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**REGIONAL FOOD SELF-SUFFICIENCY ASSESSMENT AS A**  
**FACTOR OF NATIONAL FOOD SAFETY**

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***Abstract***

The most important component of national food safety is the regional aspect. Regional food self-sufficiency is not only delay-free production of high-quality food products, but also their physical and economic accessibility to the population in the region. The particular characteristics of regional economic development predetermines the entire system of risks and threats that affect regional and national food safety. The authors assessed food self-sufficiency in the Samara region based on the analysis of the dynamics in production and consumption of basic food commodity, impact assessment of food exports and imports on the balance of food resources, and demand in the agrifood market. Despite the positive trends in agribusiness industry development in the region and resource availability, there are threats to reduce the level of regional food self-sufficiency and food safety. In this regard, under modern conditions, it is necessary to systematically study the factors that form food safety and threaten it, as well as a constant analysis of the dynamics of the socio-economic situation in the regional agribusiness industry as a fundamental factor to ensure food sovereignty. The purpose of the study is to analyze the development level of the agrifood sector in a particular Russian region, assess the productivity level of agricultural products and food staples consumption, consider food imports and exports in the region, identify current trends of food market development in the region, and propose activities to increase the level of regional food self-sufficiency.

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**Keywords:** Agribusiness, food market, food safety.



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## **1. Introduction**

Food safety is an essential aspect of national security that determines a country's ability to ensure not only its economic but also political independence. In this regard, agribusiness development is recognized as a strategic priority in most states. In Russia, it is extremely important to take into account the specificity of regional economic development that predetermines the entire system of risks and threats affecting regional and national food safety.

## **2. Problem Statement**

In political, economic and social life in Russia, the problem to ensure national food safety remains one of the central issues. Maintenance of national food safety should be considered as the most important condition of sovereignty, economic security, state social stability, its independence in international relations, and implementation of geopolitical strategy. The regional aspect is the most important component of national food safety.

## **3. Research Questions**

The analysis of the Samara region agribusiness, according to the types of products, was carried out. The dynamics in imports and exports of food and agricultural raw materials in the region was assessed. The population's consumption of food products was studied, and the demand in the agrifood market was estimated. The analysis of dynamics and development in the markets of the main types of regional food products was performed.

## **4. Purpose of the Study**

The purpose of the study is to analyze the development level of the agrifood sector in a particular Russian region, assess the productivity level of agricultural products and food staples consumption, consider food imports and exports in the region, identify current trends in food market development in the region, and propose activities to increase the level of regional food self-sufficiency..

## **5. Research Methods**

To answer the research questions, the following methods were used: dialectical, abstract-logical, economic-mathematical, comparative analysis, and research of economic and social processes on the basis of economic-statistical analysis.

Informational background of the research is data of the Federal State Statistics Service of the Russian Federation, the Ministry of Agriculture of the Russian Federation, and the Ministry of Agriculture and Food of the Samara region.

## 6. Findings

The smart state agricultural policy of recent years has contributed to the development of Russian agribusiness industry, which received a new impetus as a result of food imports embargo by the Decree of the President of the Russian Federation on 6 August 2014 "On the application of certain special economic measures to ensure the Russian Federation security" (2014). Scientists rightly point out that global food safety depends on the policies of different countries, including the European Union (Bureau & Swinnen, 2018). Due to the fact that food safety has an important role to ensure sustainable development and human well-being, it has become the subject of global policy (Xu, Hu, Tan, Yang, & Jiang, 2019).

Over the past five years, our country has reduced food imports by 31.2%, that is to say, from 43.3 billion dollars in 2013 to 29.8 billion dollars in 2018. Russia has reached and exceeded the threshold requirements of the Doctrine of food safety for a number of key food products due to the implementation of the imports substitution policy (Ministry of Agriculture of the Russian Federation, 2019). Grain and grain legume crops share of domestic production in total resources in the national market, according to the results of 2018, amounted to 99.4%, which is above the threshold requirement of the Doctrine by 4.4 points, sugar - to 95.7% versus 80%, vegetable oil - to 81.5% versus 80%, meat and meat products – to 92.8% versus 85%. As to potatoes, the indicator is almost equal to the target level of 95% (94.7% in 2018). As to milk, dairy products and salt, there is some lag behind the food safety values. However, it is planned that the positive trend in the dairy industry will allow to achieve the expected targets over the next 8 years (Vesti Economy, 2019).

Russian agricultural producers managed to ensure the necessary production sizes, both to meet domestic needs and develop sustainable exports. In 2018, our country exported food in the amount of 25.8 billion dollars, compared to 16.8 billion dollars in 2013. There was a significant increase in exports of meat and fat-and-oil products, fish and seafood, and food and processing industry. Russia headed the world list in terms of wheat supplies, and the country is among the three leaders in terms of some commodity items. The current trend in the foreign trade development allows to believe that in the mid-term our country will enter the top ten world exporters of agricultural products. According to the passport of the Federal Project "Exports of agricultural products", cross border sales of food will increase to 45 billion dollars per year up to 2024. To achieve this goal, the state will allocate 406.8 billion rubles, which will be spent to develop production and agricultural logistics, eliminate trade barriers, and give prominence to the exports of Russian products.

The implementation of the State Program for agribusiness development and market regulation of agricultural products, raw materials and food has provided the economic sector with steadily increase in the state support volume. Due to these measures, Russia has seen a significant increase in the crop farming production: crops (from 92.4 million tons in 2013 to 113.3 million tons in 2018), sugar beet (from 39.3 million tons to 42.1 million tons), soybeans (from 1.5 million tons to 4 million tons), glass-grown vegetables in agribusiness organizations (from 615 thousand tons to 1.1 million tons), fruits and berries in agribusiness organizations, peasant farms and grown by sole entrepreneurs (from 667 thousand tons to 1.2 million tons), and other crops.

Animal farming has achieved significant progress. In agribusiness organizations in 2018, the production of pigs for slaughter live weight basis increased to the level of 2013 by 60% and amounted to 4.1 million tons. Poultry production went up from 3.5 million tons in 2013 to 6.1 million tons.

There is also positive dynamics in production of processing industry, in particular, sugar (from 4.5 million tons in 2013 to 6.3 million tons in 2018), sunflower oil (from 3.3 million tons to 4.5 million tons), and cheese (from 344.7 thousand tons to 472.6 thousand tons).

Against the background of overall growth of agribusiness production, there is increase in the profitability of agricultural organizations. According to the results of the year 2018, with subsidies, it reached 12.5%, which is higher than the previous year and the year 2013 (7.3%). The level of wages in rural areas has also increased. In 2018, it amounted to 25.5 thousand rubles versus 15.1 thousand rubles in 2013.

In general, due to the stimulating and restrictive measures, the Russian agribusiness industry managed to attract investments and improve employment both in agriculture and in related industries. The Samara region ranks 50th in the Russian Federation in terms of area and 11th in terms of population. The area of farmland, as part of agriculturally used areas, is 3.8 million hectares (more than 7% of agricultural land in the Volga Federal District), including 2.8 million hectares of arable land. In 2018, the volume of gross agricultural production amounted to 85.4 billion rubles. The share of agricultural products of the Samara region in the all-Russian production is 1.7%, and in the Volga Federal District (VFD) is 7.5%.

In the structure of gross agricultural product, crop production amounted to 64.5%, and livestock production went up to 35.5% in 2018. The crop industry specializes in the cultivation of cereals, oilseeds and forage crops, potatoes, vegetables, and fruit and berry products. Animal husbandry in the region specializes in cattle, pig and sheep breeding, and poultry farming.

Some scientists consider food safety in relation to food system aspects such as food safety and healthy eating (Walls, Baker, Chirwa, & Hawkins, 2019). The regional volume of agribusiness production in fact should not only meet the existing needs of the regional inhabitants in food staples (food self-sufficiency), but also provide the consumption level, which includes scientifically sound standards established by the Institute of Nutrition RAMS.

According to the table 01, the bread products consumption exceeds the rational norm in the Samara region, in the Volga Federal District, and in the country as a whole.

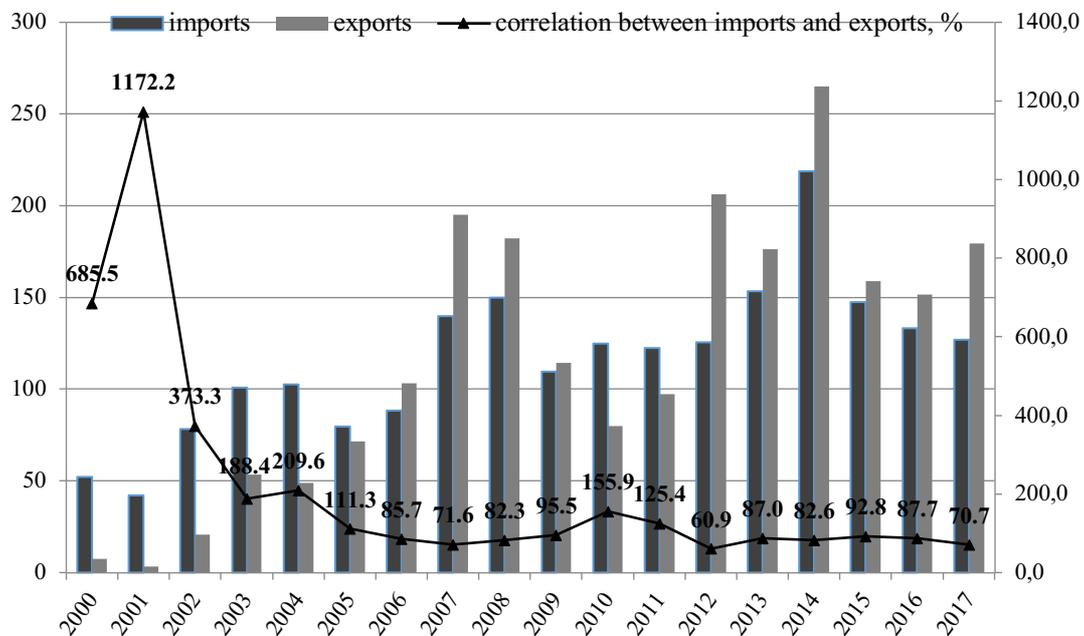
**Table 01.** Population consumption of food staples in 2018 per capita, kg

	Rational norm	The Samara region (SR)	The Volga Federal District (VFD)	The Russian Federation (RF)	As % of rational norm		
					SR	VFD	RF
Bread products	107	109	115	116	101.9	107.5	108.4
Potatoes	120	92	97	89	76.7	80,8	74.2
Vegetables	145	118	99	107	81.4	68.3	73.8
Meat and meat products	81	66	73	75	81.5	90.1	92.6
Milk and dairy products	392	241	266	229	61.5	67.9	58.4
Eggs, pcs	298	280	283	280	94.0	95.0	94.0

Source: authors based upon data of the Federal State Statistics Service of the Russian Federation, (2019).

In 2018, the production shares in per capita consumption of meat reached 48.7%, milk – 55.7%, and eggs – 11.6%, while in 2000, these figures were 67.2%, 93.5% and 48.8%, respectively. Economic accessibility is of particular importance to the food safety aspect (Glinskiy, Serga, Alekseev, Samotoy, & Simonova, 2018).

The food needs of the regional population are satisfied through imports from other regions and import deliveries, which negatively affect the formation of the food resources balance in the region and increase the competition intensity in the food market. Some scientists associate the issues of food insecurity and malnutrition in developing countries with urbanization and demographic changes (Hatab, Rigo Cavinato, Lindemer, & Lagerkvist, 2019). Between 2000 and 2017, imports of food and agricultural raw materials increased by 2.4 times, that is to say, 74.8 million dollars (figure 01). The main importers were the EU, Belarus, China, Turkey, Ecuador, and Brazil. If at the beginning of the period under review imports exceeded exports of goods, the foreign economic situation has changed since 2006 (except 2010 and 2011).



**Figure 01.** Dynamics in imports and exports of food and agricultural raw materials in the Samara region in 2000 -2017 (mln. dollars)

Source: authors based upon data of the Territorial Authority of the Federal State Statistics Service in the Samara Region, (2019)

If in 2000, imports of food and agricultural raw materials was almost 7 times higher than exports, in 2017, this figure was almost 30% inferior to the compared one. Exports of these types of goods increased by 23.6 times, that is to say, by 171.8 million dollars. The share of food products and agricultural raw materials in the total commodity composition of the Samara region exports increased and amounted to 4.2% in 2017, but it decreased and amounted to 5.6% in the total commodity composition of imports.

However, despite a slight decrease in the volume of food imports in total imports in the Samara region, in 2017 it was spent on the purchase of food on 74.8 million dollars more than in 2000 (+143.6%).

In the structure of agricultural products exports in the region, the largest share belongs to the fat-and-oil production: 35% in 2018 (46.5% in 2017), and 25% for cereals (5.2% in 2017), that is to say, 54.6 million dollars. Exports of food and raw materials improves the economy of the region. Due to the fact that export prices are higher than regional ones, increase in the exports share is a positive factor in the development of the regional food market.

Regional food sovereignty is characterized by the food self-sufficiency level, which is estimated on the basis of statistical data of food resource balances in comparison with the threshold requirements of the Doctrine. The steady excess of the actual level of food sovereignty over its threshold requirements marks the presence of exports potential. The threat to the regional food safety is assessed through the dependency ratio of the regional market on external supplies (Nekrasov, 2009).

**Table 02.** State and dynamics in development of the food staples markets in the Samara region in 2000-2018

Factors	2000	2007	2017	2018.	2018 versus 2000 (+,- points)
<b>Potatoes market</b>					
Self-sufficiency level, %	135.1	134.4	74.1	67.5	- 67.6
Dependency ratio of the regional market on foreign supplies	0.05	0.02	0.31	0.34	+ 0.29
<b>Vegetables market</b>					
Self-sufficiency level, %	101.7	104.7	77.9	84.5	-17.2
Dependency ratio of the regional market on foreign supplies	0.12	0.09	0.34	0.22	+ 0.10
<b>Meat and meat products market</b>					
Self-sufficiency level, %	67.2	58.0	53.1	48.7	- 18.5
Dependency ratio of the regional market on foreign supplies	0.33	0.45	1.19	1.54	+ 1.21
<b>Milk and dairy products market</b>					
Self-sufficiency level, %	93.5	62.7	56.8	55.7	- 37.8
Dependency ratio of the regional market on foreign supplies	0.19	0.48	1.11	1.14	+ 0.95
<b>Eggs market</b>					
Self-sufficiency level, %	48.8	36.8	12.5	11.6	- 37.2
Dependency ratio of the regional market on foreign supplies	0.53	0.68	7.76	8.43	+ 7.90

Source: authors based upon data of Territorial Authority of the Federal State Statistics Service in the Samara Region, (2019).

It has to be noted that the region does not have its own food production, which can fully satisfy the population needs. The regional level of food self-sufficiency declined from 2000 to 2018. The situation in the market of eggs, meat and milk is extremely catastrophic. The high level of regional self-sufficiency in grain (123.1% in 2018) deserves a positive assessment, which allows to implement an export-oriented policy. The degree of market saturation with food largely depends on imports from other regions of the country (table 02). The imports share in the structure of the total volume of imported milk and dairy products was 0.1% in 2018, meat and meat products 0.4%, eggs 0.2%, vegetables 3.7%, and potatoes 12.6%.

The most important aspect of the agrifood market efficiency is bringing food to the end consumer (Kuzdavletova, 2008). Recently, there have been positive changes in working with distribution companies. They are becoming more loyal to local manufacturers and ready for cooperation. The products of the large food enterprises and processing industry of the Samara region such as PJSC «Syzran meat-packing plant», Ltd «Bacon», «Garibaldi», «Factory of Quality», PJSC «Samaralakto», PJSC «Tolyattimoloko», PLC «Samara bakery and confectionery complex», PLC «Samara pasta factory VEROLA», PJSC «Zhigulevsk Beer», Ltd «Danon Industry» are widely presented in the regional supermarkets of federal chains, etc.

The role of farming is also increasing in other countries. Thus, the number of farmer's markets grew up in 1994-2014 by 4.8 times (to 8,476) in the United States. Researchers have determined that consumer choice of farmer's market to do the shopping depends on better food quality and local food support (Yu, Gibson, Wright, Neal, & Sirsat, 2017).

At the same time, while objectively assessing the situation, it is necessary to recognize that local agricultural producers and processing enterprises cannot always meet the requirements of retail chains. Basically, there are some parameters of product deliveries such as strict compliance with the delivery frequency, formation of the necessary volume of commercial batches, maintaining the product quality of all commercial batches, small packaging, barcoding, etc.

International science and practice shows that, in general, all researches focus on food production rather than people's access to food (Borch & Kjærnes, 2016). In this regard, an important aspect to assess regional food safety is the study of the state and dynamics of the population effective demand level, which characterizes the agrifood market stability. Incomes of the Samara region population after several years of falling began to grow (Internet portal of the Samara Provincial Duma..., 2019). Real wages increased by 4.6% in 2017 and by 6.9% in 2018. This allows to predict the growth in demand for food in the region and the increase in the dependence of the regional market on foreign supplies.

The study showed that the agribusiness industry in the Samara region has necessary resources and conditions to increase the level of the regional food self-sufficiency, strengthen the role of the region in solving national food safety problems, and implement strategic national goals and objectives to develop the high-performance export-oriented agribusiness sector in the Russian Federation. These efforts will be supported by the extension of the state support measures with reorientation to development of high-added value products and export-oriented industries, growth of the Russian food competitiveness in national and world markets, and improving the regulation of agricultural raw materials and food markets.

Thus, the study on the regional food safety requires a systematic approach, which includes constant monitoring of the factors that build food safety and threaten it, as well as a constant analysis of the dynamics in the socio-economic situation in the regional agribusiness industry. Implementation of the system approach will allow to respond quickly, prevent threats, and develop the measures to protect agricultural economic sectors in order to maintain food safety at regional and national levels.

## **7. Conclusion**

Due to the stimulating and restrictive measures, it became possible to carry out the inflow of investments that provides employment both in agribusiness and related industries in the Russian

agribusiness, including the Samara region. In recent years, there has been a positive trend in the regional exports of food and agricultural raw materials, with decrease in imports. The researches have shown that the Samara region does not have own food production, which fully meets the population needs, and foreign and imported supplies play a significant role in this situation. However, the resources and conditions for the growth of food self-sufficiency have been formed, which will be implemented through the growth of food competitiveness, prolongation of state support measures, and optimization of mechanisms to regulate food markets. The implementation of a systematic approach in the study on food safety in the region will allow to respond quickly, prevent threats, and develop measures to protect agricultural economic sectors in order to maintain food safety at the regional and national levels.

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