# SELF-SUFFICIENCY AS AN INDICATOR OF UKRAINE'S FOOD SECURITY

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#### **Abstract**

Food self-sufficiency involves satisfying the bulk of food intake at the expense of domestic production. which is the basis for the characteristic self-sufficiency index at the macro level. At the micro level, it is characterized by the degree of satisfaction of members of the household due to the receipt of major types of food from the management of personal peasant farms.

It is proved that the mechanisms of targeted food support in Ukraine are practically not used. The provision of domestic food aid through the sphere of social nutrition in Ukraine is carried out in all subjects, but its level is extremely insufficient. It is established that in the conditions of economic instability, personal peasant farms will be forced to remain at leading positions in food security and will be one of the main sources of cash inflows to the family budget.

**Keywords:** food safety, rational norms, self-sufficiency, indicator of economic accessibility, export.

JEL Classification: Q 18, D 60

# 1 Introduction

Each state must provide the population based on its own production of basic food products. Self-sufficiency in food involves satisfying the bulk of food needs at the expense of domestic production, which determines the independence of the state from external suppliers in meeting the needs of the population, which is the basis for characterization of self-sufficiency at the macro level. At the micro level, it is characterized by the degree of satisfaction of members of the household due

to the receipt of major types of food from the management of personal peasant farms. The level of self-sufficiency on the macro level is characterized by the state of development of agricultural production, at the same time as at the micro level the size and sources of household income, the share of food costs, the location of the household and other factors of socio-economic nature.

### 2 Data and Methods

In the current conditions, when all the signs of the financial crisis are manifested, there is a decline in the population's solvent demand for food. In such a situation, the level of self-sufficiency in food is determined not by the full satisfaction of the reduced solvent demand of the population for food, but only by the level of satisfaction in it of the regulatory needs of consumption of basic foodstuffs.

### 3 Results and Discussion

Indicators of production and consumption of basic products, the degree of self-sufficiency of the main types of products, which reflect the food safety thresholds and correspond to the characteristics of food safety indicators, are important to characterize the country's potential capabilities in meeting its own food needs. The level of self-sufficiency of the country food is defined as the percentage of gross production of a particular product to its consumption [1].

At the same time, for all types of products (except for grain) the physiological norms of food consumption are used for the norm, and for grain - 1 t grain per one inhabitant of the country, because the grain is used not only for food production, but also for feeding animals and for export supplies.

Over the period under study, a significant excess of actual production over consumption has been observed, which suggests that, in the current difficult economic conditions, when a rapid decline in the purchasing power of the population, the domestic producer satisfies the needs of the domestic market (Table 1). However, according to the main types of livestock production, the level of production did not reach the threshold (80% of the rationale). If we analyze the level of self-sufficiency on the basis of rational consumption norms for meat products, then it is close to the threshold value solely by increasing the volume of poultry meat production.

In 2016, all categories of farms produced, in slaughter mass, meat of all kinds 2323.6 thousand tons, which is 1 thousand tons more than in 2015. At the same time, meat of beef and veal 375.6 thousand tons. t, which is 8.4 thousand tons less (2.2%) of the 2015 figure. A similar phenomenon is observed in the production of

pork, which produces in slaughter mass, pork meat 747.6 thousand tons, which is 12,1 thousand tons less (1,6%).

However, in 2016, farms of all categories produced in the slaughter mass, poultry meat 1166.8 thousand tons, which is 23.1 thousand tons more (2%) than in 2015. The growth of poultry meat production was offset by a decrease pork and beef production.

The consumption of meat and meat products per person per year in 2016 amounted to 51.4 kg, which is lower than the rationale (80 kg) by 28.6 kg. At the same time, compared to 2000, consumption increased by 18.6 kg.

The level of consumption of meat per one person has a positive trend and in 2016 it increased by 0,5 kg, or 1%.

Table 1 Dynamics of production, consumption and index of self-sufficiency of basic food products in Ukraine

Indexes	2000	2005	2010	2015	2016				
Meat and meat products (in terms of meat)									
Actual consumption fund, thsd.	1611	1844	2384	2179	2195				
Fund of consumption on the basis of rational norms, ths.	3929	3773	3668	3425	3416				
Production, ths. Tons	1663	1597	2059	2323	2324				
The level of security is based on									
• actual rates,%	103,2	86,6	86,4	106,6	105,9				
• rational standards,%	42,3	42,3	56,1	63,7	68,0				
Milk and dairy products (in terms of milk)									
Actual consumption fund, thsd.	9789	10625	9470	8995	8942				
Fund of consumption on the basis of rational norms, ths.	18683	17897	17435	16284	16219				
Production, ths. Tons	12658	13714	11249	10615	10382				
The level of self-sufficiency is based on									
• actual rates,%	129,3	129,1	118,8	118,0	116,1				
• rational standards,%	67,8	76,6	64,5	61,3	64,0				
Bread and bakery products (in terms of grain)									
Actual consumption fund, thsd.	7748	7750	6808	5897	5745				
Fund of consumption on the basis of rational norms, ths.	6265	6338	6178	5771	5745				
Production, ths. Tons	24459	38016	39271	60126	66088				
The level of self-sufficiency is based on									

Indexes	2000	2005	2010	2015	2016
actual rates,%	315,7	490,5	576,8	1019,6	1150,4
• rational standards,%	390,4	599,8	635,7	978,9	1150,4
Vegetables					
Actual consumption fund, thsd.	5002	5663	6581	6890	6984
Fund of consumption on the basis of rational norms, ths.	5410	5182	5045	4713	4693
Production, ths. Tons	6195	7606	8873	9792	9998
The level of security is based on					
actual rates,%	123,9	134,3	134,8	142,1	143,2
• rational standards,%	114,5	146,8	175,9	195,2	213,0
Potato					
Actual consumption fund, thsd.	6660	6386	5914	5892	5966
Fund of consumption on the basis of rational norms, ths.	5411	5180	5047	4714	4694
Production, ths. Tons	19838	19462	18705	20839	21751
The level of security is based on					
actual rates,%	297,9	304,8	316,3	353,7	364,6
• rational standards,%	366,6	375,7	370,6	415,4	463,4

According to the rational consumption rate (80 kg) of beef and veal, 32 kg (40%) in 2016 consumed 8.1 kg (10.1% of the norm), pork 28 kg (35%), respectively, consumed 19 kg (23.8%), poultry meat - 20 kg (25%) consumed 23.6 kg (29.5%).

A similar situation is observed in the production and consumption of milk and dairy products. Thus, in 2016, milk production in all categories of farms decreased by 233.9 thousand tons (2.2%) compared to 2015, including 270.3 thousand tons (3.4%) in households. , whereas in agricultural enterprises, on the contrary, increased by 36.4 thousand tons (1.4%).

The consumption of milk and dairy products per one person per year in 2016 amounted to 209.5 kg, with a scientifically substantiated norm - 380 kg.

In 2016, the consumption of milk and dairy products per person in 15 oblasts - from 210 kg in Volyn to 281.4 kg in Ivano-Frankivsk exceeds the average level in Ukraine (209.5 kg).

At the same time, the level of production of the main types of crop production significantly exceeds the normative values. The main reason for such a situation is the unbalanced state policy, which led to the targeting of export-oriented agricultural crops by farms of the corporate sector of the agrarian economy of Ukraine.

Most agricultural enterprises have abandoned the production of livestock products due to its loss-making and lack of effective state support [2].

The predominance of export of raw materials, instead of directing them to the domestic market, not only goes against the capabilities of the latter, but also in view of the current situation in the country becomes a certain threat. At present, the foreign market is seeing a decline in grain prices (food and feed), sunflower, rape and soybeans. At the same time, there is an increase in prices for beef, pork and dairy products - production, which in Ukraine tends to decrease.

One of the main factors of the difficult situation in livestock production, as an industry oriented mainly to meet the needs of the domestic market, is the decline in solvent demand from domestic consumers. This was one of the main reasons why prices for livestock products in the first half of 2017 were lower than in 2016 (by 1.3%) and began to increase only in July 2017 (they were 5% higher than in 2016) year) However, this is much less than inflation, which has already exceeded 16% on an annual basis. As a result, the level of consumption of livestock products per consumer in Ukraine is considerably inferior to similar consumption in the leading countries of the world and is less than the recommended physiological standards.

In 2016, the average monthly total cost of one household was 5720,37 hryvnia per month, and the aggregate consumer spending - 5331,53 hryvnia per month. At the same time, on average, households spent on food a total of 2944.32 hryvnias.

That is, the indicator of economic availability was 51.5% with its 60% threshold criterion. Compared to 2015, this indicator decreased by 1.7 percentage points.

But if we take into account not general, but only consumer total household expenses, then the share of food expenses was 55.3% (in 2015 - 58.9%).

At first glance, it seemed that there was an improvement in the economic availability of our population to food. However, the caloric content of a daily diet of one person was 2990 kcal, protein content in consumed food was 84 g, one of the lowest rates among EU countries and 18% lower than the average level of this indicator in developed countries (103 grams per day), fats - 135 g, carbohydrates - 367 g. Compared with 2015 the caloric content of home-nutrition decreased by 1.3%. The content of carbohydrates in consumed food decreased by 1.9%, of fats by 0.7%, and the protein content did not change (Table 2). At the same time, the caloric content of the ration is still 10% higher than the maximum permissible level for this indicator - 2500 kcal.

The statistical data prove that the average Ukrainian tends to vegetarianism. However, in most cases, this is due not to life beliefs, but mainly to financial opportunities. Thus, in 2016, only 29% of the average daily ration was provided

through the consumption of livestock products, which is almost 2 times less than the level required for a healthy eating (55%).

The share of the population's energy value of daily food intake of less than 2100 kcal in 2016 amounted to 24.2%, in 2015 - 22.9%

Reducing food costs is primarily due to the re-direction of part of households' money to pay for HCS services. In 2015 compared with 2014, the share of population spending on housing and communal services increased by 2.2%. then in 2016, the share of these expenses rose by 4.7 percentage points.

That is, in this case, it is not about improving the economic access to food due to the growing purchasing power of Ukrainians, but about the reorientation of family budgets to pay for HCS, even to the detriment of quality and quantity of food.

Table 2 Energy value and content of nutrients in households consumed in food (on average per day per person)

					ln	cluding	residi	ng		
All				in u	ırban s	ettleme	nts		in the	
Indicator	house	holds	in big cities		in small cities		total		countryside	
	2010	2016	2010	2016	2010	2016	2010	2016	2010	2016
Energy value (kcal)	3359	2990	3134	2784	3419	2943	3241	2850	3601	3259
Proteins (g)	93	84	89	81	92	81	90	81	98	90
Fat (g)	153	135	150	131	161	136	154	133	150	139
Carbohydrates (g)	409	367	361	325	409	355	379	338	471	423

With regard to the structure of consumer spending on food, there were no significant changes in comparison with the previous year. The first place is spent on: meat and meat products - 22% (657 UAH per household per month), bread and bakery products - 15% (439 UAH), milk and dairy products - 13% (386 UAH).

According to the results of a household survey on the self-assessment of their income level in January 2017, about 4% of households (by 0.8 percentage points less than in January 2016) reported that their income level did not allow even adequate nutrition to be provided. Among the large households, the share of such households decreased by 8 percentage points. and accounted for 6%.

Rural households have traditionally directed most of the total cost of food to the city than urban (respectively 54% vs. 50%). At the same time, the villagers

consumed more: potatoes - 1.5 times, bread and cereal products - 1.3 times, sugar - 1.2 times, oils and other vegetable fats - by 7%, milk and dairy products - by 5%, vegetables and melons - by 3%. The caloricity of the daily ration of one villager (3259 kcal), as in 2015, was 14% higher than urban.

In the current difficult conditions, the main source of food intake, especially for members of rural households, is a private peasant (subsidiary) household.

Significant role in providing people, especially rural, food products traditionally continued to play personal auxiliary farms (PF). They produced 52% of potatoes consumed in households, about half - other types of fresh, chilled, frozen edible meat, 27,2-32,2% - eggs and vegetables and melons, 22,7% - milk and milk products. (Table 3).

It should be noted that there is a clear differentiation, depending on the income level and the location of the household. So, the largest share of consumed food products received from PF in rural households. In rural households, 91% to 11.5% of these consumed products were produced, and almost all consumed potatoes were consumed. It should be noted that in high-income households (over UAH 4500), located in large cities in 2016, a high level of consumption of other types of fresh, chilled, frozen edible meat and poultry received from a private auxiliary farm was recorded. This fact testifies to the high quality of products produced in the PF.

A detailed analysis suggests that the provision of foodstuffs by the personal subsidiary farm is a source of food for members of households in small and large cities, which significantly differ in the level of aggregate income.

Table 3 Share of consumed foodstuffs produced in private auxiliary farms in rural households, depending on the size of average per capita equivalent total income

	Share of value of		S	hare in the	Share in the consumption of products with PF, %	of pro	ducts wit	h PF, %		
Total income per household member per month, UAH	consumed products received from PF in the structure of aggregate resources,%	Fresh, chilled, frozen beef and veal	Fresh, chilled, frozen pork	Fresh, chilled, frozen meat of poultry	Other types of fresh, chilled, frozen edible meat	Milk	EAggs	Potato	Fruits and berries of all	Vege- tables of all
to 2000	0,5	0,0	0,0	0,1	3,7	0,0	8,0	2,9	1,8	4,5
2001-2500	0,5	0,0	0,0	0,2	2,8	0,3	0,5	3,8	2,2	5,7
2501-3500	9'0	0,0	0,0	1,4	5,5	1,0	0,3	5,0	1,1	4,3
3501-4500	0,5	0,0	0,0	0,1	1,0	0,0	0,2	6,3	2,2	3,7
more than 4500	6,0	0,0	0,0	0,3	11,4	0,2	0,4	1,8	1,8	3,9
Big city	6,0	0,0	0,0	9'0	3,7	1,0	9,0	3,9	1,7	4,5
until 2000	4,1	4,4	4,8	7,7	19,2	4,6	10,3	44,8	2'5	34,7
2001-2500	3,7	1,9	0,9	14,8	22,3	13,6	20,8	47,6	6'9	29,8
2501-3500	3,4	0,0	8,0	13,3	43,3	3,6	18,5	42,2	5,1	24,0
3501-4500	3,3	0,0	3,2	15,3	1,0	17,2	21,1	41,8	5,3	22,1
more than 4500	1,8	2,5	6,3	15,9	19,2	10,7	11,0	38,9	3,2	17,2
Small town	3,6	1,9	6,1	11,6	28,2	7,8	15,5	44,4	2,7	28,2
until 2000	12,6	14,4	47,9	48,6	54,0	43,5	62,6	92,1	19,4	69,7
2001-2500	12,4	3,0	47,0	52,3	91,5	42,5	71,3	8'06	18,7	9'59
2501-3500	11,3	6'9	45,0	6'89	79,1	46,1	73,6	91,7	19,0	63,0
3501-4500	10,4	17,2	47,7	70,4	9'89	51,8	0,22	92,1	17,5	59,1
more than 4500	7,6	9,9	40,8	61,4	87,0	46,8	71,3	93,6	18,1	62,8
Countryside	11,5	9,1	46,3	58,8	78,2	44,8	70,5	91,8	18,9	65,7
Total	4,9	1,4	16,7	20,7	47,2	22,7	27,2	52,7	6'9	32,5

It should be noted that the share of most of the consumption of food in rural households does not depend on the value of the total income received. This circumstance indicates the orientation towards self-sufficiency of food products for rural households.

According to the results of the research in the conditions of the manifestation of destructive phenomena in the socio-political life of the growth of the role of personal peasant farms, as the main source of income of the main types of food, especially in rural households. Thus, in 2016, against 2000, there is an increase in the share of consumption of potatoes and eggs, and against - all types of foodstuffs except for bread and bakery products (Table 4).

Table 4 Share of consumption of main types of products by members of rural households received from personal auxiliary farms, %

Indexes			Year			2016 y. to	
indexes	2000	2005	2010	2015	2016	2000	2015
Bread and bread products	5,5	5,4	2,1	1,8	1,6	-3,9	-0,2
Meat and meat products	61	39,3	33,2	43,1	45,1	-15,9	2
(in terms of meat)	64,5	43,5	51,7	54,8	55,6	-8,9	0,8
Milk and cheese (in terms of milk)	72,1	71,2	69,5	89,7	90,6	18,5	0,9
Eggs	88,4	95,1	86,6	100,0	100,0	11,6	0
Potato	75,5	60,2	50,6	74,4	71,7	-3,8	-2,7

In the period of mass unemployment in the countryside as a consequence of the crisis, a private peasant economy became the center of labor activity of the able-bodied population, an important source of supply of necessary food and cash. "Until the time when the bulk of our peasant population is in such a state when it comes not to savings, but to the possibility of obtaining daily bread ... .. In this state, only a communal economy can protect a peasant from poverty and homelessness, or in the very poverty - to eliminate the danger of starvation "[3, p. 480].

In the conditions of the economic crisis, which is characterized by the presence of a significant number of unemployed, cash income from the management of PF became the main source of filling the family budget, while saving on its own consumption. It is these features of a natural subsidiary used during his propaganda in 1943 by Eleanor Roosevelt.

According to statistics, in 2009, for the cultivation of land 94.2% of rural households used manual labor, for 17.6% - with a land area of up to 0.5 hectares. Only 13.6% of the surveyed rural households had the technical means for mechanization of production processes in the implementation of agricultural activities. Unsustainable physical labor negatively affects the state of health of the peasant, which is manifested in the growth of diseases of the musculoskeletal and cardio-vascular systems, reduction of life expectancy. In addition, in the small-scale production of agricultural products, child labor is widely used, which is unacceptable in large-scale farms. "Small peasants," Kautsky quotes in his paper "Capitalism in Agriculture", a researcher of the rural population in Westphalia, who are overloading their children with work, so that their physical development is delayed; such negative sides do not have hiring "[4].

For each particular PF owner as a household, consumer, it is usually not fundamentally what its effectiveness. He will deal with him even in the most difficult conditions, regardless of any costs. But this happens to a certain limit - to meet their own needs. As A.M. Tarasov notes, "despite the lack of efficiency in terms of the economy, PF today, as an economic institution, performs, first of all, a social function, which is a fundamental basis for the social sustainability of the rural community" [5].

As V.G. Venzher, "to eliminate the causes that caused the existence of an PF, it is necessary to solve two problems: to achieve the full supply of agricultural products and on this basis to meet the needs of rural residents at the expense of social production; to raise personal incomes of peasants for equal work to the average level of real incomes of workers and thus alleviates the cause that leads to the search for additional sources of income, including at the expense of personal subsidiary farms." [6]

In general, this provision, subject to its extension to all forms of personal subsidiary farms, is appropriate. Indeed, the growth of social production and the growth of incomes associated with it eliminates the need for private farming of peasants. But it is necessary to make a few remarks. First, the growth of production and income must be considered obligatory in a close relationship and in a certain optimal combination. If money revenues increase, but the mass of goods will not be counterbalanced by the corresponding mass of goods, the necessity of conducting a personal economy (even if it is economically unprofitable) will remain, as there will be a shortage of food in the market. So, in our stories there are vivid examples of this scenario (1990-1994). In this case, the stimulus of the functioning of private peasant farms will be not only a problem of providing them to rural households, but also residents of cities. As noted above, households are the main suppliers of food through informal links to urban residents.

On the other hand, the need for this economy can be maintained in separate groups of the population or individual citizens, if there is sufficient level of provision of all products at insufficient level of incomes of citizens. As already noted, for most rural households with a low income, they are the main source of cash and food. Secondly, in our opinion, there can be no reason for the refusal of the PF to erase the differences in the amount of income among the residents of the village and the city. Thirdly, the value of revenues should not only ensure that food needs are met in accordance with existing consumption norms, as well as full satisfaction of material and other needs.

The personal economy of different persons and at various stages of development of society can perform simultaneously all its functions or only some of them. At the same time, it acts as one of the important forms of combining the social and personal interests of citizens at the present stages of development of our society. In general, it should be emphasized that the management of private peasant farms, provided that it is effective, will not negatively affect the development of the social economy, provided that it is effective, and, on the contrary, will increase the activity and standard of living of citizens.

The rejection of a personal economy will occur in the process of objective, systematic movement of economic development of social production, increase its level of socialization. However, this will not happen soon, because still a generation of rural residents has survived.

Despite the high role of PF today, agrarian production, according to E. Serovoi, in the future should largely rely on civilized forms. "The further development of PF will be linked to the macroeconomic trends and the evolution of agricultural enterprises. Economic growth and associated growth in real incomes and social stability, reducing the risk of loss of work, etc. will lead to an increase in the alternative cost of labor in society. This, in turn, will contribute to the reduction of personal auxiliary farms, both urban and rural residents.

On the other hand, the development of former collective farms and state farms in the direction of the concentration of ownership in some hands will also restrict private peasant farms, as new owners of agricultural enterprises will seek to reduce such employment of their employees.

And only in marginal agricultural areas PF will become a form of survival of the rural population, and economic growth can transform some of these PF into commodity farms "[7].

Personal peasant farms are only part of a complex socio-economic organism. But in each of its elements a program of behavior is laid down, which shows the resources of the whole. Will Ukraine be competitive or doomed to lagging behind? The relations in the countryside, as the most conservative sector of our

society, show whether reforms are far advanced, whether they have a chance to succeed and how different their outcomes are in the regions of the country.

## 4 Conclusions

Assessing the level of self-sufficiency of the population of products of particular animal origin, it should be noted about its critical state, which in future may be a threat to the country's food security. In this regard, it is necessary to introduce a system of state support measures that will be aimed at increasing the production of beef and pork. Measures that are financed from the state budget should have a differentiated approach to each category of agricultural producers.

Unlike existing programs of state support for livestock industries, in our opinion, one of the priority areas of financing the creation of a high-value personal peasant farm that holds 3 or more heads of cattle and cows, in particular mini-farms for the production of dairy and meat products cattle breeding. The main method of support is an additional payment for the growth of cow stock in the amount of 50% of its market value. One of the main conditions for providing such support is the receipt by the farmer of an identification number and related supporting documentation.

In relation to large agricultural enterprises with a population of more than 300 heads, the main programs of direct state support in the amount of 30% for the purchase of complex agricultural machinery, breeding animals of domestic breeding and the costs associated with the construction of industrial premises should operate. Taking into account that this category is the main producer of higher grade milk and extra "Extra" milk, and their technological process meets the requirements of the European Union, it is necessary to stimulate expansion of their production capacity by partial compensation of interest rates on foreign currency loans in the amount of 1-2% and 5-6% - on loans in national currency, the funds of which will be spent on the development of material and technical base.

The mechanisms of targeted food support in Ukraine are practically not used. The provision of domestic food aid through the sphere of social nutrition in Ukraine is carried out in all subjects, but its level is extremely insufficient. Domestic food aid is considered by us as a form of state social support for the population, aimed at improving the nutrition and achieving its balance, taking into account the recommended rational standards for the consumption of food products, with its division into a system of social nutrition in budget institutions and targeted food support. On the one hand, it solves the problem of reducing poverty, and on the other hand, producers and processors of agricultural products receive a stable long-term order for their products.

Under conditions of economic instability, private peasant farms will be forced to remain at leading positions in food security and will be one of the main sources of cash inflows to the family budget.

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