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## Development of food exports to ensure economic security

**Abstract.** This paper deals with knowledge in the field of increasing the level of the state economic security in view of the development of foreign trade in food products. The obtained results make it possible to determine the relationship between food and economic security, as well as the place of foreign trade in achieving sustainable development.

The assessment of the volume of food production and the level of food security has allowed the authors of the paper to identify promising food groups for export. They include meat and meat products, as well as vegetables and gourds. These groups were determined on the basis of an assessment of the level of production, the volumes of which correspond to the threshold values of food security and have growth prospects. Calculations of the balance of food products, taking into account the needs of the domestic and foreign markets, are presented in the paper. The calculations are based on the condition of maintaining the target level of food security and increasing economic security.

The main results of stimulating exports of food products will be: diversification of exports, an increase in the country's share in world trade, an increase in foreign exchange earnings, expansion of agricultural production and a cumulative growth in gross domestic product. The instruments of state regulation of foreign trade in food products will be export quantitative quotas for goods the production level of which exceeds the threshold of self-sufficiency, as well as increased export duties on food, the production of which does not cover the domestic needs of the country. As part of the study a potential effect of the proposed measures implementation to improve economic security was presented. The potential for increasing exports is more than 1.5 million tons for meat and meat products and 162 thousand tons for vegetables and gourds.

**Keywords:** Economic Security; Food Security; Foreign Trade Activities; Agricultural Producers; State Regulation

**JEL Classification:** F52; Q17

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**Розвиток експорту продовольства для забезпечення економічної безпеки**

**Анотація.** У статті систематизовано знання в галузі підвищення рівня економічної безпеки держави на основі розвитку зовнішньоторговельної діяльності стосовно продовольчих товарів, що не знижує рівень продовольчої безпеки. Отримані результати дозволили авторам статті визначити точки дотику продовольчої безпеки та безпеки економічної, а також місце зовнішньоторговельної діяльності в досягненні стану сталого розвитку. Оцінка обсягів виробництва продовольства й рівня продовольчої безпеки дозволила визначити перспективні для здійснення експорту товари продовольчої групи, до яких належать м'ясо та м'ясні продукти, а також овочі та баштанні культури. Ці групи були визначені на основі оцінки рівня виробництва, обсяги якого відповідають пороговим значенням продовольчої безпеки і мають перспективи зростання.

Авторами статті представлено розрахунки формування балансу продовольчих продуктів, що враховує потреби внутрішнього і зовнішнього ринків. В основу розрахунків закладено умову підтримки цільового рівня продовольчої безпеки та підвищення рівня економічної безпеки. Основними результатами стимулювання експорту продовольчих товарів будуть: диверсифікація експорту й зростання частки країни у світовій торгівлі, збільшення валютних надходжень і податкової бази, розширення сільськогосподарського виробництва, а також сукупне зростання валового внутрішнього продукту. Інструментами державного регулювання зовнішньоторговельної діяльності продовольчими товарами стануть експортні кількісні квоти на товари, рівень виробництва яких перевищує порогове значення самозабезпеченості, а також підвищені експортні мита на продовольство, виробництво якого не дозволяє покрити внутрішні потреби країни.

**Ключові слова:** економічна безпека; продовольча безпека; зовнішньоторговельна діяльність; сільськогосподарські товаровиробники; державне регулювання.

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**Развитие экспорта продовольствия в целях обеспечения экономической безопасности**

**Аннотация.** В статье систематизированы знания в области повышения уровня экономической безопасности государства на основе развития внешнеторговой деятельности продовольственными товарами, не снижающей уровень продовольственной безопасности. Полученные результаты позволили авторам статьи определить точки соприкосновения продовольственной и экономической безопасности, а также место внешнеторговой деятельности в достижении состояния устойчивого развития.

Оценка объемов производства продовольствия и уровня продовольственной безопасности позволила определить перспективные для осуществления экспорта продовольственные группы, которыми стали мясо и мясопродукты, а также овощи и продовольственные бахчевые. Данные группы были определены на основе оценки уровня производства, объёмы которого соответствуют пороговым значениям продовольственной безопасности и имеют перспективы роста. Представлены расчёты формирования баланса продовольственных продуктов, учитывающего потребности внутреннего и внешнего рынков. В основу расчётов заложено условие поддержания целевого уровня продовольственной безопасности и повышения экономической безопасности. Основными результатами стимулирования экспорта продовольственных товаров станут: диверсификация экспорта и рост доли страны в мировой торговле, увеличение валютных поступлений и налоговой базы, расширение сельскохозяйственного производства, а также совокупный рост валового внутреннего продукта. Инструментами государственного регулирования внешнеторговой деятельности продовольственными товарами станут экспортные количественные квоты на товары, уровень производства которых превышает пороговое значение самообеспеченности, а также повышенные экспортные пошлины на продовольствие, производство которого не позволяет покрыть внутренние потребности страны.

**Ключевые слова:** экономическая безопасность; продовольственная безопасность; внешнеторговая деятельность; сельскохозяйственные товаропроизводители; государственное регулирование.

## 1. Introduction

Every year Russia plays an increasingly important role in the global agro-food market, remaining a major net importer. Food is an instrument of political pressure and social stability. Also, for Russia, a country with a high agricultural potential and a large percentage of rural residents, agriculture determines the country's economic stability in rural areas. For this reason, the role of agriculture in the structure of the Russian economy and ensuring the economic security of the country will increase both in the short term and in the strategic perspective.

Economic security is an integral element of national security, and therefore requires increased attention. Foreign trade activity is a source of foreign exchange and budget revenues that allows selling goods of excess supply for the domestic market, increasing the profitability of domestic production. In Russia, the threshold values of food security have been reached for a number of food groups, and for some other groups they will be achieved in the years ahead. Thus, there is an urgent question regarding the need to expand sales markets in order to avoid surplus products and, as a result, reduce prices and increase profitability of production at the same time. Given the decline in the real level of the Russians' income, the best solution is to enter the world market. With the solution of marketing problems, the budget will receive additional revenues; the owners of the companies will also get revenues; the agricultural market will have favourable pricing; and for the overall national economy this will result in the growth of both employment and gross domestic product.

Thus, economic security is part of national security. At the same time food security is an integral element of the national and economic security. The importance of the agro-industrial sector for the country is determined by a need to ensure a high standard of living of the population, the formation of employment in rural areas as well as food independence.

## 2. Brief Literature Review

A wide range of Russian and foreign scientists have studied issues of ensuring economic and food security as well as related foreign trade activities.

In their work, B. X. Lin and Y. Y. Zhang (Lin & Zhang, 2020) found that 21.15% of the studied agricultural companies experienced a decline in exports due to the impact of the COVID-19 pandemic. At the same time more than 80% of agro-industrial companies had a decrease in the number of export contracts for food supplies. Food security issues are reflected in the works by O. G. Ehebhamen, A. E. Obayelu, I. O. Vaughan, W. A. O. Afolabi (Ehebhamen, Obayelu, Vaughan, & Afolabi, 2017), S. E. Edewor, A. O. Ogbe, (Obayelu, Edewor, & Ogbe, 2017). As a part of the study they came to the conclusion that the global pandemic threatened the food security of African countries, which was already at a fairly low level. In addition, the increase in health care costs became possible, among other things, due to a reduction in funding for food programs.

T. Mizik, A. Szerletics and A. Jambor (Mizik, Szerletics, & Jambor, 2020) in the study of the competitiveness of food exports proposed a methodological approach to its assessment. Using the proposed approach allowed them to determine the competitiveness of food exports of the ASEAN countries. However, the main result of their research was that they identified an extremely high level of competition in the global agro-industrial market.

I. Szczepaniak (Szczepaniak, 2019; Szczepaniak, 2018; Szczepaniak, 2009) have carried out an assessment of the competitiveness of Poland's food exports. According to the obtained results, Poland has increased its competitiveness in the world market, which was highly influenced by the country's EU membership.

A theoretical study of foreign trade in food is reflected in the work by E. P. Makutsenia and M. L. Zapolsky (Makutsenia & Zapolsky, 2019). In their research, they suggest optimal ratios of food exports and imports as well as directions for maintaining a balance between domestic consumption and foreign trade.

The contradictions and issues of choosing export policies concerning food products are reflected in the works by scientists such as R. B. Ali, A. Durand-Morat, E. J. Wailes, J. Luckstead (Ali, Alvaro, Wailes, & Luckstead, 2019), B. Rigod, P. Tovar (Rigod & Tovar, 2019). Scientists such as B. Daviron (Daviron, 2010), J. Clapp and W. G. Moseley (Clapp & Moseley, 2020), S. Pouliot (Pouliot, 2020), and A. Cheptea (Cheptea, 2007) have made a significant contribution to the study of the world food trade.

A leading Russian agricultural scientist, whose research interests include food security, is A. I. Altukhov (Altukhov, 2018). In his scientific works, he analyzes the problems of state regulation

of the agro-industrial sector, conducts research on the current state of food security in the country and suggests ways to improve it.

Among Russian scientists and economists a significant contribution to the development of the theoretical and methodological apparatus for ensuring economic and food security through foreign trade activities was made by M. Y. Lyavina (Lyavina, 2020), N. A. Baryshnikova, O. Kirilyuk and D. Klimetska-Tatar (Baryshnikova, Kiriliuk & Klimetska-Tatar, 2020), T. V. Akhmadulina, V. M. Raspopov and V. V. Derkach (Akhmadulina, Raspopov, & Derkach, 2019), N. V. Naydenova (Baryshnikova, & Naydenova, 2018) and others.

Despite the significant scientific contribution made by those scientists, a number of issues remain unresolved. Insufficient attention has been paid to foreign trade activities in the context of ensuring the economic security of the state. The issue of maintaining a balance between domestic consumption and food exports has not been sufficiently developed either.

### 3. Purpose

To study ways of increasing the level of the state economic security in view of the development of foreign trade in food products. To determine the relationship between food and economic security, as well as the place of foreign trade in achieving sustainable development.

### 4. Results

According to the legislation of the Russian Federation, economic security is a state of security of the national economy, in which economic sovereignty, the unity of the economic area and economic development are ensured.

Food security has a high impact on ensuring economic security. This impact can be traced in four directions by using the Ishikawa diagram (Figure 1).

Figure 1 demonstrates that the development of the Russian light industry is possible due to an increase in the production of plant raw materials (flax, hemp) as well as a decrease in costs of such materials for the textile industry.

It is impossible to ensure the economic security of the state without ensuring the stability of functioning of its economic entities. Agricultural enterprises are less sustainable than those in other industries. Low sustainability is caused by both natural and climatic conditions, as well as by low profitability in a number of production areas. Increasing profitability through government subsidies can increase the sustainability of agricultural production entities. Another area of increasing

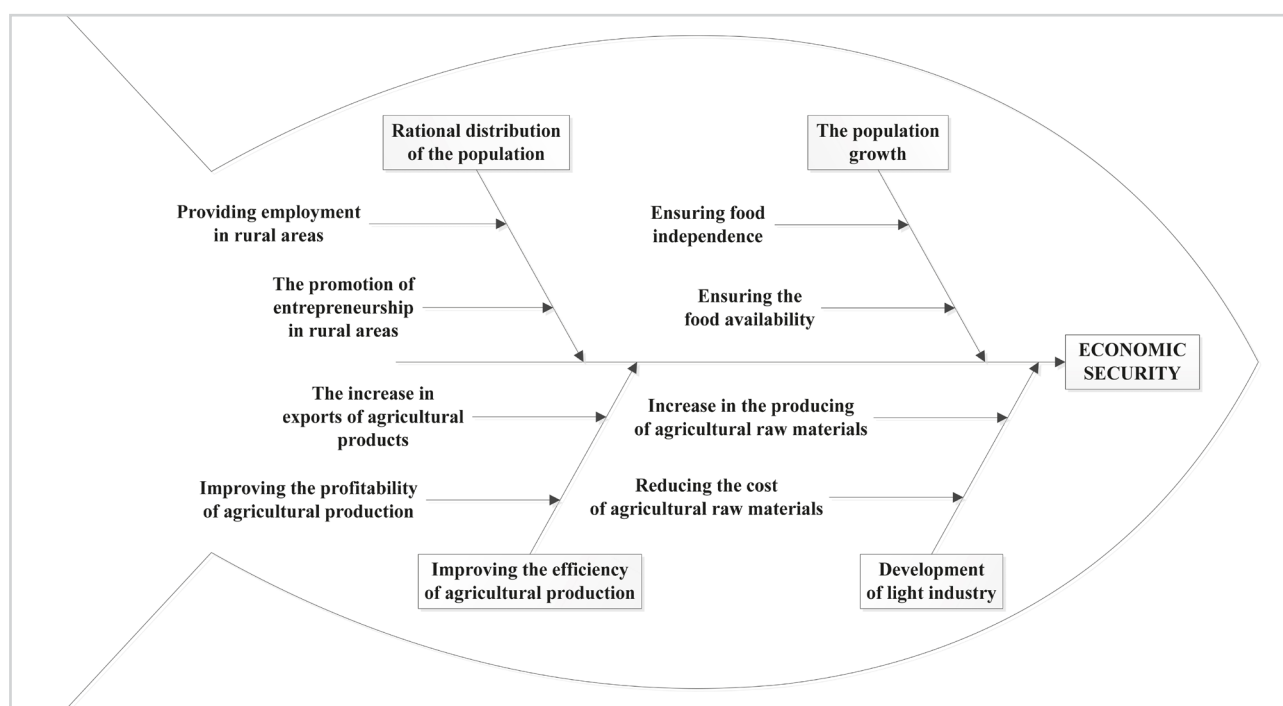


Figure 1:  
**Causal link between food and economic security**  
Source: Developed by the authors

sustainability Development of exports could be another area of increasing sustainability. Exports will give enterprises an unlimited sales market and foreign exchange earnings, which will rehabilitate the domestic market. Foreign exchange earnings will help to minimize foreign exchange risks when purchasing foreign-made production assets.

Well-being of the population is the main priority of any national policy. Providing the population with food in sufficient quantity, of sufficient quality and at affordable prices is food security, which, of course, has a positive impact on the demographic situation in the country.

Rational allocation of the population and rural development are mutually determining directions of economic policy. The development of infrastructure, improvement of living conditions and creation of jobs, including stimulating small businesses, will stop the decline of the rural population and ensure rational territorial settlement.

One of the main indicators of the level of economic security is the GDP growth. In ruble terms, Russia's GDP shows stable growth, yet given the significant devaluation of the national currency, the situation shows fundamental problems in the Russian economy. In dollar terms, the value of GDP in 2015, in comparison with 2014, decreased by almost a third and in 2016 the decline had been continuing. Further, the indicator began to increase, however the country's GDP in 2019 was 78.3% of the level of the year 2014. In view of the global pandemic in 2020, even according to the government forecasts, Russia's GDP may decline by approximately 10%, if compared to the previous year. In our opinion, this is an optimistic assessment that hides the real scale of economic problems which are far from being limited to the fight against the consequences of coronavirus. Russia is still highly dependent on the price environment in the energy market; the share of imported products in the pharmaceutical market is high, and the solution of import substitution problems in the field of information technology and food security is also stagnating (Figure 2).

Russia's GDP in 2014-2019 showed consistently high growth rates. However, there is a caveat: the increase in GDP of 38.9% occurred in the ruble amount; however, given the significant devaluation of the Russian currency, in fact there was a significant decrease in GDP.

The food embargo has become one of the elements of the sanctions struggle between Russia and Western countries. This became a catalyst for the development of Russian agricultural production in 2015-2016, increasing the importance of the agro-food complex in the structure of the economy. However, in the future, difficult macroeconomic conditions in the country removed the momentum from the introduction of the food embargo. As a result, the share of both crop production and animal husbandry in the GDP structure decreased to the level of 2016 (Figure 3).

In 2014-2019, the volume of agricultural production increased by 1.5 times. This growth was driven by a 53.4% increase in crop production and a 33.9% increase in livestock production.

The importance of agriculture for the national economy is determined by three main aspects. The first aspect is a need to ensure food security, the second one is to provide raw materials for light industry, and the third one is the sustainable development of rural areas and the rational

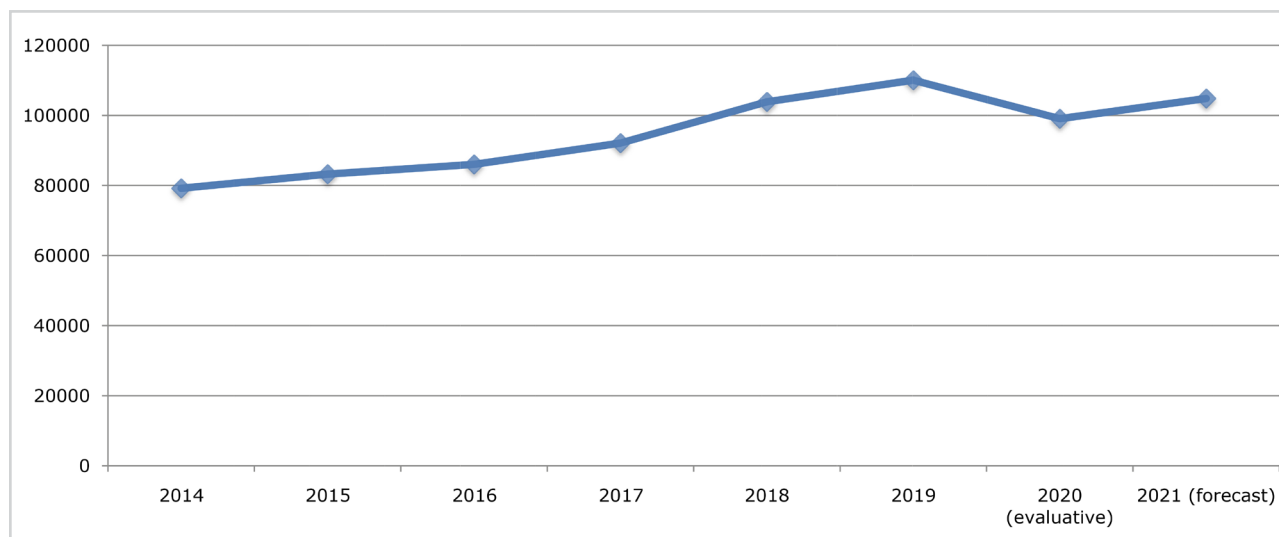


Figure 2:  
**Dynamics of Russia's GDP between 2014 and 2020, and an optimistic forecast for 2021**  
Source: Compiled by the authors based on data from Ifinance (2020)

division of labour. These aspects are crucial in the need to stimulate the development of the agricultural sector, which plays an increasingly important role in the national economy.

The importance of agriculture for the national economy shows high volatility, however on average it is determined by 5%. Despite such a small percentage, it is not necessary to evaluate the obtained value only from the position of low significance. Firstly, the main aspects that determine the significance were presented above. Secondly, only a comprehensive comparative assessment of the size of agricultural production in Russia by foreign countries, with mandatory adjustment for the size of the area of agricultural land, will correctly determine the significance of the agricultural sector (Figure 4).

The solution of the food security problem in a number of important areas of production remains relevant in 2020. First of all, this applies to the products of the meat and dairy complex, vegetables and fruits. In terms of grain, Russia has become one of the main players in the past decade with an average potential of 40-45 million tons per year, fully meeting domestic needs. Significant progress has been made in providing meat products by increasing the capacity of pig farms, for which the level of self-sufficiency is approaching 100% and exports are already being carried out. However, it should be noted that the country has a high level of poverty, which creates a corresponding hidden under-consumption of more expensive meat and dairy products (Golovin et al., 2020). This is why the development of dairy farms is slow, and the country still has a surplus of cheaper products from palm oil and milk powder, while the profitability of dairy production is low and even unprofitable. However, the problem of the development of the dairy complex in view of its biological characteristics is much wider than the low effective demand of a large proportion of the population, which does not allow purchasing high-quality, but more expensive products (Table 1).

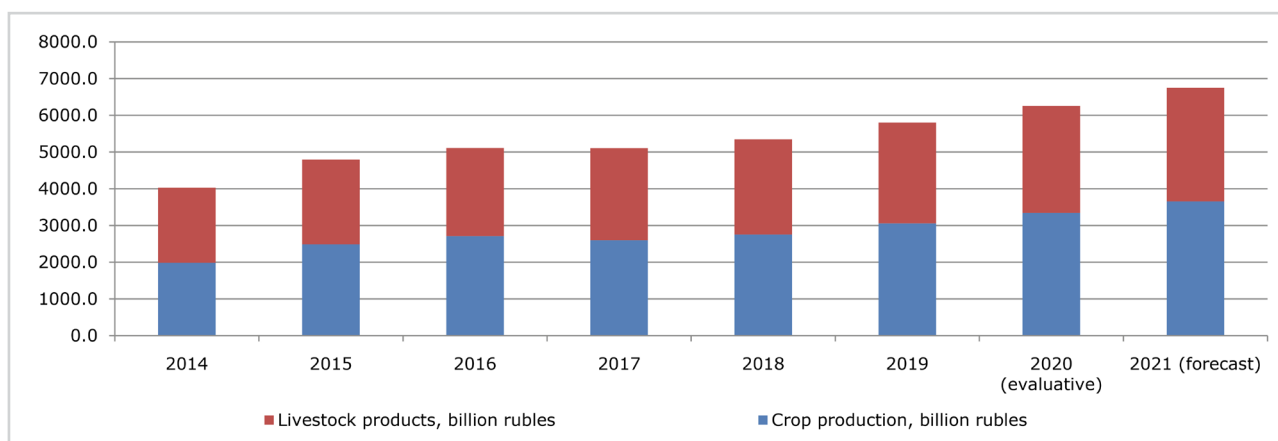


Figure 3:

**Dynamics of agricultural production in Russia for 2014-2020 and an optimistic forecast for 2021**

Source: Compiled by the authors based on data from Rosstat (2020)

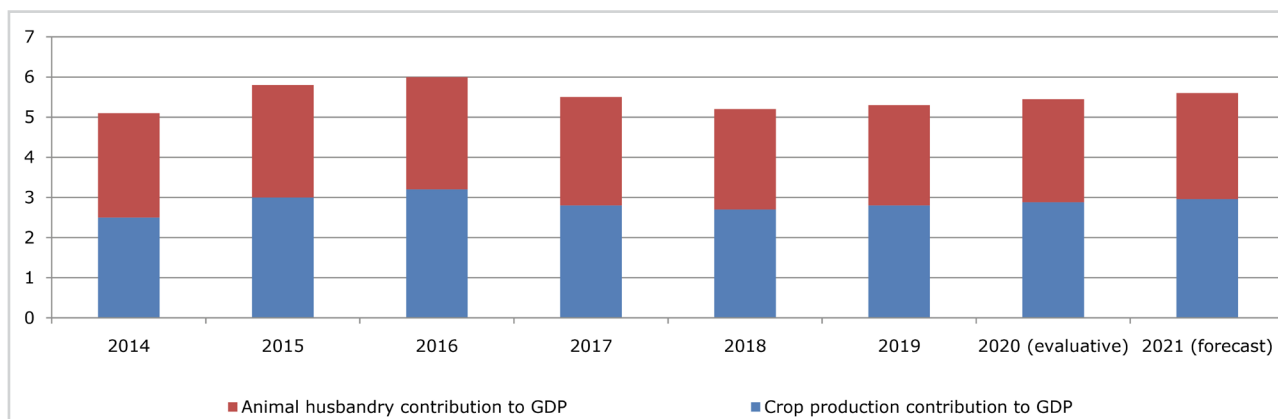


Figure 4:

**Assessment of the contribution of agriculture to the formation of Russia's GDP in 2014-2020, and an optimistic forecast for 2021, %**

Source: Compiled by the authors based on Rosstat data

The state of the agricultural sector closely affects the economic security of Russia, as evidenced not only by its share in the GDP structure, but also by its foreign trade activity. Political and economic factors in the form of sanctions and devaluation have had a huge impact on foreign trade activities of Russian business entities. A number of countries refused to cooperate with Russian companies, which shows the failure of export and import indicators in 2015 relative to the level of 2014. Food imports fell by a third, reflecting the impact of the food embargo. In subsequent years, the size of imports tends to increase due to the diversification of supplier markets. This fact also indicates that, despite the devaluation of the ruble, Russian farmers have not been able to close the vacant niche in the domestic agro-food market. As before, it is food products that remain one of the main elements of the import structure, emphasizing the threat to the country's food and economic security in this position. At the same time, the share of food products in the export structure is increasing even in the context of the structural crisis of the Russian economy and acute political contradictions with many countries in the political arena. This highlights the significant potential of Russian agriculture in a number of areas, the key of which are wheat, and fat and oil products (Table 2).

The data in Table 2 indicate negative trends in Russia's foreign trade. Despite the positive trade balance there is a reduction in all indicators of foreign trade activity. Thus, during the study period the volume of trade turnover decreased by 17.2% by 2019, exports and imports - by 14.9% and 20.8% respectively, and the trade balance - by 5.2%. According to the data by the Federal Customs Service of Russia in January - October 2020, compared to the same period in 2019, the foreign trade turnover decreased by 16.9%, exports - by 22.4%, and imports - by 7.4%. Based on this trend, we have given a preliminary estimate of the indicators for the whole of 2020 and 2021, presented in Table 2. If the total volume of trade turnover is expected to decline in the near future, then in the context of food, on the contrary, the trade turnover should exceed the level of USD 60 billion in 2021 due to exports.

Table 1:  
**Assessment of changes in the level of self-sufficiency in Russia by major food groups for 2014-2021, %**

Indication	Year									Deviation (+/-)	
	2014	2015	2016	2017	2018	2019	2020 (evaluative)	2021 (forecast)	2019 from 2014	2019 from 2016	
Export-oriented food groups											
Grain	156	152	163	174	150	158	177	160	1.9	-4.7	
Eggs	106	106	107	108	108	107	107	108	1.7	0.1	
Potato	103	108	99	97	102	102	102	102	-1.2	3	
Promising food groups for export											
Meat & meat products (in terms of meat)	83	89	91	94	96	98	101	104	14.7	6.8	
Vegetables & food gourds	87	89	90	90	90	90	91	92	3.7	0.2	
Deficient food groups											
Milk & dairy products (in terms of milk)	78	80	81	82	84	84	85	86	5.8	3.3	
Fruit & berries	33	33	37	33	39	41	42	44	7.6	3.6	

Source: Compiled by the authors based on data from Rosstat (2020)

Table 2:  
**Assessment of Russia's foreign trade in the period between 2014 and 2021**

Indication	Year									Rate of change from 2019 to 2014	Deviation from 2019 to 2014
	2014	2015	2016	2017	2018	2019	2020 (evaluative)	2021 (forecast)			
In total, billion USD											
Volume of trade turnover	804.7	534.4	468.1	591.7	693.1	666.6	553.9	570.0	-17.2	-138.1	
Exports	496.8	341.4	281.7	353.5	444	422.8	328.1	355.0	-14.9	-74	
Imports	307.9	193	191.5	238.1	249.1	243.8	225.8	215.0	-20.8	-64.1	
Trade balance	188.9	148.4	90.2	115.4	195	179	102.3	140.0	-5.2	-9.9	
Food products and agricultural raw materials, billion USD											
Volume of trade turnover	59.1	42.9	42.1	49.7	54.7	54.4	57.2	59.5	-8	-4.7	
Exports	19.2	16.2	17.1	20.7	24.9	24.7	28.1	31.0	28.6	5.5	
Imports	39.9	26.7	25.1	28.9	29.6	29.7	29.1	28.5	-25.6	-10.2	
Trade balance	-20.7	-10.5	-8	-8.2	-4.8	-5	-1.0	3.5	-75.8	15.7	

Source: Compiled by the authors based on official data by the Customs Statistics of Foreign Trade of the Russian Federation, Rosstat and data of the AB-Center analytical center

The situation is different for trade in food products and agricultural raw materials. Thus, a decrease of USD 4.7 billion in the volume of trade turnover was caused by a decrease in imports by USD 10.2 billion, exceeding the growth of food exports, which amounted to USD 5.5 billion. However, the reduction in trade turnover caused by a decrease in food imports can be attributed with full confidence to positive aspects. Another positive point was the approach to a positive value of the trade balance for food and agricultural raw materials. During the study period, the negative value of the trade balance decreased from USD 20.7 billion to USD 5 billion (Figure 5).

The assessment of the importance of trade in food products and agricultural raw materials showed positive trends. The growth in the importance of food trade showed positive values in 2014-2016, then there was a slight decline until 2018, and then the growth resumed. Considering the estimated values for 2020 and the forecast for 2021, it is safe to say that growth will continue. Even with the pandemic, food is a commodity, reducing the consumption of which takes place in the last turn.

The peculiarity of the impact of the pandemic is the complexity of the forecast implementation of the development in all socio-economic processes. Agriculture is no exception, since the infectious threat affects all stages of the productive chain from disruption of logistics operations to the production process itself. In a global sense, the role of food as a guarantor of social stability should increase in the crisis period, therefore we should expect continued demand in the global agricultural market. However, in the context of the deterioration of the economic situation in many areas of business activity we should expect a decline in the standard of living of the population, which means that the demand for less expensive and high-quality products should increase. Russia in the global competition relied not on the quality of products, but on the price and individual competitive qualities. For example, in the main export element - grain - the supply is mainly carried out with regard to class 4 and 5 wheat, which has a relatively high content of protein. Despite the fact that grain is one of the few products in the structure of Russian exports which consistently provides foreign exchange earnings, we need a balanced export strategy that meets the economic and food security of the country. The grain product subcomplex is a system-forming element of the agro-industrial complex, stimulating or hindering the development of related industries. For example, the concentration on the cultivation of export-oriented wheat poses a strategic threat to the balanced development of related livestock areas in the domestic market.

Inadequate infrastructure remains a strategic problem for the development of export destinations, which prevents the promotion of domestic food products even in geographically close regions, determining additional transport and logistics costs. Restrictions on increasing exports are a serious problem for further stimulating domestic production for a number of food products. In the conditions of limited demand on the Russian market, it is important to further develop the industry to provide rehabilitation through exports. An additional difficulty in increasing demand in the domestic market is determined by a decline in real incomes of the Russian people. As a result of reduced opportunities for people, the structure of food consumption changes in favour of cheaper products.

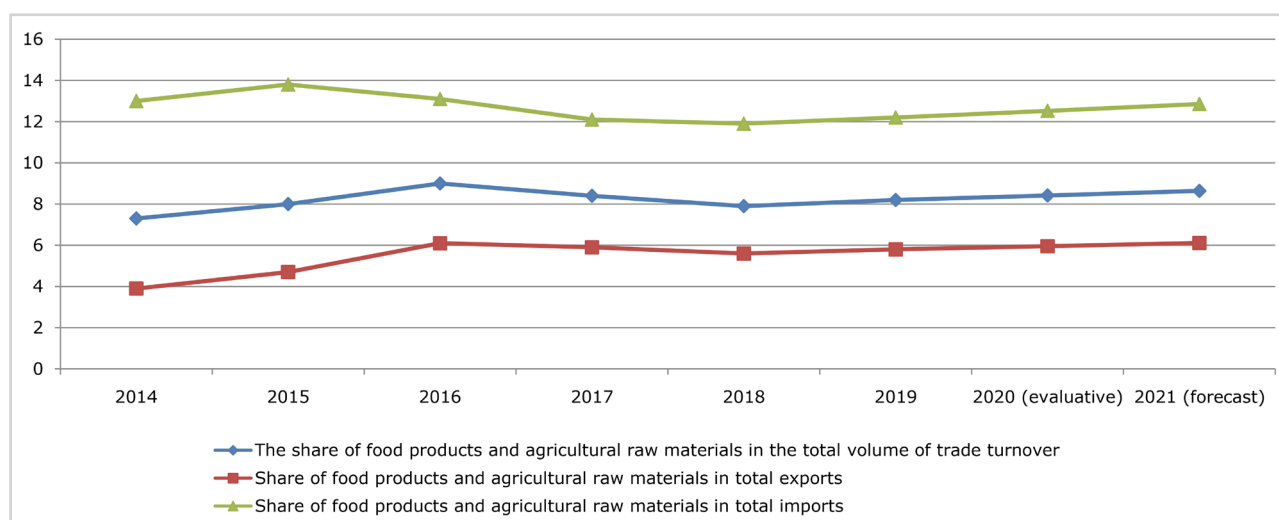


Figure 5:

**Importance of food products and agricultural raw materials in international trade of Russia, %**

Source: Compiled by the authors based on official data by the Customs Statistics of Foreign Trade of the Russian Federation, Rosstat and data by the AB-Center analytical center



The previously presented findings of food self-sufficiency have determined that the grain, eggs and potatoes producing exceeds the standard level of self-sufficiency. The export of these products has been actively developing for a long time. Also, according to Table 1, food groups of meat and meat products, vegetables and gourds were identified as promising for increasing exports (Table 3).

The calculations presented in Table 3 show that reducing losses is an additional resource for reducing the deficit or increasing exports. Thus, the losses of vegetables and food gourds at the end of 2019 amounted to more than 500 thousand tons, while real exports amounted to just over 300 thousand tons.

Saving on losses and reallocating resources will further increase the export of meat and meat products, vegetables and gourds by 1,507 and 162 thousand tons, respectively. Export growth reserves imply the need to comply with the self-sufficiency standards of 85% for meat and meat products and 90% for vegetables and gourds. Achievement of 100% self-sufficiency is not necessary due to the fact that some products cannot be manufactured in the country as well as due to the need to ensure the necessary diversity of assortment.

Within the framework of state regulation of foreign trade activities, it is proposed to establish quantitative export quotas for food products, the level of production of which exceeds the established level of self-sufficiency. Within the established quotas, it is advisable to cancel the export duty. This measure will allow agricultural producers to receive foreign currency earnings, which will reduce foreign currency risks when purchasing means of production abroad.

In the case of food products, the level of that production does not provide a required level of self-sufficiency. In this case, it seems appropriate to establish increased export duties. This tool is actively used in a number of developed and developing countries, for countries to stimulate domestic production and preserve strategic resources. The need to introduce restrictive measures is due to the fact that in some cases, when the standard of self-sufficiency is not met, agricultural producers continue to export food. This situation has occurred in different years with different food groups, including grain. But if the grain deficit and the accompanying price increase were levelled by the state grain fund, such measures are impossible in terms of milk, fruit, berries and other goods, the production of which is below the established standards of self-sufficiency.

## 5. Conclusions

The research has systematized the knowledge in the field of improving the level of the state economic security on the basis of ensuring food security and the development of foreign trade activities with food products. It has been determined that food and economic security have many common points of contact.

Table 3:  
**Export potential of food products without compromising food security**

Indication	2014	2015	2016	2017	2018	2019	2020 (evaluative)	2021 (forecast)	Rate of change 2019 to 2014	Deviation 2019 from 2014
<b>Meat and meat products (in terms of meat)</b>										
Production, thousand tons	9,026	9,519	9,854	10,320	10,630	10,867	11,278	11,705	20.4	1,840.4
Consumption, thousand tons	10,888	10,712	10,855	11,023	11,087	11,137	11,188	11,240	2.3	249.4
Real level of self-sufficiency, %	83	89	91	94	96	98	101	104	17.7	14.7
Regulatory level of self-sufficiency, %	85	85	85	85	85	85	85	85	X	X
Losses, thousand tons	18	18	17	16	18	21	21	22	13.3	2.4
Potential export, thousand tons	-210	431	644	965	1,224	1,421	1,789	2,173	775.9	1,630.8
Real export, thousand tons	135	143	236	307	354	415	526	666	206.9	280.0
The difference between potential and real exports, thousand tons	-345	288	408	658	870	1,005	1,263	1,507	391.0	1,350.8
<b>Vegetables and food gourds</b>										
Production, thousand tons	14,352	14,968	15,064	15,427	15,655	15,890	16,218	16,552	10.7	1,537.6
Consumption, thousand tons	16,581	16,738	16,730	17,104	17,472	17,613	17,827	18,045	6.2	1,031.8
Real level of self-sufficiency, %	87	89	90	90	90	90	91	92	4.2	3.7
Regulatory level of self-sufficiency, %	90	90	90	90	90	90	90	90	X	X
Losses, thousand tons	483	509	510	512	472	501	506	510	3.7	18.1
Potential export, thousand tons	-88	413	518	544	402	540	679	822	716.6	627.1
Real export, thousand tons	76	198	269	248	282	323	462	660	322.5	246.4
The difference between potential and real exports, thousand tons	-164	215	248	296	120	217	217	162	232.2	380.7

Source: Compiled by the authors based on data from Rosstat (2020)

The assessment of the volume of food production and the level of food security made it possible to identify promising food groups for exports, i.e. meat, meat products, vegetables and gourds. The level of production of these food groups exceeds the threshold values of food security.

As part of the study a potential effect of the proposed measures implementation to improve economic security was presented. The potential for increasing exports is more than 1.5 million tons for meat and meat products and 162 thousand tons for vegetables and gourds. The main results of stimulating the export of food products will be: diversification of exports and an increase in the country's share in world trade, an increase in foreign exchange earnings, expansion of agricultural production and a cumulative growth of gross domestic product.

In order to develop foreign trade in food products, an adaptive system for forming a balance of food products is proposed, taking into account the needs of domestic and foreign markets. This system is based on a mechanism for maintaining the target level of food security. The proposed mechanism is based on the introduction of restrictions on exports of food groups, the level of production of which does not cover the needs of the country. In order to prevent a decrease in the level of self-sufficiency, it is advisable to establish quantitative quotas for the export of food products, the level of production of which exceeds the normative values of self-sufficiency.

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