

# FEATURES OF CONSUMER BEHAVIOR IN THE MARKET OF MEAT CATTLE BREEDING IN UKRAINE

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## **Abstract**

*In the balance of meat of Ukraine, beef and veal, which can not be replaced, are the most important place, because each of these types of meat has specific taste properties, amino acid composition and nutritional value. However, a sharp decline in the volume of production of meat products of cattle breeding during the years of market transformations has led to a significant reduction in the consumption of beef and veal by the population against the backdrop of a decrease in the supply of domestic meat and a significant increase in its import supplies in frozen form. Consumer demand for beef and veal is due to economic, socio-demographic and specific factors. Economic and socio-demographic factors influence the consumer demand for meat products, similar to those inherent in the demand for consumer goods.*

**Key words:** *Beef and veal market, Household income, Consumer behavior, Demand elasticity.*

**JEL Classification:** *Q 18, O 15.*

## **1 Introduction**

The main objectives of the study are defined: there is a definition of patterns and characteristics of the domestic consumer market of meat products, identification of factors that determine the consumer behavior of consumers in the beef and veal market, justification of the directions of ensuring the balanced development of this market.

## 2 Data and Methods

In carrying out the research, the data of the State Statistics Service, observation and survey of the author were used. The calculations for the elasticity of consumer demand in the market were carried out using correlation-regression analysis and balance method in substantiating the indicators of development of consumption of beef and veal for the future.

## 3 Results and Discussion

It is known that end-use food indicators form the main group of indicators that characterizes the standard of living of consumers in the country. The foregoing makes it possible to determine that the state and trends of the development of the consumer market, namely volumes of commodity turnover, retail prices, have a direct influence on the volumes of consumption. The proof of this is the conclusion of the experts of the World Health Organization, who believe that the health of 50% depends on the individual lifestyle, the main factor which is nutrition [1].

Demand in the market of livestock products is formed under the influence of demographic, economic, cost factors, that is, it depends on the population, distribution of its income, quality and value of goods, commodity assortment, advertising [2].

Analyzing volumes of consumption of meat products by the population of Ukraine by species, it was established that during the last five years the main type of meat is chicken (Table 1).

Table 1 **The level of consumption of beef and veal in Ukraine**

Product type	2006		2011		2016		2016 in per cent	
	kg	%	kg	%	kg	%	2006	2011
<b>Meat is all</b>	42	100	51,2	100	51	100	121,4	99,6
<b>Beef and veal</b>	13	30	9,1	19	8,1	15,8	62,3	89,0
<b>Pork</b>	13	31	19	35	19	37,0	146,2	100,0
<b>Bird meat</b>	16	37	23	45	24	45,9	150,0	104,3
<b>Other types of meat</b>	1	2,3	1	1,9	0,7	1,4	70,0	70,0

Source: Compiled and calculated according to the data of the State Statistics Service of Ukraine.

Consequently, there is a clear tendency in Ukraine to increase the consumption of poultry meat per capita compared to the same indicator for other types of meat. In particular, consumption of poultry meat per capita during 2006-2016 increased from 15.7 kg to 24 kg. It should be noted that consumption of this type of meat is growing at a faster pace than other species. However, in recent years, the volume of consumption of pork is also increasing. It should be noted that during 2006-2016 there was a significant decrease in the consumption of beef and veal by the population of Ukraine by 37.7%. According to the FAO, real beef consumption is 6 kg per capita, which is 2.1 kg lower than the corresponding figures of the State Statistics Service of Ukraine. In Ukraine, in 2016, meat consumption has fallen behind the rational norm by 36%. In addition, the proportion of beef in the overall structure of meat consumption is the lowest. In 2016, the consumption of chicken is the highest and is about 45.9%. Inner consumption of beef is very small and is 15.8%. In addition to economic reasons, in particular inter-industry imbalances in pricing, there is also no understanding of what quality beef is. The population, feeding the cattle extensively, spends the same amount of money per kilogram of live weight, as well as intensive fattening. In this case, animals grow slowly and their mortality is 150-200 kg lower than that of animals fed by an intensive system.

Cattle meat is an expensive product, therefore, in the current economic situation, the population prefers cheaper meat (pork or chicken meat).

During 2007-2016 the price level for beef was almost twice as high as the cost of poultry meat. Also, the cost of beef during 2011-2016 was higher than the price for pig slaughter products.

**Table 2 The dynamics of prices and the price ratio for beef, pork, poultry meat**

Year	Beef	Pork		Bird meat	
	UAH / kg	UAH / kg	Value of prices for beef and pork	UAH / kg	The ratio of prices for beef and poultry meat
2007	25,52	26,88	0,95	14,62	1,75
2008	38,04	40,75	0,93	17,24	2,21
2009	38,76	43,03	0,90	18,22	2,13
2010	40,72	41,59	0,98	20,28	2,01
2011	48,73	46,48	1,05	22,40	2,18
2012	55,73	50,58	1,10	23,14	2,41
2013	53,10	48,70	1,09	21,40	2,48
2014	68,09	62,78	1,08	31,09	2,19

Year	Beef	Pork		Bird meat	
	UAH / kg	UAH / kg	Value of prices for beef and pork	UAH / kg	The ratio of prices for beef and poultry meat
2015	84,02	74,99	1,12	39,18	2,14
2016	85,61	77,03	1,11	42,02	2,04

*Source:* Compiled and calculated according to the data of the State Statistics Service of Ukraine.

The high level of beef prices in 2016 was caused by several factors. First, reduce the supply. The number of cows in all categories of farms as of January 1, 2017 decreased by 57.7 thousand heads compared to January 1, 2016, including 20.5 thousand in agricultural enterprises, and 37 per cent in households, 2 thousand heads. In 2016, all categories of farms produced, in slaughter mass, beef and veal, 375.6 thousand tons, which is 8.4 thousand tons less (2.2%) in 2015. In 2016, at Recycling of cattle from all categories of farms was 123.8 thousand tons, which is less than 3.5 thousand tons compared to 2015. Secondly, the reduction of beef imports into Ukraine. In general, the import of cattle slaughter products is negligible and in 2016 it was at the level of 4-5 thousand tons.

Nevertheless, the inflationary processes that are taking place in the national economy played a role in the growth of beef prices. Thus, the average sales prices of cattle (aggregate) sold by agricultural enterprises in all directions in 2016 increased by 2.1% (436 UAH / t) and by 54.9% (7489 UAH / t) in 2014

Consequently, compared to pork and poultry meat, beef and veal are the most expensive form of meat. Consequently, the volume of domestic demand for meat from cattle, which depends directly on the purchasing power of the population, is also being reduced.

The low purchasing power of the population directly affects the level of consumption in terms of certain types of meat and meat products. An average resident of a low-income country is forced to prefer cheaper meat and sausage products made from low-grade imported raw materials [3]. Therefore, it is important to ensure not only the approximation of the consumption of meat to rational norms, but also take into account the structure of consumption of meat products in order to increase the proportion of beef in the overall consumption of meat.

Now beef is a food product for people with high income. According to research results, the highest levels of consumption are observed in households in large cities with an income level of over 6,000 UAH / month. It should be noted that in this group of households, depending on the level of income, there are significant fluctuations depending on the location. Thus, members of small town

households consume beef by 2 kg less compared to households in large cities, and rural ones - 10.5 times. This circumstance shows that beef is not a priority in consumption in rural households and small cities. This circumstance is evidence of the lack of a culture of consumption in most Ukrainians (Table 3).

It should be noted that there is a significant difference in the consumption of beef between 1 and 9 groups of households, regardless of their location. This circumstance is evidence of a significant impact on the level of consumption of the value of aggregate income.

Especially high dependence of households' demand on their income is on products that are in the higher price segment of the market in comparison with competitors. The same is the reaction and intermediate consumption. Thus, the meat cattle industry, whose production is in the higher price segment compared with poultry production, was most sensitive to the effects of the transformational crisis [4].

Only one to two percent of the Ukrainian population can afford to buy beef. Household incomes are decreasing, and this affects the demand for livestock products. People gradually move on to substitute products: instead of beef, they buy pork or chicken, or even whole offal. Due to low purchasing power, they are guided by the cheapness of the product, not its quality indicators.

In our opinion, the culture of consumption of beef could also be commodity producers themselves.

Beef will still be more expensive than other types of meat - the consumer needs to understand this. But producers who have a closed cycle - growing agricultural products-producing fodder-fattening livestock-processing meat - may somewhat lower prices and stimulate this demand.

Table 3 Dynamics of consumption of meat of cattle by households of large, small towns and rural settlements depending on the level of monetary incomes

Household groups	Urban households				Rural households		Urban households in% to rural households	
	Big cities		Small cities				Big cities	Small cities
	kg	% to the total consumption of meat products	kg	% to the total consumption of meat products	kg	% to the total consumption of meat products		
<b>By 1500</b>	2,1	2,1	0,5	1,4	0,2	0,8	9,5	23,8
<b>1501-2000</b>	3,8	3,8	0,4	1,0	0,3	0,9	7,9	10,5
<b>2001-2500</b>	4,0	4,0	1,5	3,1	0,4	1,0	10,0	37,5
<b>2501-3000</b>	4,4	4,4	1,0	1,8	0,5	1,0	11,4	22,7
<b>3001-3500</b>	4,5	4,5	1,0	1,6	0,8	1,4	17,8	22,2
<b>3501-4000</b>	5,3	5,3	2,0	3,0	0,7	1,0	13,2	37,7
<b>4001-5000</b>	5,6	5,6	2,9	3,9	0,6	0,8	10,7	51,8
<b>5001-6000</b>	7,2	7,2	1,8	2,3	0,7	0,9	9,7	25,0
<b>More than 6000</b>	4,7	4,7	1,8	2,0	0,9	1,1	19,1	38,3
<b>Total</b>	<b>4,2</b>	<b>4,2</b>	<b>1,0</b>	2,1	<b>0,4</b>	<b>1,0</b>	9,5	23,8

Source: Calculated by the author.

At the same time, the issue of safety and eco-friendliness of meat consumption may remain outside the spotlight.

Another possible direction for increasing the consumption of meat from cattle is the production of organic beef. At the cost of such products may be cheaper, however, as the world experience shows, the costs ultimately appear to be higher compared to the production of traditional products. Prices for organic products tend to be higher, but according to consumer indicators, organic produce has advantages. The demand for such products is gradually being formed, and today it tends to increase mainly at the expense of consumers with high incomes, families with small children, producers of baby food (all these groups of consumers consider a healthy diet as a priority). Taking into account the above, organic beef production is considered by us as a component of quality food security (that is,

by increasing the physical volumes of organic cattle production, simultaneously affecting its quality and safety) [5].

According to statistics, an increase in per capita income leads to less than a proportional increase in food expenditure. Ernst Engel, head of the German State Statistical Service, was the first statistician to analyze the dynamic rows of consumption and bread prices, (for example, Prussia). The work of Ernst Engel "Production and Consumption in Saxony" (1857) was based not on budgets initially. Engel shows how large groups of expenses for food, clothing, housing, etc. when changing income levels change. In the same work, he showed a relative decline in the cost of food with an increase in income - the dependence, which was called "the curve of Engel and the law of Engel.

Demand economists understand the desire and ability of people to buy goods and services. From a mathematical point of view, the elasticity of the function  $Y = f(x)$ . In relation to  $X$  is defined as the limit of the ratio of relative increase in to the relative increase of  $X$ , when the last increment approaches 0:

$$Q_1 = \frac{1}{m} \sum_{j=1}^m z_{ij}$$

Based on this approach, we calculated the coefficients of cattle elasticities for all households, households in large cities and rural areas.

Elasticity in relation to  $x$  is the relative magnitude of increment (positive elasticity) or decrease (negative elasticity) in a relative growth  $x$ .

The elasticity of income demand is the relative change in the cost of food (or volume of demand) as a reaction to the relative change in consumer income. Elasticity can vary at different levels of income, so the elasticity factor is usually measured in relation to a small (1 percent) change in income. Four situations can be distinguished:

Expense growth is more than proportional to change in income: the ratio is more than one, in such cases, it is said that demand is elastic for income. This circumstance is observed in the consumption of beef, with the exception of urban households with a level of average per capita income of more than 2751 USD / month, and rural - more than 3251 UAH / month. Consequently, for the majority of the population, consumption of beef and veal is limited due to low purchasing power (Table 4).

In the group of urban households with a level of average per capita income of over 5000 UAH / month there is a negative value of the calculated indicator, which is evidence of a reorientation in the consumption of meat and meat products.

In conditions of underproduction of beef and veal, we have sales problems. For Ukrainians, beef is not the main form of meat consumption. In particular, the domestic consumer uses mainly dairy veal or young beef derived from live-stock weighing up to 200 kg. We do not have a culture of consumption of steaks, as in the United States or Europe, where the feta steak is much more expensive than conventional meat. In addition, due to low purchasing power and high retail prices for beef, not all Ukrainians can afford to buy it and prefer cheaper meat (poultry and pork).

**Table 4 The coefficient of elasticity of beef demand depending on the level of income of households, depending on the location.**

Groups per per capita incomes per month, UAH	City		Countryside		In general	
	Actual consumption of kg / shower per month	Coefficient of elasticity	Actual consumption of kg / shower per month	Coefficient of elasticity	Actual consumption of kg / shower per month	Coefficient of elasticity
<b>by 1250</b>	0,92	2,104	0,15	2,549	0,46	3,324
<b>1251-1500</b>	0,65	1,498	0,26	1,664	0,54	2,003
<b>1501-1750</b>	2,01	1,343	0,44	1,414	0,91	1,679
<b>1751-2000</b>	1,91	1,226	0,14	1,254	0,91	1,482
<b>2001-2250</b>	2,28	1,148	0,47	1,118	1,42	1,352
<b>2251-2500</b>	1,94	1,074	0,42	1,015	1,32	1,249
<b>2501-2750</b>	2,35	1,008	0,53	0,915	1,52	1,162
<b>2751-3000</b>	2,88	0,960	0,44	0,825	1,42	1,098
<b>3001-3250</b>	2,73	0,913	1,01	0,734	1,67	1,034
<b>3251-3500</b>	3,00	0,862	0,51	0,647	1,68	0,978
<b>3501-3750</b>	2,86	0,815	0,48	0,564	2,19	0,926
<b>3751-4000</b>	4,30	0,769	1,03	0,466	2,73	0,877
<b>4001-5000</b>	4,65	0,665	0,58	0,252	3,08	0,770
<b>More that 5000</b>	4,84	-0,072	0,74	-0,515	3,18	0,281
<b>Total</b>	2,36	1,028	0,43	1,029	1,33	1,240

*Source:* Calculated by the author.

For the market of agrarian products, including the beef market, the inelasticity of demand for price and non-price determinants is characteristic. Demand for food products can not grow under the influence of competitive market forces to

the level of growing supply. This situation is typical for countries where self-sufficiency of food products has reached the level of need in them.

Regardless of the location of households, almost all the beef consumed was purchased in retail food markets and retail establishments (Table 5).

According to the research results, a similar phenomenon is observed in households with average per capita income in large cities of 3501-4000 UAH, small cities - 2501- 3500 and 5001-6000 UAH. At the same time, the establishment of a monetary equivalent is not considered appropriate, since all this is based on "informal" ties between the village and the city and between rural households. In this case, it is advisable to mention the peasant professor T. Shanin, who noted: "The informal economy absorbs a number of certain activities that are not focused on automatic profit-taking, and is carried out not so much in order to achieve pre-set goals, but to maintain a certain normal degree of stability, survival, well-being and reproduction "[6].

According to the results of the study, it has been found that for a long period of time there is a situation where a significant part of meat products comes for consumption from relatives for free. This problem of scientific research was rejected by scientists as a "relic of the past, prehistoric". But according to the results of the survey of the activities of private peasant farms, up to 30% of the marketable livestock production is directed by the above-mentioned channel.

It should be emphasized that under present conditions such a form of assistance is perhaps the only opportunity for the formation of a young family. In this case, parents even share the responsibilities of providing young families: some help livestock products, others - special product kits.

The development of cooperation between rural and urban families is possible as follows: residents of the city may incur expenses for the purchase of young animals, which leave for raising and fattening the farmer of a relative peasant, performing one-time work if necessary. Approaches to the practical implementation of this scheme may be different.

**Table 5 Structure of beef consumption in households, depending on location and income level (%)**

	Big cities				Small cities				villages			
	Total	Incl			Total	Incl			Total	Incl		
		bought	PF	donated		bought	PF	donated		bought	PF	donated
<b>By 1500</b>	100	100,0	0,0	0,0	100	100,0	0,0	0,0	100	50,0	50	0,0

	Big cities				Small cities				villages			
	Total	Incl			Total	Incl			Total	Incl		
		bought	PF	donated		bought	PF	donated		bought	PF	donated
<b>1501-2000</b>	100	95,0	0,0	5,0	100	100,0	0,0	0,0	100	100,0	0,0	0,0
<b>2001-2500</b>	100	100,0	0,0	0,0	100	100,0	0,0	0,0	100	100,0	0,0	0,0
<b>2501-3000</b>	100	100,0	0,0	0,0	100	90,0	0,0	10	100	80,0	20	0,0
<b>3001-3500</b>	100	100,0	0,0	0,0	100	80,0	0,0	20	100	100,0	0,0	0,0
<b>3501-4000</b>	100	97,1	0,0	2,9	100	100,0	0,0	0,0	100	85,7	14,3	0,0
<b>4001-5000</b>	100	100,0	0,0	0,0	100	100,0	0,0	0,0	100	66,7	33,3	0,0
<b>5001-6000</b>	100	91,2	0,0	8,8	100	88,9	0,0	11,1	100	85,7	14,3	0,0
<b>Over 6000</b>	100	100,0	0,0	0,0	100	88,9	11,1	0,0	100	100,0	100	0,0

Source: Calculated by the author.

According to the data of the State Statistics Service of Ukraine, the largest share in the structure of consumption of rural households with a income level of up to UAH 1,500 per month. takes beef, which is produced in private farms (PF). It should be noted that most of them are in depressed areas and are oriented on self-sufficiency. The owner of a private peasant farm is characterized by an orientation towards self-sufficiency, economic closure. In this case, as a powerful resource is the tradition. The risk to the peasant is permissible only within the limits that do not lead to the destruction of the very existence of the family due to crop failure and other problems. As Chayanov emphasized: "The peasant economy exists with minimal access to the market, only insofar as the surplus product is formed. His main motivation is the production of products for the family ... "[7]

It should be noted also about the relatively high consumption of beef coming from PF in rural households with an income level of more than 3,500,1 UAH / month. In our opinion, this is due not only to the low purchasing power of this category of households or to the lack of products in the trading network, but to the quality. According to numerous observations, the majority of commodity producers violate the technologies of growing farm animals, which negatively reflects on qualitative parameters. As O. Solzhenitsyn notes, characterizing the current quality of the products "Yes, even the food is healthy we have already forgot ... In the 90's we still remembered. But now, such an impression is created that many citizens will not recall soon. Others will never know "[8].

According to the results of statistical observations carried out by the State Statistics Service of Ukraine on the basis of the quarterly household questionnaire, the bulk of beef is used for own consumption and for meeting the needs of other household members who are in friendly and family relationships (Table 6).

Table 6 **Areas of use of beef and veal in rural households** (per 100 households)

Year	Production volumes during the year		Areas of use:					
			consumed, processed, presented		fed cattle, birds		sold, incl. in the redesigned form	
	kg	%	kg	%	kg	%	kg	%
2010	202,94	100	168,56	83,06	0	0	34,38	16,94
2011	173,53	100	156,44	90,15	0	0	17,08	9,85
2012	78,17	100	70,76	90,52	0	0	7,41	9,48
2013	152,31	100	110,67	72,66	0	0	41,63	27,34
2014	144,10	100	141,62	98,28	0	0	2,48	1,72
2015	135,06	100	135,06	100,00	0	0	0	0
2016	109,96	100	106,29	96,66	0	0	3,56	3,34

Source: Calculated by the author.

It should be noted that during 2010-2016 there was a significant decrease (by 37%) in the use of beef for domestic needs. It should be noted that during the investigated period, the growth of the share of own consumption by 13.6 percent points. This circumstance is due primarily to a decrease in the number of cattle kept in private farms and the increase in the number of households holding one head of cattle. According to the State Statistics Service of Ukraine in 2016, 52% of rural households holding one head of cattle. The owner of the PF, which holds one head, is not interested in further feeding the young to high-grade conditions, as there is no equipped space for this [9]. According to the results of the questionnaire survey, in the PF, where one head of cattle is fattened, this period of retention is 3-7 months. That is, the sole owner keeps the young in the period between the cuts clearance because of the lack of places of detention.

According to research results during the year, the seasonality of beef production and consumption is traced. The largest number is produced and accordingly consumed in the I - II quarter. This serves as an indication that the production and slaughter of cattle are carried out for the purpose of self-sufficiency (Table 7).

**Table 7 Production and consumption of beef in rural households, for 2016 kg (per 100 households)**

Quarter	How much has been received over the last three months	How much of the used is used, namely:		
		consumed, recycled is given	cattle, poultry are fed, eggs are used for bird breeding	sold, incl. in the redesigned form
I	36,79	35,57	0,00	1,22
II	34,49	33,34	0,00	1,15
III	23,17	22,40	0,00	0,77
IV	15,50	14,98	0,00	0,52
<b>Total</b>	109,96	106,29	0,00	3,67

*Source:* Calculated by the author.

It should be noted that most rural households consume calves at a 3-month age. The main factor of this situation is the unfavorable correlation between the price of young cattle and milk. This is the first. Secondly, further retention of livestock requires full feeding with the necessary content of concentrated feed, and this level of nourishment is not ensured by private producers [10]. Typically, grazing on the meadows of cattle, the peasants do not prepare forage for the winter. Thirdly, the lack of sufficient premises for keeping farm animals and storing feed. During 2012-2016, tertiary households in rural households had premises for storing feeds and in less than a half - for livestock and poultry. It should be noted that there is a negative tendency in providing rural households with premises for storage of feed and for keeping livestock and poultry. Thus, during the period under study, the proportion of households with feed storage facilities decreased by 1.3 cents. etc., which have a room for keeping livestock and poultry - by 4.8 pp

Usually the bulk of the coarse fodder is kept in the stool, which leads to certain losses, as well as to reduce their nutrition.

The main reason for the insufficient level of availability of production facilities is the lack of financial resources for the PF for the construction of new and existing ones. This root cause also hinders the development of the PF product orientation. So, only half of rural households have premises for keeping livestock and poultry irrespective of the area of land use.

Reconstruction of commercial premises, which will ensure the expansion of the area of the latter to date, is economically unprofitable due to a violation of the parity of prices for industrial and agricultural products. Due to the lack of facilities for keeping young animals of bovine animals in most owners, it is

located in temporary premises, which makes it possible to grow it only during the spring-summer period of the year.

The maintenance of farm animals in temporary structures, especially in the autumn-winter period, is economically inappropriate due to the low payback of feed.

## 4 Conclusions

Consumer demand for beef and veal is due to economic, socio-demographic and specific factors. Economic and socio-demographic factors influence the consumer demand for meat products, similar to those inherent in the demand for consumer goods. It is established that the distinctive feature of consumer demand for this product is the attitude to food.

As a result of the study of the peculiarities of the formation of consumer demand in the meat and meat products market, factors that underpin the consumption of meat cattle production are identified. A direct relationship was found between the change in the real disposable income of the population and the per capita consumption of meat cattle breeding products. However, the growth of consumer demand for meat and meat products with the growth of real incomes of the population is satisfied mainly due to poultry meat and pork, and with the decrease in incomes, primarily consumption of red meat is reduced. In addition to the income of the population, the level of consumption of red meat is influenced by the price situation in the meat market of the cattle and the markets for competitive products - pork and poultry meat. Although pork is in the same price segment with beef in the consumer market of Ukraine, demand for it has a lower elasticity at a price due to the traditional consumer preferences of the population and large volumes of supply of fresh and chilled meat on the market. Another influential factor that leads to a decrease in the proportion of beef in the meat consumption fund - a decrease in domestic production, which is due to the reduction of cattle in the country and the lack of development of specialized meat cattle.

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