ENSURING FOOD SECURITY IN RUSSIA IN MODERN CONDITIONS

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Abstract. *Food security is an integral part of the country's national security. In Russia, as in most countries of the world, ensuring food security is the most important direction of state policy. The aim of the work was a complex economic assessment of the current food security state in Russia. The methodological basis of the study is the general scientific cognition methods - deduction and induction, analysis and synthesis, which allow to reveal genesis and current state of the country's food security. The theoretical source of the research was the scientific works of Russian and foreign scientists and specialists on the problems of citizen's food supply, food independence of the state, rational and optimal human nutrition, and the system of consumption of high-quality and safe food for health. The study showed that food deficit and famine in Russia, caused by both unfavorable natural and climatic factors, by wars, by irrational government policies, have serious socio-economic consequences and threats to the country's development. As a result, assessment of the Russian Federation food security level established that the target indicators of food self-sufficiency were achieved and exceeded for grain, meat and meat products, eggs, potatoes, however, for the rest of the products there is an insufficient level of self-sufficiency. The most critical situation is with self-sufficiency in fruits and berries. The volumes of food consumption demonstrate positive growth dynamics in all major groups, except for bread products and potatoes. Scientifically grounded consumption norms for potatoes, vegetables and melons, fruits and berries, milk and dairy products, eggs have not been reached, and for the rest there is an excess of the norm. The main reason for the underconsumption of food by the population is low income of the population.*

Keywords: *food security, self-sufficiency, actual and standard consumption, underconsumption, food deficit*

INTRODUCTION

Despite the uniqueness of spatial position and multi-zonality, Russia has rather unfavorable conditions for farming. Droughts and frosty snowless winters became the main natural and climatic causes of crop failure and food deficit. So, bad harvest and famine occurred more than 16 times from 1024 to 1570 and more than 5 times from 1601 to 1650. The famine of 1601-1603 was named "Great". The poor harvest and the famine were caused by influence of the "Little Ice Age" (ERMOLOV, 1892).

Natural disasters had adverse consequences for the state. Considering low population of the country, its decline led to slowdown of economic development. Besides, the state was forced to spend additional resources to purchase and deliver grain to starving regions. But, because of big distances between localities and additional time needed to purchase food, help could come too late.

In the second half of the 19th and beginning of the 20th century, the frequency of crop failures increased. The famine of 1891-1892 had the most serious consequences (MAKSUDOV, 2015). Poor harvest and government's wrong policy resulted in it. Grain exports led to severe depletion of stocks, internal prices for food were rising and for labor – falling. Epidemics of

typhus, dysentery, malaria, and cholera spread because of the famine (REPORT OF THE MEDICAL DEPARTMENT OF THE MINISTRY OF INTERNAL AFFAIRS FOR 1892).

According to different estimates, the total demographic losses of the country varied from 400 to 700 thousand people. Food crisis was a reason, why confrontation between the monarchy and the people increased as well as the spread of revolutionary ideas. The next hungry years 1901, 1905-1908, 1911, 1913 accelerated onset of the revolution.

The Civil War that followed the revolution led to the mass famine of 1921-1922. The reasons for the famine were military actions, the territorial disunity of the country and the policy of war communism. In 1932-1933 there was a massive famine in the main agricultural regions of the country. According to various estimates, the country's demographic losses reached more than 7 million people (ROBBINS, 1975). The next mass famine occurred in 1946-1947. Its causes were the destroyed by the war economic sector, demographic losses, grain exports and creation of food reserves for a new war.

In general, the history of Russia is full of natural, military and economic disasters, which were accompanied by food shortages and hunger. In some cases, famine was the result of cataclysms, wars, inefficiency of the state system, while in others in conversely. The food deficit had a negative impact on development of the country and became one of the reasons why Russian economy was lagging and population was still low.

MATERIAL AND METHODS

The issues, connected with providing food security in different countries of the world, are widely represented in economic literature. In particular, they were discussed in the works of famous foreign scientists: Alston P., Altieri M., Buks J., Godfray H., Diouf J., Kastro J., Campbell H., Keyzer M., Mane E., Rocca M., Stock P., Hockmann H., Sherpa M. et al. In most works, the food problem is investigated both in a global scale and a country individually. Issues, related to the development of strategic priorities and foreign economic prospects for ensuring food security in Russia, are the subject of discussion in works of such scientists as A.I. Altukhov, V.M. Bautin, Yu.G. M. A. Grigorieva, E. N. Krylatykh, B. N. Kuzyk, L. S. Revenko, V. Ya. Uzun, L. N. Usenko, I. G. Ushachev, Yu. V. Yakovets and others.

The aim of the work was a comprehensive economic analysis of the current state of food security in Russia.

The methodological basis of the study is general scientific methods of cognition - deduction and induction, analysis and synthesis, which allow revealing the genesis and current state of the country's food security.

RESULTS AND DISCUSSIONS

Presidential Decree No. 208 of May 13, 2017 approved the economic security strategy (hereinafter referred to as the Strategy) of the Russian Federation (hereinafter referred to as the RF). This strategy defines the priority goals for national economy development and possible challenges and threats during goals achivements.

Meanwhile, three of the six directions of the Strategy affect the food aspect: strengthening economic sovereignty, increasing the stability of the economy and improving the quality of life. It demonstrates the importance of food security and agriculture in strengthening the country's sovereignty.

The first stage of the study is to determine contribution of agriculture to formation of the gross domestic product (GDP) of the Russian Federation (Table 1) (https://ac.gov.ru/archive/files/publication/a/21974.pdf 2019).

Table 1

Assessment of agricultural contribution to the formation of gross domestic product in Russia for 2000-2019

Index	Years					Rate of change 2019 to 2000	Deviation 2019 from 2000
	2000	2010	2016	2017	2019		
GDP, billion rubles	7306	46309	86014	92101	103876	1421.8	96569.8
GDP per capita, thousand rubles	49.8	324.2	586.4	627.2	707.5	1419.6	657.6
Agricultural products, billion rubles	742.4	2462.2	5112.3	5109.5	5348.8	720.5	4606.4
including: crop production	394.7	1090.2	2710.3	2599.7	2756.1	698.3	2361.4
animal husbandry	347.7	1372	2402	2509.8	2592.7	745.7	2245.0
Agricultural production per capita, thousand rubles	5.1	17.2	34.8	34.8	36.4	718.0	31.4
including: crop production	2.7	7.6	18.5	17.7	18.8	695.9	16.1
animal husbandry	2.4	9.6	16.4	17.1	17.7	743.1	15.3
Contribution of agriculture to GDP, %	10.2	5.3	5.9	5.5	5.1	50.7	-5.0
Contribution of agriculture to GDP per capita, %	10.2	5.3	5.9	5.5	5.2	50.6	-5.0
Contribution of crop production to GDP, %	5.4	2.4	3.2	2.8	2.7	49.1	-2.7
Contribution of livestock to GDP, %	4.8	3.0	2.8	2.7	2.5	52.4	-2.3
Contribution of crop production to GDP per capita, %	5.4	2.4	3.1	2.8	2.7	49.0	-2.8
Contribution of livestock to GDP per capita, %	4.8	3.0	2.8	2.7	2.5	52.3	-2.3

The values presented in Table 1 allow us to conclude that the gross domestic product of the Russian Federation grew significantly in 2000-2019. RF GDP increased 14 times, from 7.3 trillion. rub. in 2000 to 103.9 trillion. rub. in 2019. At the same time, the growth rate of agricultural production was twice lower. Agricultural production increased 7.2 times, from 742.4 billion rubles. in 2000 to 5.3 trillion. rub. in 2019

Meanwhile, during the study period, animal husbandry showed higher growth rates than the crop production. Gross product of livestock for 2000-2019 increased 7.4 times, and crop production 7 times.

Having studied the volume of the gross and agricultural product, as well as its change, we can assess the place of agriculture in the national economy. At the beginning of the study period, agriculture provided 1/10 of the country's gross product, but by the end of the study period it gave 1/20. This situation is the result of significant growth in the extractive sector of

economy, including rise of prices for mineral products. At the same time, there was an increase in other sectors of economy, that led to a greater differentiation of gross product structure. As a result, the contribution of agricultural production to the gross product per capita also showed 5.0 pp decrease (http://www.consultant.ru/document/cons_doc_LAW_ 343386 /).

By Decree of the President of the Russian Federation No. 20 dated January 21, 2020, the food security doctrine of Russia was approved (hereinafter - the Doctrine 2020), (AGRICULTURE, HUNTING AND HUNTING ECONOMY, FORESTRY IN RUSSIA. 2011: STATISTICAL COLLECTION / ROSSTAT - M., 2011).

Doctrine 2020 interprets food independence as the country's self-sufficiency by basic types of agricultural products, raw materials and food.

It has to be assessed the level of self-sufficiency by main food groups firstly to assess achievement of food security in the country (table 2), (MERCE, et al., 2011).

Table 2

Assessment of self-sufficiency level changes in Russia by main food groups for 2000-2019. (%)

Index	Years					Deviation (+, -)		
	2000	2010	2016	2017	2019	2010 from 2000	2019 from 2000	2019 from 2010
Grain	102.5	93.3	160.0	170.6	147.2	-9.2	44.7	53.9
Meat and meat products (in terms of meat)	67.0	72.2	90.6	93.5	95.7	5.2	28.7	23.5
Milk and dairy products (in terms of milk)	88.3	80.5	80.7	82.3	83.9	-7.8	-4.4	3.4
Eggs	97.5	98.3	98.6	98.9	98.8	0.8	1,3	0.5
Potato	99.6	75.9	93.2	91.1	95.3	-23.7	-4.3	19.4
Vegetables and melons	85.6	80.5	87.4	87.6	87.2	-5.1	1.6	6,7
Fruits and berries	55,7	26.8	36.5	33.1	38.8	-28.9	-16.9	12.0

The data in Table 2 show the level of coverage of the country's food needs through its own production. The only food group that fully covers the country's needs is grain. With short periods of self-sufficiency below 100%, the country is fully provided with grain. In 2016 and 2017 the volume of grain production exceeded its own consumption by 60 and 70.6% respectively.

Self-sufficiency in meat and meat products has a positive trend. It reached the level of 95.7%. However, self-sufficiency in milk and dairy products shows a negative trend of decline by 4.4 pp. In 2019, the level of milk and dairy products self-sufficiency was set at 83.9%. There is a positive trend of growth in eggs self-sufficiency by 1.3 percentage points during the whole study period.

The level of self-sufficiency in potatoes, vegetable and melons shows multidirectional trends. There is a negative dynamic for potatoes (-4.3 pp), while positive for vegetables and melons (+1.6 pp).

The most critical situation is with self-sufficiency in fruits and berries. During the study period, self-sufficiency in this food group decreased from 55.7% in 2000 to 38.8% in 2019.

In general, the change in food self-sufficiency for the main food groups shows multidirectional trends. Self-sufficiency in grain, meat and meat products, eggs, vegetables and

melons tends to grow, while in milk and dairy products, potatoes, fruits and berries, on the contrary, to decrease.

Then, we have to consider realization of target food security indicators established in the Doctrine (table 3).

Table 3

Assessment of target values in self-sufficiency realization in Russia for the main food groups during 2000-2019. (%)

Index	Years					Standard	Deviation (+, -)		
	2000	2010	2016	2017	2019		2010 from 2000	2019 from 2000	2019 from 2010
Corn	7.5	-1.7	65.0	75.6	52.2	95	-9.2	44.7	53.9
Meat and meat products (in terms of meat)	-18.0	-12.8	5.6	8.5	10.7	85	5.2	28.7	23.5
Milk and dairy products (in terms of milk)	-1.7	-9.5	-9.3	-7.7	-6.1	90	-7.8	-4.4	3.4
Potato	4.6	-19.1	-1.8	-3.9	0.3	95	-23.7	-4.3	19.4
Vegetables and melons	-4.4	-9.5	-2.6	-2.4	-2.8	90	-5.1	1.6	6,7
Fruits and berries	-4.3	-33.2	-23.5	-26.9	-21.2	60	-28.9	-16.9	12.0

The data in Table 3 indicate that the target values of self-sufficiency in grain are done with a few exceptions during the entire study period. In 2016-2019 the level of self-sufficiency in grain exceeded the target value by more than 50%. The volume of meat production in 2000-2010 did not provide the target value of self-sufficiency, however, by the end of the study period, the situation improved. Growth of production allowed to exceed the target level. For milk, vegetables and melons the target level of self-sufficiency was not achieved by the end of the study period. Situation is opposite for potatoes. In 2000-2019 there is a decrease in self-sufficiency. In 2000-2010 situation with self-sufficiency in fruits and berries was the worst, but then it normalized.

In general, the situation with the achievement of food self-sufficiency should be assessed as difficult. The situation with milk and dairy products, vegetables and melons, fruits and berries remains critical.

Food security is not only food self-sufficiency, but food availability for the population, too (http://www.consultant.ru/ document / cons_doc_LAW_204200- 2016).

Thus, it is necessary to estimate change in consumption of food products by the Russian population (table 4), (MINAKOVA et al., 2018).

Table 4

Assessment of comparison actual and standard food consumption by Russian population for 2000-2019 (kg / year / person)

Product name	Years					Standard	Deviation (+, -)		
	2000	2010	2016	2017	2019		2010 from 2000	2019 from 2000	2019 from 2010
Bread products	13	6	3	1	0	96	-7	-13	-6
Potato	3	-24	-30	-31	-31	90	-27	-34	-7
Vegetables and melons	-58	-43	-35	-38	-36	140	15	22	7
Fruits and berries, including dried in terms of fresh	-73	-30	-27	-27	-26	100	43	47	4
Meat and meat products in terms of meat	-23	6	15	15	16	73	29	39	10
Milk and dairy products in terms of milk	-126	-62	-52	-59	-59	325	64	67	3
Eggs, pieces	-58	-39	-31	-30	-29	260	19	29	10
Fish and fish products in terms of fish	-8	-1	0	0	0	22	7	8	1
Sugar, including confectionery, in terms of sugar	6	9	8	7	7	24	3	1	-2

The data in Table 4 indicate that the decrease in the consumption of bread products had a positive value, since in 2019 the actual consumption fully matches the standard. On the other hand, the decline in potato consumption led to deficit in 2017-2019 in amount of 31 kg / year / person.

The growth in consumption of such food groups as vegetables and melons, fruits and berries, milk and dairy products was not enough to reach recommended consumption rate. However, a positive moment is the approach to the standard established by the Ministry of Health of Russia.

The excess of sugar and confectionery products consumption can also be considered as a negative fact. However, since 2010 there has been a positive trend in approaching the standard.

Consumption of fish and fish products in 2016-2019 fully matches to the standard. The standard realization is the result of an increase in the consumption of this food category.

Another important factor in the availability of food is income of population (DANCEA and REIANA, 2011). To assess their impact on the basic food consumption level, we will divide foods by percentile groups and determine the deviation from the standard consumption (table 5).

Table 5

Dividing Russian population by 10 percentile groups depending on the level of average per capita disposable income in 2019 (kg / year / person)

Product name	I	II	III	IV	V	VI	VII	VIII	IX	X
Bread products	-5	-3	-1	2	4	1	2	1	3	-2
Potato	-37	-35	-33	-30	-30	-31	-29	-31	-25	-32
Vegetables and melons	-70	-57	-48	-42	-36	-36	-26	-22	-14	-9
Fruits and berries, including dried in terms of	-58	-46	-39	-34	-29	-25	-18	-12	-2	1

fresh										
Meat and meat products in terms of meat	-14	-1	5	10	15	18	25	30	37	38
Milk and dairy products in terms of milk	-150	-113	-93	-71	-58	-51	-34	-22	0	-5
Eggs, pieces	-85	-62	-47	-35	-29	-27	-16	-12	13	14
Fish and fish products in terms of fish	-8	-6	-3	-2	0	0	2	4	5	6
Sugar, including confectionery, calculated as sugar	2	4	5	7	8	8	9	9	12	10

The data in Table 5 allow us to say that in group where population has the lowest incomes (I) there is an underconsumption of all main food groups with the exception of sugar. Its consumption is 2 kg / year / person higher than the standard. The biggest deviation from the standard is observed for milk and dairy products (-150 kg / year / person), eggs (-85 pieces / year / person), vegetables and melons (-70 kg / year / person), fruits and berries (-58 kg / year / person) (MINAKOVA and all., 2018).

The group of the population with the highest incomes (X) has a significant excess of standard consumption for all food groups with the exception of bread products, potatoes, vegetables and melons, dairy and milk products. Significant excess of consumption of meat, meat products and sugar should be assessed from a negative side.

In general, grouping allows us to make a conclusion, that the higher incomes the higher food consumption. It means that the main reason why underconsumption exists is low population incomes.

CONCLUSIONS

The study showed that food deficit and famine in Russia, caused by unfavorable natural and climatic factors, wars, irrational government policies, have serious socio-economic consequences and threats to the country's development. Hunger and related epidemics became the reasons for a significant reduction of the country's population and, of course, the labor force. Considering territorial extent of the country and its low population density, the negative impact of food deficit was increasing. In addition to demographic and related economic problems, hunger result in popular disorder, uprisings, the growth of banditry, and, finally, fall of the government system.

At the modern stage of the country's development, food security issues are regulated by the Food Security Doctrine 2020.

As a result of the assessment of the Russian Federation food security level, a number of conclusions can be made:

1. Self-sufficiency in grain, meat and meat products, vegetables and melons shows a positive dynamics of growth, and in milk and dairy products, potatoes, fruits and berries – a negative of decline.
2. Target indicators of food self-sufficiency have been achieved and exceeded for grain, meat and meat products, eggs, potatoes, while for the rest of the products level of self-sufficiency is not high enough.
3. The amount of food consumption shows positive growth dynamics in all major groups beside bread products and potatoes. Scientifically grounded consumption norms for potatoes, vegetables and melons, fruits and berries, milk and dairy products, eggs have not been reached, while for the rest there is an excess of the norm.

The main reason for the underconsumption of food by the population is the low income of the population.

The publication was carried out within the framework of the State Assignment of the Ministry of Science and Higher Education of the Russian Federation (*topic No. 1.13.20F "Conceptual foundations for ensuring the economic security of the Russian Federation in the context of digitalization: the contours of spatial transformations")*.

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