the context of Ukraine's membership in the WTO, the functioning of a free trade area with the EU, the opportunity for agricultural producers to obtain a larger share of the value added is primarily linked to the intensification of trade in domestic livestock products and their processing products. However, their production is one of the high-risk areas and requires a set of measures aimed at ensuring proper quality. Without effective solution of the problem of quality of livestock products it is impossible to ensure its competitiveness in the world market, to guarantee the rational nutrition of the population of the country, the availability of the necessary components for the vital activity of the human body. The aim of the research is to determine the socio-economic factors for ensuring the quality of livestock products in Ukraine.

The scientific and specific research methods were used to solve the tasks set in the work: the historical method; abstraction method; method of comparative analysis; system-structural method.

The main producer of livestock products in Ukraine are households. They do not have the capabilities to implement technologies of keeping, feeding, veterinary services, programs prerequisites for guaranteeing the safety of products, adherence to the HACCP principles. In Ukraine, real technical, economic and organizational-economic prerequisites for ensuring the safety and quality of livestock products are created only in the poultry meat sector. During 2015-2017, the trends in production of almost all types of livestock products except poultry and honey were identified. One of the reasons for this situation was, firstly, decreasing in capital

investment in the livestock sector, and secondly, the low profitability of production of livestock products in the context of accelerated growth in prices for resources. It is proved that insignificant market (price) incentives should be supplemented with instruments of state assistance to improve the quality parameters of products on the basis of specialized enterprises. The necessity of state support for the production of livestock products based on small and medium-sized enterprises is substantiated. This will effectively combine the processes of increasing the production of livestock products with the environmental friendliness of production and steady improvement of quality. It is shown that the low quality of certain livestock products in Ukraine is caused by insufficient living standards of the population and low incomes of the majority of households, which cause them to consume low quality products. It is determined that the problem of guaranteeing the quality of livestock products in Ukraine has deep roots cause due to the influence of socio-economic factors. Therefore, a comprehensive approach is needed to solve it, which is not limited to improving the efficiency of the state control system and successfully harmonizing of the Ukrainian technical regulation system with the European one.

The problem of low quality and the danger of livestock production requires a systematic approach for its solution, which is not limited, in particular, by measures to improve the system of state control and ensure approximation of the domestic technical regulation system to the European one. In Ukraine, major high-quality animal products are economically inaccessible to a large part of households. The projected increase in safety

parameters and a certain improvement in the quality of livestock products as a result of the implementation of regulations adopted in 2014-2017, will necessarily lead to an increase in its value, and therefore may lead to a decrease in market demand and even greater inaccessibility of these products to people. All this can only aggravate the situation with guaranteeing the food security of the country, forming the prerequisites for increasing the intellectual capacity of the nation.

Key words: *Livestock production, Quality, Safety, Socio-economic factors, Rational consumption rate, Economic inaccessibility of production.*

1. Introduction

To ensure high quality livestock products in Ukraine, it is necessary to identify key threats and socio-economic factors that emphasize the quality problem. Key factors include, first and foremost, the economic inaccessibility of quality animal products to the public. The low quality and danger of certain animal products is largely driven by the low standard of living of the population and low incomes of most domestic households, which drives them to consume and demand low quality products.

Modern researches within the framework of scientific topics of quality and safety of agricultural products and food are directed, in particular, to the disclosure of their: technical, biological, microbiological, chemical, environmental aspects, as well as the basic principles of the organizational and economic mechanism of guaranteeing the safety and quality of livestock products in Ukraine are laid by the many researches which were the basis of the author's scientific works [1, 2]. However, a number of socio-economic aspects of ensuring the proper functioning of the national system of safety and quality of livestock products origin have insufficiently complex nature of study and theoretic-methodological substantiation. The problem of quality and safety of animal products in Ukraine has deep economic roots and remains extremely acute.

The purpose of the article is to determine the socio-economic factors for ensuring the quality of livestock products in Ukraine.

2. Materials and Methods

The results of the research are based on modern scientific approaches, means, principles, instruments of cognition of economic processes and phenomena revealed in the works of domestic and foreign scientists. The scientific and specific research methods were used to solve the tasks set in the work: the historical method - to find out the essence of the category of product

quality, to reveal the tendencies of development of the theory and methodology of quality management; abstraction method - to identify components and characteristics of product quality, to establish organizational and economic factors for ensuring the quality of livestock products; methods of analysis and synthesis - to determine the effectiveness of the system of control and supervision of the safety and quality of livestock products in Ukraine, identify key problems and threats of socio-economic nature related to the quality indicators of the main types of livestock products; method of statistical information processing - when grouping and processing statistical information on consumption of basic livestock products and products of its processing in Ukraine (design effect (deff), structural groupings, sample variance, coefficient of variation); and system-structural method - to substantiate the conceptual foundations of organizational and economic support for improving the quality of livestock products, development of the author's model of organizational and economic mechanism for improving the quality of livestock products in Ukraine.

The information base of the study were the legal acts of Ukraine, official data of the State Statistics Service of Ukraine, the Ministry of Agrarian Policy and Food of Ukraine, statistics and materials of the Food and Agriculture Organization of the United Nations (FAO), the EU Statistical Service (Eurostat), the National Science Center "Institute of Agrarian Policy", publications of foreign and domestic scientists, and results of our own previous researches.

3. The main socio-economic factors of providing quality of livestock products in Ukraine

3.1 Features of production of basic livestock products in Ukraine and factors of quality assurance in farms of different types

One of the prerequisites for poor quality of livestock products in Ukraine is the irrational subjective structure of its production. At present, 74% of beef and veal production, 73% of milk, 49% of pork, and 46% of eggs are concentrated in households (Table 1).

These farms are characterized mainly by the primitive conditions of keeping animals, the lack of sanitary and hygienic conditions and, as a consequence, the low quality of production. There are no opportunities for introduction of technologies of keeping, feeding, veterinary services, programs-preconditions for guaranteeing safety, adherence to the HACCP principles. With the participation of the state, it is necessary to change the subjective structure of production of livestock products.

Foreign and domestic experience proves that ensuring high quality and safety of certain types of livestock

products becomes possible only when households will produce them only for their own consumption, that is, they will not acquire the commercial form. In the times of the USSR, the share of non-marketable products that was used for own consumption by the population, was less than 25%. This is the only situation with the production of poultry meat, where the share of households is 14% of its total production. Thus, in Ukraine, the real technical, economic and organizational-eco-

nomical prerequisites for ensuring the safety and quality of livestock products that enter the market are created only in the poultry meat sector.

This confirms the analysis of the structure of export of high-quality domestic meat and dairy products, eggs and honey to the EU, where the system of food safety and quality control is one of the most rigid in the world (Table 2).

Table 1. Production of basic livestock products in Ukraine

Agricultural holdings ¹	Year								2017 to 2015, %	Production structure by holdings 2017, %
	1990	1995	2000	2005	2010	2015 ²	2016 ²	2017 ²		
Meat, total production (thsd. tons)										
"1"	3099	1107	438	588	1134	1463	1490	1483	101,4	64,0
"2"	1259	1186	1225	1009	925	859	834	835	97,2	36,0
"1+2"	4358	2294	1663	1597	2059	2323	2324	2318	99,8	100,0
Beef and veal (thsd. tons)										
"1"	1808	816	305	154	105	94	99	95	101,1	26,1
"2"	177	370	449	408	323	290	276	269	92,8	73,9
"1+2"	1985	1186	754	562	428	384	376	364	94,8	100,0
Pork (thsd. tons)										
"1"	894	203	91	111	256	400	397	373	93,3	50,7
"2"	683	604	585	383	375	359	351	363	101,1	49,3
"1+2"	1576	807	676	494	631	760	748	736	96,8	100,0
Poultry meat (thsd. tons)										
"1"	357	65	36	320	772	968	992	1014	104,8	85,6
"2"	352	170	157	177	182	176	174	171	97,2	14,4
"1+2"	708	235	193	497	954	1144	1167	1185	103,6	100,0
Milk production (thsd. tons)										
"1"	18634	9443	3669	2583	2217	2669	2706	2766	103,6	26,9
"2"	5874	7831	8989	11132	9032	7946	7676	7515	94,6	73,1
"1+2"	24508	17274	12658	13714	11249	10615	10382	10281	96,9	100,0
Eggs production (thsd. tons)										
"1"	10126	4171	2977	6458	10250	9762	8068	8365	85,7	53,9
"2"	6161	5233	5831	6588	6803	7021	7033	7141	101,7	46,1
"1+2"	16287	9404	8809	13046	17052	16783	15100	15506	92,4	100,0

Legend: ¹"1" - Agrarian enterprises; ²"2" - Households, ²Data exclude the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and a part of temporarily occupied territories in the Donetsk and Luhansk regions [3].

Table 2. Export of high quality domestic meat and dairy products, eggs and honey to the EU (thousands euros)

Type of products	2014	2015	2016	2017	2018	Export structure in 2018 p., %
Beef fresh, chilled or frozen	11,3	13,5	18,1	27,5	33,8	0,0
Pork fresh, chilled or frozen	31,0	43,3	53,3	104,6	71,9	0,0
Poultry meat and edible offal, fresh, chilled or frozen	39211,3	58741,3	62119,2	118521,1	198273,9	66,2
Meat and edible offal, salted or in brine, dried or smoked	52,9	1161,3	1196,6	2247,1	2631,8	0,9
Milk and cream, non-concentrated and without sugar	47,6	8,1	12,6	793,4	2735,0	0,9
Milk and cream, concentrated or with sugar	464,4	330,9	598,8	1241,0	1436,1	0,5
Cream, yogurt, yogurt and other fermented or fermented dairy products	5,3	8,1	9,9	15,1	328,3	0,1
Whey, products that consist of the natural components of milk parts	0,0	0,0	0,0	227,8	235,3	0,1
Butter and other fats made from milk	5,3	4,5	2348,1	12639,6	14444,4	4,8
Cheeses of all kinds and lactic cheese	28,0	48,7	66,8	394,5	96,5	0,0
Poultry eggs in shell and without shell, egg yolks	1843,2	21662,8	14272,2	4349,7	12920,3	4,3
Natural honey	50033,1	53936,6	66164,3	87558,1	66261,1	22,1
Total	91819,0	135967,2	146865,4	228132,7	299481,2	100,0

Source: Ministry of Agrarian Policy [4].

In the export structure, share of poultry industry products is 70.5% (of which poultry meat is 66.2%), and another 22.1% is natural honey. The share of other meat and dairy products in the structure of export to the EU is 7.4% [4]. Moreover, significant export of domestic poultry meat to the EU are observed in conditions where, in terms of different types of meat products, the risks associated with the presence of dangerous microbiological and chemical factors are highest in poultry farming.

Thus, despite the presence of higher risks and more hazardous factors in poultry farming than in cattle or pig breeding, concentration of poultry meat production at specialized enterprises in Ukraine has led to positive consequences in the field of its safety and quality. This, in turn, was reflected in the large-scale export of individual businesses. According to the State Consumer Service, the export of high quality livestock products to the EU is now carried out by several large enterprises that have implemented international standards of quality and safety. So, in 2018, 6 enterprises exported poultry and meat products, eggs and egg products exported by 4; milk and dairy products exported by 22 (with small volumes) [5].

Trends in the concentration of poultry and egg production in specialized enterprises should be extended to the domestic dairy sector, livestock breeding, pig breeding, etc. (such concentration was observed in the former USSR). Particular signs of such concentration are observed in domestic pig production, which is reflected in a certain stability of the supply of pork in the domestic market in conditions of outbreaks of ASF (African swine fever) outbreaks. In 2017, the 5 largest pig farms sold about 30% of domestic pork in live weight. Along with the specialization and concentration of production, prerequisites are created for the implementation by the market operators of pork international standards of safety and quality, built on the principles of the HACCP system. Although there is a problem with the usage of a large number of antibiotics and growth promoters in domestic pig production, its release in specialized farms will help to improve the quality of products entering the market.

With regard to beef, veal, pork, lamb, goat and other meats, along with the change in the structure of production in favor of specialized production, it is necessary to ensure the creation of prerequisites for slaughtering animals raised on farms for sale on the market, only in official slaughterhouses. This will ensure proper quality and safety control of the products. Strengthening of animal slaughter requirements is envisaged by the Law "on Basic Principles and Requirements for Food Safety and Quality". According to it, since 04.04.2018, the number of slaughtered animals been reduced, not slaughtered (yard) in a week to three heads of ungulates. And from 01.01.2025 products obtained from

slaughter not in the official slaughterhouse can only be used for their own consumption or marketed within 50 kilometers of the place of slaughter.

In our opinion, this requirement does not create big problems, because nowadays, according to the estimates of the State Consumer Service, on average 70 - 80% of the products sold in the markets are offered by intermediaries (dealers) who go through the villages and collect animals [5]. Therefore, it is not difficult for them to call the slaughterhouse and kill the animals there. It is much more difficult to ensure that cattle, pigs, horses are grown in specialized establishments, as well as increased milk production and various types of high quality meat.

Moreover, the size of specialized enterprises should be different, from small enterprises, farms (poultry, cattle, goats, sheep, horses, egg production) to large enterprises employing more than 1000 people (pigs, poultry, milk production, etc.). Nowadays in the European market, eggs obtained from free-range chickens, are displacing eggs obtained from large industrial poultry farms. Although the use of free-range technology increases the cost of eggs, the demand for these eggs is steadily increasing, as is the demand for organic products. In Europe, the dominant view is that large animal husbandry complexes pollute the environment, cause animal suffering and, accordingly, adversely affect human health. Therefore, in our view, the preference for state support only for large livestock enterprises is not optimal in terms of product quality assurance. Currently, from the 3.52 € billion in grants allocated in 2017 under the budget program "Financial Support for Agricultural Producers", the agricultural holding "Mironivsky Khiboproduct" received 1.4 billion UAH (46.67 million €). This is 30% of the amount of all state subsidies to the agro-industrial complex for the year [6].

As for whole milk, in the early 1990's milk processing companies almost did not buy it from households. During 1990 - 1992, only 100,000 tons of milk were purchased from processors from households, or 0.2% of total purchases. It is necessary to create conditions that by 2025 year 4.5 - 5.5 million tons of milk will be produced in households, while 5.5 - 6.5 million tons are based on large-scale enterprises. By 2035 year, in the structure of milk production, the ratio of large-scale production and households should be 75 to 25. Otherwise, high quality milk, which is marketed and handed over for processing, will be difficult to provide.

In addition, setting strict European quality standards for milk without the introduction of production support mechanisms will reduce its consumption, which is a threat to the food security of the country. Today, not even taking into account the households of the population, the majority of milk sold by processing enterprises to agricultural enterprises is milk of the

first grade (according to the current State Standard of Ukraine 3662-97 [19], as well as the new State Standard of Ukraine 3662: 2015 [20]. In 2017, of the total volume of milk sold by agricultural enterprises to processing enterprises, 39.4% was milk of 1st grade, 35.8% was of higher grade and 15.5% was extra (Table 3).

During 2014 - 2017, the qualitative characteristics of milk coming from households have remained unchanged (87% of all processed milk is grade II). At the same time, in agricultural enterprises, the share of extra grade milk, which is considered to be of European quality, has increased (from 9.2% to 15.5%), and the proportion of grade I-II milk has decreased (from 56.8% to 48%).

As the share of high-quality agricultural products on the market will increase with the share of high-quality extra-grade and higher-grade milk, there is a need to use tools to increase the supply of these products, including stimulating the construction of farms and livestock complexes.

Therefore, ensuring high quality livestock products is a multifactorial task. Quality improvement processes should not be accompanied by a fall in production and consumption, otherwise certain industries, such as the dairy industry, may remain in crisis. After the liberation of Ukraine from the occupation during World War II, cattle, including cows, were much larger number in the country than they are now. According to the State Statistics Committee, as of 01.01.2018 the cattle population amounted to 3530.8 thousand heads (including cows - 2017.8 thousand heads), whereas for the same period in 1945 year were 8275.3 and 4312, 2 thousand heads). Over the last 28 years, the number of cows has

decreased by 4 times, pigs by 2.9 times, sheep and goats by more than 6 times [8, 9].

3.2 The main problems of improving the quality of livestock products and ways to overcome them

Over the last three years (2015 - 2017), there has been a decline in production of almost all types of livestock products except poultry and honey (see Table 1). One of the reasons for this situation is insufficient state support for the development of cattle breeding, pig breeding and dairy farming. The practical implementation of changes in state agrarian policy during 2010 - 2017 through the transformation of indirect support (due to the specific use of the VAT mechanism) of milk and meat producers to direct budget support (payment of subsidies) deprived the industry of an effective support system and abolished effective measures of state support for development production. In addition, one of the basic support regimes for milk and meat producers in Ukraine has changed five times in over a short period of time. While developed countries, including the US and EU countries, have been steadily increasing the competitiveness of livestock production by attracting various forms of indirect support to commodity producers, enhancing their effectiveness in the context of modern neo-protectionism, which does not contradict WTO requirements.

During 2014 - 2017, capital investments in the livestock sector in euro terms decreased from 233.8 to 218.9 million €. They are now at the level of 2004 year, and that is three times lower than the corresponding figure in 2008, and more than twice the corresponding figure in 2012. The level of depreciation of fixed assets in the

Table 3. Qualitative structure of milk sold by processing enterprises, % to the corresponding total volumes

Milk, by grades	2010	2014	2015	2016	2017
Agrarian enterprises					
Extra	4.4	9.2	10.3	14.6	15.5
Higher grade	31.3	33.8	35.2	36.7	35.8
I grade	59.3	51.5	49.6	42.0	39.4
II grade	4.1	5.3	4.7	6.4	9.0
Non-varietal milk	0.9	0.2	0.2	0.3	0.3
Households					
Extra	Not available	0	0	0	0.1
Higher grade	Not available	0.1	0.1	0.1	0.1
I grade	Not available	11.8	8.8	9.0	9.0
II grade	Not available	83.6	86.4	85.8	87.2
Non-varietal milk	Not available	4.5	4.7	5.1	3.6

Legend: Compiled by the authors based on [7, 8].

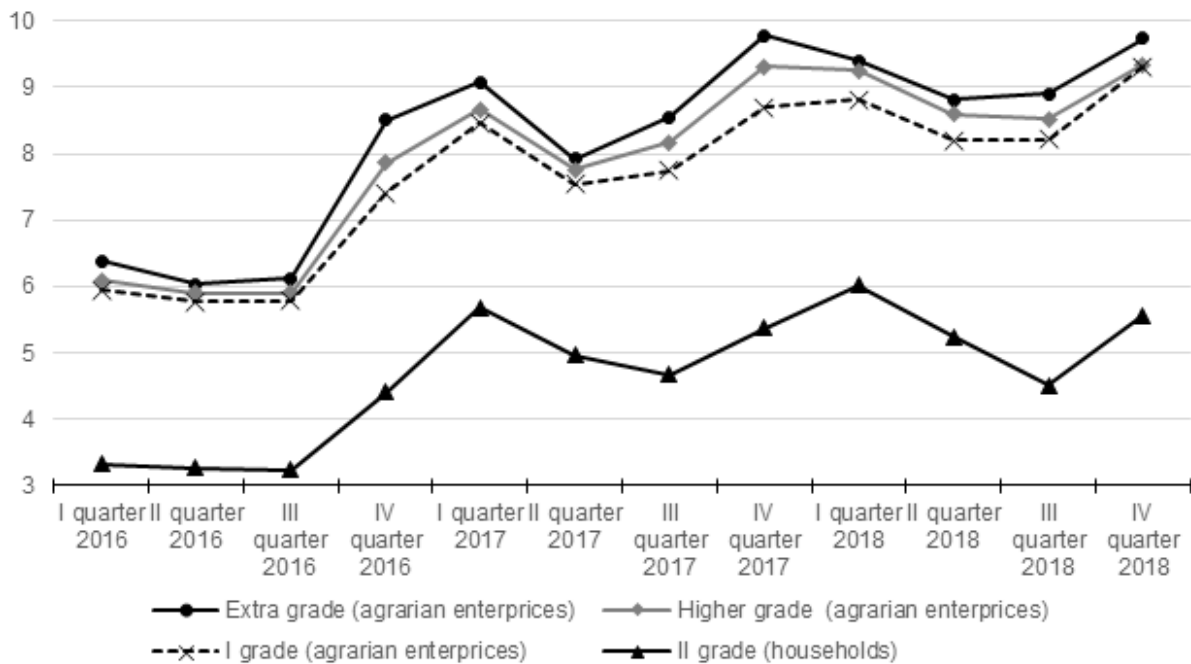


Figure 1. Weighted average purchase prices for milk of different quality from agricultural enterprises and households, UAH/L [10-12]

industry is about 50%. Situation in the processing industry is not better: the degree of depreciation of fixed assets at food-producing enterprises is 48.9% [8].

The key problems and threats in Ukraine should also be attributed to the low profitability of livestock production in the context of accelerated growth in prices for resources. Thus, in 2017 in the agricultural enterprises the profitability of chicken egg production was minus 9%, cattle production for meat was 3.4%, pigs for meat was 3.5%, poultry for meat was 7%, milk was 26,9% [3]. In households, the profitability of production of these species was even lower due to the high costs of manual labor.

Of all the major livestock products, only to milk in Ukraine there are some market incentives to increase production and improve quality in agricultural enterprises. For example, the price of extra-grade milk is slightly higher than its other varieties, which provides higher profitability of production and motivates producers to increase its supply (Figure 1).

However, recently (during 2016 - 2018), the difference in the weighted average purchase prices for extra grade and first grade milk has been minimizing. Thus, in the 4th quarter of 2016 year, extra milk was 15% more expensive for Ukrainians (8.51 UAH (0.3 euros)/L against 7.41 UAH (0.22 euros)/L), in the 4th quarter of 2017 was 12% more expensive in hryvnia equivalent and in the 4th quarter of 2018 was only 5% more expensive. This reduces the incentives for agricultural enterprises to improve milk quality. As there is a need for large investments in the dairy business, small market

incentives need to be complemented by government assistance to improve the quality of milk based on specialized enterprises.

Current market for livestock products is characterized by price discrimination of agricultural producers by processing enterprises, enterprises of the field of procurement and storage of products, various intermediary structures, as well as the uncontrolled growth of trade margins and margins in the wholesale chain and in the retail network. According to the researches of the NSC "Institute of Agrarian Economics", the structure of the retail price of milk is as follows: the share of the producer is 23.5%; processing share is 52%; the share of trade is 24.5%. Although in developed countries, this ratio has a different structure: 50% (raw materials) - 25% (processing) - 25% (trade) [13].

The main producer of livestock products, households, in 2017 in comparison to 2014 processing enterprises sold less than 20% of cattle and 10% of pigs, in the market (after slaughter) was respectively 15% and 30%. The vast majority of these products (65% of cattle and 60% of pigs) were sold through other channels, means commercial intermediaries [8]. Under the current pricing scheme for livestock products, the bulk of the income is redistributed to the benefit of processing organizations and trade.

Regarding the analysis of the domestic beef and pork market, we noted that their use of meat-packing plants for meat products is constantly decreasing. This is due to changes in the range and demand for meat products, and partly to the use of imported raw materials

Table 4. Consumption of the main types of food of animal origin by the population of Ukraine per person (kg per year)

Types of food	Rational consump. rate	1990	1995	2000	2005	2010	2015	2016	2017	2017 in % till rational norm
Meat and meat products	80	68.2	38.9	32.5	39.1	52	50.9	51.4	51.7	64.6
Milk and dairy products	380	373.2	243.6	197.7	225.6	206.4	209.9	209.5	200	52.6
Eggs, pcs	290	272	171	164	238	290	280	267	273	94.1
Fish and fish products	20	17.5	3.6	8.3	14.4	14.5	8.6	9.6	10.8	54.0

Sources: [14; 16] and own research.

(minced poultry meat and other cheap raw materials) to replace the more expensive beef and pork. It is difficult to expect a change in the situation, even if mandatory standards are introduced for the use of beef and pork sausages: the range of products is formed under the influence of low solvency demand. Therefore, about 70% of domestic beef and more than 80% of pork are now consumed as shredded meat semi-finished products on the domestic market [8].

The low quality of some livestock products in Ukraine is due, in particular, to the poor standard of living and low incomes of most households, prompting them to consume and demand low quality products. Consumer often opts for low-quality livestock products that can be produced in unsanitary conditions. In addition, more expensive products of animal origin are often replaced by cheaper products of plant origin. As a result of higher prices of livestock products, the effect of such a substitution effect may be even stronger as the quality of livestock products increases.

During 2015 - 2017, in conditions of system of state control improvement over the safety and quality of livestock products, the volumes of consumption of its main species decreased compared to 2014 (eggs by 13 - 14%, milk and milk products by 8%, and meat and meat products by 3%) [14]. Reason for this was the growing demand for cheaper and less quality food. Consequently, socio-economic factors of quality have become dominant in reducing the level of real incomes of the population.

This means that the problem of guaranteeing the quality and safety of livestock products has deep root causes due to a number of factors, in particular socio-economic, and to solve it requires a comprehensive approach, which is not limited, in particular, to increase the efficiency of the state control system and successful harmonization of the domestic technical system regulation with European.

In 2017, only 28.9% of the average daily diet was provided at the expense of consumption of animal products in Ukraine (55% was set at the threshold). Per person, the average daily calorie intake of food products of animal origin was 781 kcal [14]. Although, the norm of the physiological minimum is 1,375 kcal.

Much less than the established norms in 2017, all major animal products were consumed as follows: eggs were 94% of the rational; meat and meat products were 65%, milk and dairy products were 53% (Table 4). This is a testament to the irrationality of the food supply of the population, which is trying to meet energy needs through more affordable products. In the structure of meat and meat consumption, the share of poultry is significant, or more precisely that is 48%. Pork accounts for 37% of the meat diet, only 14% for beef and 1% for other types of meat [15].

Rate of consumption of products of animal origin, below which begins fasting and irreversible processes in the body, is 1,650 kcal in developed countries. In Ukraine, this figure is more than 2 times lower. It testifies to the difficult state of the nation health. Without proteins of animal origin, the human body cannot function properly. Unlike their plant counterparts, it contains all the essential amino acids in exactly the proportions that are necessary for humans.

According to the World Health Organization, protein deficiency causes slowing of growth, physical and intellectual development of children, changes in internal organs and hormonal background in adults, impaired enzyme formation, impaired absorption of nutrients, trace elements, fats, vitamins. Protein deficiency causes vitamin deficiency, weakening of immunity, functionality of cardiac and respiratory systems, loss of muscle mass, deterioration of calcium absorption in the human body, resulting in a violation of a number of physiological functions, inhibiting the formation of bones, the processes of digestion begin.

Table 5. Domestic market capacity of the main types of food of animal origin, thousand tons

Items	Facts for 2017 year	Potential capacity (economically justified level ¹)	Level 2017 to an economically justified level, +/-
Meat and meat products (in terms of meat)	2204,1	3390,9	-1186,8
Milk and dairy products (in terms of milk)	8701,9	16106,7	-7404,8
Eggs (million pcs)	11359,5	12291,9	-932,4
Fish and fish products	415,4	847,7	-432,3

Legend: ¹Potential capacity of the internal market is calculated on the basis of the population of Ukraine at 01.01.2018, 4 million people (excluding the temporarily occupied territories of the Autonomous Republic of Crimea and Sevastopol). Source: Authors own calculations based on State Statistics [14, 16].

Due to non-observance of rational standards of consumption of food of animal origin, the capacity of the internal market is less than its economically justified value (Table 5).

Calculations showed that the potential of expanding the domestic market of animal products in Ukraine (in 2017 prices) is about 197 billion UAH or 6.5 billion euros. The basis of the calculations are the rational norms of food, the level of own production of food by households and prices for them.

Rural population has always consumed more milk and dairy products than the urban population. However, the consumption figures are now almost equal, due to the decrease in whole milk production in households during 2010 - 2017 (from 9031.9 thousand tons to 7514.8 thousand tons), while their increase in agricultural enterprises (from 2216,6 thousand tons to 2765,7 thousand tons), low incomes of rural residents, as well as excessive "activity" of processing enterprises.

In the period 2010 - 2017, production of whole milk in Ukraine decreased by 9% (from 11.3 million tons to 10.3 million tons), and the volume of its receipt for processing (from 4.8 million tons to 4.3 million tons). At the same time, dairy plants increased production for 8% (liquid processed milk, butter, rennet cheese and melted cheese from 1,088 thousand tons to 1,171 thousand tons) [3]. Therefore, there is a basis for assuming the use of falsification of products using substances of vegetable and inorganic (chemical) origin. As a result, two interrelated problems are exacerbated in Ukraine: low levels and low quality of consumption, driven by income and substitution effects.

Measures aimed at improving the quality of most of these livestock products can make them even more inaccessible, further delaying in the achievement of rational consumption rates, as they lead to higher costs. Accordingly, the capacity of the domestic livestock market will remain low and the production of high quality products will be oriented towards export op-

erations. This will further exacerbate the problems of guaranteeing the country's food security and the development of the nation's intellectual potential.

At present, there is a need to introduce targeted food assistance programs to the population below the poverty line in Ukraine. Such programs should include, for example, a program of preferential purchases of high-quality, chronic, under-consumed products (milk, meat, and fish) like in the United States. In the United States, in 2016, through the Supplemental Nutrition Assistance Program (SNAP), 44.2 million people received assistance (14% of the country's total population). The average monthly amount of this assistance per person was about 128.7 €, and government spending on the program reached 59.82 billion € [18].

In Ukraine, the criteria for the participation of individual households in this program should be the level of gross family income (per person) below 118% of the poverty line or net income below 100% of the poverty line (from 01.01.2018 it is 52.95€ per person). Thus, up to 25% of the population of the country is considered to be poor (although, according to the UN, 36 million of Ukrainians live below the poverty line). Financial resources under the preferential purchase program for high-quality, chronic under consumption products should be allocated through plastic cards, which are rotated through a dedicated electronic payment transfer system for subsidies. These cards will be used by recipients of the program to purchase high-quality home-grown food from authorized supermarkets. The list of food of appropriate quality (indicating their producers) and authorized supermarkets participating in the program will be determined by the State Consumer Service after careful examination. To be included in this list, livestock producers must implement the HAC-CP system and certify production according to international environmental standards (ISO 14000 series standards). Manufacturers will be motivated to improve the quality of products, as this can significantly expand its market.

As with any system of transfer payments to the public, the implementation of this program may be accompanied by certain problems. One of them may be that the population participating in the program will begin to conceal their extra or “shadow” income in order to receive food assistance. Therefore, considerable attention should be paid to verifying sources of household income and expenditure. In the United States, for example, when determining eligibility for the program, they carefully review the information provided.

One of the ways to solve the problem is to introduce such a mandatory requirement for assistance as completing a declaration of income and expenses for the previous two years by splitting the items of expenditures on necessities, durables, various services and luxury goods (like electronic declaration systems). In case of discrepancy of expenditures officially declared by the recipients of the program must return the entire amount of received payments with interest [17].

The program of preferential purchase of high-quality products for which chronic under consumption is observed should supplement (or replace) existing state aid for the poor in Ukraine (according to the Ministry of Social Policy as of the beginning of 2018, it received 306 thousand families, that is about 1 million people). Much of the state aid for the needy, which is provided in cash, is spent by non-intended recipients (for the purchase of liquor, cigarettes, etc.). Poor households tend to buy low-quality cheap animal food, including imported ones. It turns out that the state is stimulating demand for the products of unscrupulous producers or for products of foreign production. Although almost 12 billion UAH (373.3 million euros) was spent on this assistance in 2017 from the state budget, it does not bring systemic effect for domestic producers [21].

The replacement of existing state aid for the low-income to the preferential purchase program will lead to an increase in the capacity of the domestic market of high-quality animal food, which will result in the following:

- 1) Will help to increase the consumption of high-quality food products of animal origin that are not adhered to rational food standards (milk, meat, and fish) and expand the capacity of the internal market.
- 2) Will provide poor citizens with access to high-quality food products of animal origin, which has not been observed before.
- 3) Will be an effective motivator for increasing the supply of high-quality animal products by domestic producers. The program embodies one of the tools to support conscientious agricultural producers by stimulating demand, which will increase the capacity of the market for high-quality domestic food;
- 4) Will be a tool for solving the problem of food security and the nation’s intellectual capacity.

From our point of view, the implementation of this program fits into the strategic vector of modern social policy in Ukraine, which transforms various benefits or ineffective programs into effective targeted social assistance programs for those who need it most.

One of the disadvantages in the program of preferential purchase of high quality products implementation for which chronic under consumption is observed, may be the desire of poor households to sell high quality livestock products purchased in authorized supermarkets on pop-up markets for a significant discount (to get at least some cash to buy a counterweight). This will in no way counterbalance the positive impact of the program on society, as it will promote the development of a secondary market for high-quality food of animal origin and increase their accessibility for ordinary citizens.

It is advisable to introduce other food programs in Ukraine, which, on the one hand, ensure the rational nutrition of the population and increase the intellectual potential of the nation, and on the other, stimulate the demand for high quality food products of domestic production. Given the need to enhance the intellectual potential of children and adolescents, it must first be attributed to quality school animal nutrition programs (special dairy program in general educational institutions, such as in the United States, quail eggs consumption program in schools, such as in Japan).

Obviously, the rational nutrition of children and adolescents under the conditions of post-industrial transformation is a prerequisite for increasing the nation’s intellectual potential and developing the knowledge economy. Therefore, we consider it expedient to develop and adopt the basics of state policy in the field of healthy nutrition of the population in view of changes in the socio-economic situation, the appearance of new scientific ideas about quality nutrition.

Ukraine’s great potential for producing high-quality livestock products necessitates the development and implementation of measures to expand its export. The problem of export becomes more urgent in the context of low domestic market capacity. Expanding and promoting the export of high value-added products is one of the top priorities of governments in some developed countries. For example, in the United States, measures are being taken at the state level to economize foreign policy, which are affecting more and more American organizations. On the basis of the annual National Export Strategy, more than one hundred state programs are being developed to promote the export of American products [18].

From our point of view, the mechanism for stimulating the export of domestic agricultural products and their processing products needs radical reform. As it facilitates the export of low-value-added products,

in particular for grain cereals that could supplement the livestock feed base. Due to the functioning of the mechanism of VAT refunds, the exporters of crop products create unequal conditions for the entities that are in demand for it in the domestic and foreign markets. According to Ukrainian legislation, it is more profitable for a large domestic company to enter the foreign market to sell crop production outside the country and to be entitled to a refund from the budget of the amount of VAT paid on the purchase of the product than for a domestic processor or owner of livestock complexes (since then the seller will not be entitled to a VAT refund). As a result, the owner of livestock complexes, for example in Germany, is in more competitive conditions than the same owner in Ukraine. To be interested in a feed grain seller (a large Ukrainian company), the owner of domestic livestock complexes must bid 6 - 7% higher than the owner of the livestock complexes in Germany. Because in the case of export of feed grain to a large domestic company, the state will refund VAT, and when sold on the domestic market won't.

On the other hand, export-oriented feed grain operators, only export oriented, with VAT refunds, can purchase products from commodity producers at lower prices than the owners of domestic livestock complexes. This does not encourage livestock development in Ukraine. Due to the functioning of such a mechanism, the state actually encourages not domestic processing of agricultural raw materials, the use of plant products as a feed base in animal husbandry, and, accordingly, the receipt of added value by domestic producers, but its export outside the country. A considerable part of feed grain (wheat, barley, maize) is exported, although these products can be used to increase livestock production domestically [17].

During 1990 - 2017, almost in four times (from 1.2 million to 4.5 million hectares) in Ukraine the area under maize is increased. However, this did not in any way affect the development of domestic livestock (although in the world about 20% of corn grain is used for food needs, 15 - 20% for technical purposes, 60 - 65% for livestock feed). This is due to the large volume of exports of this important crop. In the marketing year 2017/18 (October - September), 17.8 million tons of maize were exported from Ukraine, which was 72% of its gross harvest in 2017 (24.7 million tons) [8].

In our opinion, in order to promote the development of domestic animal husbandry, the VAT refund mechanism should only operate when exporting products with a significant proportion of value added: livestock products, food products of animal origin, crop products, oils, biodiesel, bioethanol, etc. The first step has already been taken: on December 7, 2017, the Parliament approved amendments to the Tax Code, which abolish VAT refunds for the export of oilseeds (soybean, sunflower and rapeseed). Although such a cancellation

was postponed under the pressure of a powerful agribusiness lobby later, it is advisable to disseminate the practice of promoting only high value-added products. VAT refunds should be abolished for the export of forage crops (barley, wheat, maize), thus stimulating their processing and use domestically. This will help to create more jobs and increase the country's GDP.

In Ukraine, it is necessary to focus not on mechanisms that discriminate against individual subjects of the internal market (processing enterprises, animal husbandry), but on important aspects of expanding domestic exports of high value added products: providing export (commodity) credit guarantees, export credit insurance, the creation of a livestock export support fund, the provision of commodity loans to livestock exporters, and more.

As high quality products are in demand in the foreign markets, these programs will stimulate domestic producers to accelerate the HACCP system, ISO standards, traceability, development of modern systems of conformity assessment and voluntary conformity assessment, as well as facilitate the process of control through growth improving the quality of the producers themselves.

It is necessary to develop and approve the State Program for the promotion of livestock exports, aimed at creating a new competitive model for the development of the agricultural sector, an effective system for developing its export potential, improving the quality of domestic exports, improving its structure and expanding its nomenclature.

4. Conclusions

- Problem of low quality and the danger of livestock production requires a systematic approach for its solution, which is not limited, in particular, by measures to improve the system of state control and ensure approximation of the domestic technical regulation system to the European one.

- In Ukraine, major high-quality animal products are economically inaccessible to a large part of households. Projected increase in safety parameters and a certain improvement in the quality of livestock products as a result of the implementation of regulations adopted in 2014 - 2017, will necessarily lead to an increase in its value, and therefore may lead to a decrease in market demand and even greater inaccessibility of these products to people. All this can only aggravate the situation with guaranteeing the food security of the country, forming the prerequisites for increasing the intellectual capacity of the nation.

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