ISSN 2228-9860 eISSN 1906-9642 CODEN: ITJEA8

International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies

http://TuEngr.com

Russian Experience of Export Regulation of Food Flows

Boris A. Kheyfets[1,2], Veronika Yu. Chernova[3*], and Natalia N. Shurakova[2]

[1]*Institute of Economics of the Russian Academy of Sciences, RUSSIAN FEDERATION.*
[2]*Financial University under the Government of the Russian Federation, RUSSIAN FEDERATION.*
[3]*People's Friendships University of Russia, RUSSIAN FEDERATION.*
**Corresponding Author (Tel: +7-4954335029, Email: veronica.urievna@mail.ru).*

Paper ID: 13A5J

Volume 13 Issue 5

Received 30 December 2021
Received in revised form 7 April 2022
Accepted 15 April 2022
Available online 23 April 2022

Keywords:
food security; food self-sufficiency; food balance; export regulation; sustainable food markets.

Abstract

In the paper, we discuss wheat export restrictions in Russia in terms of food security. Russia's position in the global grain market and considerable growth in the wheat output generate paradoxes regarding the validity and efficiency of export restrictions. Explanation of emerging phenomena is a goal of our research. To achieve this, we redefine the framework that we use to evaluate food self-sufficiency. We also reveal the relationship between export prices for Russian grain in the foreign market and national wholesale prices. We find that the growth in national retail prices for processed cereal products makes foods less affordable for the population. According to our estimates, in 2020, the volume of grain exported to the global market was significantly lower than the maximum-rated level, the overrun of which could damage self-sufficiency. Therefore, we conclude that export restrictions introduced in the grain market do not have true potential for food inflation regulation. Promotion measures in the agri-food sector and currency movements have a larger effect on price movements in the food market. In terms of economy, to bridge such gaps we need to justify scales of export regulation as well as the development of alternatives for control of food flows.

Disciplinary: International Economic Relations, Food Trade.

Cite This Article:

Kheyfets, B.A.., Chernova, V. Y., and Shurakova, N.N. (2022). Russian Experience of Export Regulation of Food Flows. *International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies, 13*(5), 13A5J, 1-13. http://TUENGR.COM/V13/13A5J.pdf DOI: 10.14456/ITJEMAST.2022.94

1 Introduction

Total or partial compensation for the influence of extreme conditions in world markets on the welfare of the population in an exporting country is the main objective of the export restriction

policy. In response to the COVID-19 pandemic, many countries introduced temporary restrictions on exports of certain goods, including grain (20 measures) and products of the flour-grinding sector (16 measures) to reduce potential shortages in national markets (Casey & Cimino-Isaacs, 2021). Of 133 COVID-19-specific trade measures, in G20 countries since the beginning of the pandemic, 37% are restrictive in nature and cover trade in G20 countries to the amount of USD111 billion (WTO, 2020).

From January 2020-June 2021, countries introduced 324+ measures. This includes Germany and the United States (181 measures each), Russia - 168, Japan - 160, South Korea - 156, and France - 153 (Global Trade Alert, 2021). Measures prohibit or restrict exports of certain goods for COVID-19-related reasons. Most export restrictions are temporary in nature. Their introduction was at the beginning of the pandemic while cancellation was on 1 April 2021. Their objective is to reduce the dependence of national markets on the unfavorable international situation.

Past supply crises (such as the volatility of global food prices in 2007-2008) show that governments are not only ready to use commercial policy tools to maximize the national supply of basic goods, but also do so without a proper analysis of the efficiency of such measures for (inter)national markets or discuss indirect effects (Hoekman, Fiorini, & Yildirim, 2020). The growth in wheat prices in past periods (the gap between the global supply and demand) was 30% due to export restrictions. As for the rice, the influence reached 45% (Martin & Anderson, 2012). Although the situation in food markets at the beginning of the 2020 pandemic differed significantly from that in 2007 with a higher level of production, lower prices (Espitia et al., 2020) and the high size of stocks exceeding the level of availability as of the end of 2009-2010 (70-100% excess) (Voegele, 2020). In April 2021, the FAO food price index averaged 120.9 points, which is 30.8% higher than in the same period of 2020. The cereal price index had a 26% rise compared to the level of April 2020 (FAO, 2021), which we can compare to 2007 when food prices had a 27% rise (FAO, 2009).

In 2020, Russia announced the introduction of a quota for grain exports and export duty (Interfax, 2021). At the same time, over the past 20 years, Russia has nearly doubled its wheat production, and from an importing country in the past, it turned into the largest exporter reaching a share of 20% of global supply (Durisin & Fedorinova, 2021). Over the past decade, Russia has repeatedly introduced measures to restrict grain exports in cases of growing global prices in the food crisis of 2007-2008, crop failure because of the severe drought in 2010 (Fellmann, Helaine, & Nekhay, 2014), and sudden rouble devaluation in 2015.

On the grain market, the export restrictions that Russia introduced did not have a significant influence on the stabilization of consumer prices in the national market. This brings up the question of whether there is a threat to food security.

These reasons predetermine the *research goal*, which we state as clarifying the reasons and consequences of restrictions on Russian grain exports in terms of food self-sufficiency and the development of the evaluation framework for food security threats. *The objectives of the research* are as follows: develop the framework for evaluation of food security threats, evaluate food security

threats in Russia due to increased grain exports that higher world prices cause, detect the dependence of national grain prices on export prices, and explore implications of export restrictions for participants in the grain food chain.

2 Literature Review

Self-sufficiency and stable food prices are a starting point in the food security analysis (Enriquez, 2020; Clapp, 2017; Fellmann *et al.,* 2014; Kuzmin, 2015, 2016). The drive of states toward food self-sufficiency lies in their desire to reduce the vulnerability of national food markets to impacts of macroeconomic and geopolitical shocks, as well as the need for an increase in employment and a decrease in unemployment (Kheifets & Chernova, 2019). In practice, countries often seek to increase national food output in relation to total consumption, but they do so in different ways and rarely completely abandon international commerce. Likewise, few countries ignore national output and only rely on international commerce to meet all their food needs (Clapp, 2017). However, despite the growth in world food output, the average food self-sufficiency of countries has been in a steady decline over the past decades (Schramski, Woodson, Steck, *et al*., 2019).

The problem of insufficient food security is aggravating because of rapid development in the biofuel industry around the world (Kurowska *et al*., 2020). Over the past ten years, we have seen a clear increase in biofuel production. This has led to higher demand for non-food applications of agricultural raw materials (Advanced biofuels summit, 2021). In this regard, we have grave concerns about rising food prices and the impact of increased biofuel production on food security (Brinkman *et al.*, 2020).

Target achievement of food self-sufficiency is usually a reason for introducing export restrictions against the background of price instability in world markets (Beckman et al., 2018). Other reasons for the use of export restrictions relating to the following: cost advantages to local processors of raw materials compared to international competitors (Liefert & Westcott, 2015), increase food output available for consumption in a national market and price reduction (Fellmann *et al.,* 2014), etc. But empirical research shows that export restrictions do not always achieve expected goals and, in many cases, exacerbate food price shocks (Estrades et al., 2017). Moreover, such measures are often ineffective for the whole society (Wright, 2011). Export restrictions narrow international supplies, and if a country is large enough, this leads to higher world prices (Espitia *et al.,* 2020). The consequences of export restrictions are clear in the countries that show heavy dependence on imports (Deuss, 2017).

Losses caused by restrictions of various types largely depend on the price elasticity of demand and supply (Siddhartha & Tim, 2009). The impact of export restrictions on the national market leads to changes in prices, output, consumption, and trade, as well as the welfare of producers and consumers (Aragie et al., 2018).

The literature review shows that economists mostly regard export restrictions as costly and dangerous tools that are a threat to long-term targets in food security. Most contemporary

researchers focus on the consequences of introduced export restrictions in countries that import agricultural products. The influence of rising food prices in an exporting country (if it applies export restrictions) requires more attention. Export controls can also higher prices for these goods, make them less economically affordable for the population, and depress food security. In this regard, a need arises to find a volume of unregulated exports that would not harm food security in an exporting country.

3 Method

According to the 1999 FAO vision, food self-sufficiency depends on the ability to meet food needs from its own national output (FAO, 1999). However, no country would fully provide itself with all the food. Countries import some foods, which is normal (FAO, 2015).

Food self-sufficient countries might specialize their food production to some extent and import some foods. Based on this understanding of food self-sufficiency, we calculate the food self-sufficiency rate (FSSR) as the ratio of national production (*DP*) to the number of foods available for consumption (*DS*):

$$FSSR = \frac{DP}{DS} \times 100\%. \quad (1)$$

At the same time, the number of foods available for consumption, or the total volume of their supply might calculate in different ways: (a) sum of national output, imports, and stock reduction (Puma et al., 2015); (b) sum of national output, imports, and stock changes; (c) sum of national output, imports, changes in stocks minus exports (Clapp, 2017).

Food independence is a key indicator of Russian food security. It refers to food self-sufficiency and lies in the ratio of the agri-food national output to its national consumption volume (Decree of the President of the Russian Federation, 2020). This causes an incorrect evaluation of self-sufficiency (Kulistikova, 2020). First, this interpretation of food security ignores foreign trade in agribusiness. This prevents us from identifying the relationship between export and food self-sufficiency. Second, food self-sufficiency ignores the fact that growing food self-sufficiency might be not because of the output growth, but because of lower consumption.

We admit that the volume of agri-food national output available to consumers (national supply) is the difference between national output minus losses and exports:

$$FSSR_F = \frac{DP}{(DP - L - E) + I + \Delta St} \times 100, \quad (2)$$

where $FSSR_F$ is the food self-sufficiency rate at the actual consumption level, *DP* is the national output of agri-food, *L* is the level of losses of agri-food that appears from problems in harvesting, food processing, storage, packaging, or transportation, and *E* is the volume of exports of agri-food products, *I* is the volume of its imports; ΔSt is difference between stocks of agri-foods products at the beginning and end of the year.

According to the framework within which we make balances of food resources, the change in agri-food stocks over a period is the difference between national output minus agri-food losses, national consumption, and exports:

$$\Delta St = DP - L - DC_{\Sigma} - E, \tag{3}$$

where DC_{Σ} is the total national consumption of an agri-food product, which includes industrial consumption volume (*PrC*), the volume of agri-food product processing (*P*), and individual consumption (*PsC*).

Upon transformation, we receive the following:

$$FSSR_F = \frac{DP}{(DP - L - E) + I + (DP - L - DC_{\Sigma} - E)} \times 100\%. \tag{4}$$

To find the volume of exports that will not damage food security, we admit that the self-sufficiency rate is equal to the self-sufficiency threshold $(FSSR_F = FSSR_D)$ and from equation (4) we obtain the equation to calculate the maximum volume of exports at actual consumption (E_F^L):

$$E_F^L = DP_L - \frac{1}{2\left(\frac{DP_L}{FSSR_D} - DC_{\Sigma} + I\right)} \times 100\%. \tag{5}$$

The maximum-rated volume of exports is a part of the national output of agri-food products that remains when the existing volume of product losses that does not damage national food security meet national needs.

When people consume foods at reasonable rates, the total consumption of agri-food products will look like the following:

$$DC_{\Sigma}^N = PrC + \frac{(P + PsC)}{K_N}, \tag{6}$$

where DC_{Σ}^N is the total national consumption of this type of agri-food product with reasonable consumption, *PrC* is industrial consumption volume, *P* is *the* volume of agri-food product processing, *PsC* is individual consumption volume, and K_N is the degree of achievement of reasonable norms.

We calculate the degree of achievement of reasonable norms as the ratio of food consumption per capita (kg per year) to the recommended rate of reasonable consumption (kg per year):

$$k_N = \frac{FCpC}{PN}, \tag{7}$$

where *FCpC* is food consumption by main food groups per capita (kg per year); *PN* is the reasonable norm of food consumption.

Using transformations, we get the maximum-rated volume of exports with reasonable consumption (E_N^L):

$$E_N^L = DP_L - \frac{1}{2\left(\frac{DP_L}{FSSR_D} - \left(PrC + \frac{(P + PsC)}{K_N}\right) + I\right)} \times 100\%. \quad (8)$$

The involvement of the indicator "degree of achievement of reasonable norms" in the calculation of self-sufficiency makes it possible to level the lack of the approach to food self-sufficiency and consider consumption decrease due to the changed purchasing power of the population.

In the research, we calculate the maximum permissible export limit based on the data that Rosstat collected. To do this, we also take into account the actual consumption level and wise consumption.

4 Result and Discussion

Russia is the largest exporter of some agri-food products. A share of national exports (cereals) in certain periods approached 50%, while for fish it is over 60% of the total fish catch and production of other water resources (Rosstat, 2021a). The gross grain harvest in Russia since 2000, except for 2003 and 2010, has been higher than national consumption. From 2013-to 2020, this excess was 1.43-1.74 times (Figure 1).

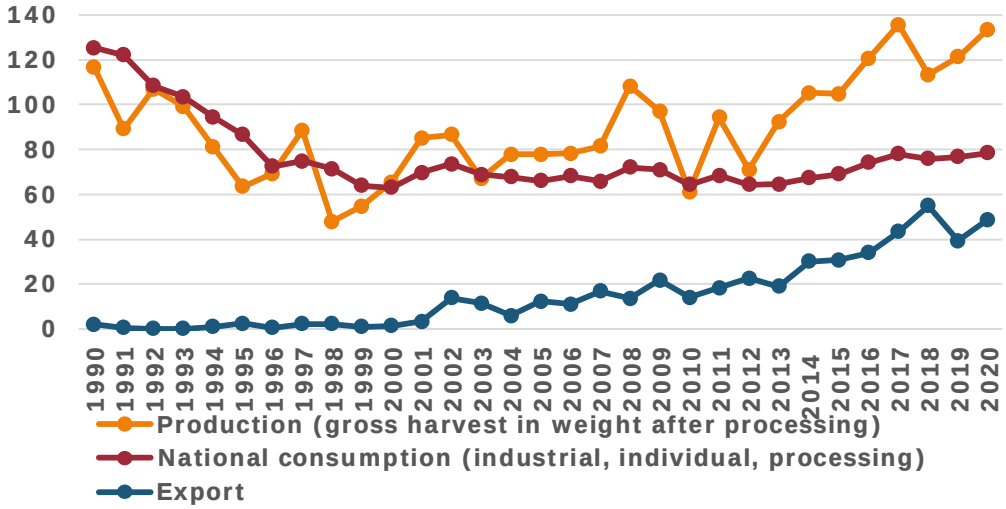

Figure 1: Dynamics of Russian Output, Exports, and National Consumption of Cereals in 1990-2020, Million Tons. Source: Rosstat (2021b).

Consumption of grain crops in the national market over the past five years has shown a 1-2% increase. At the same time, in 2020, national consumption was almost 40% less than in 1990. Against the background of the weak growth in national consumption, exports of Russian grain in 2000-2020 increased by 48+ times, the export was 62% of the national consumption volume.

To evaluate threats to food security, we calculate the maximum-rated volume of exports at the actual consumption and maximum-rated exports with reasonable consumption and in accordance with the healthy eating standards (Figure 2).

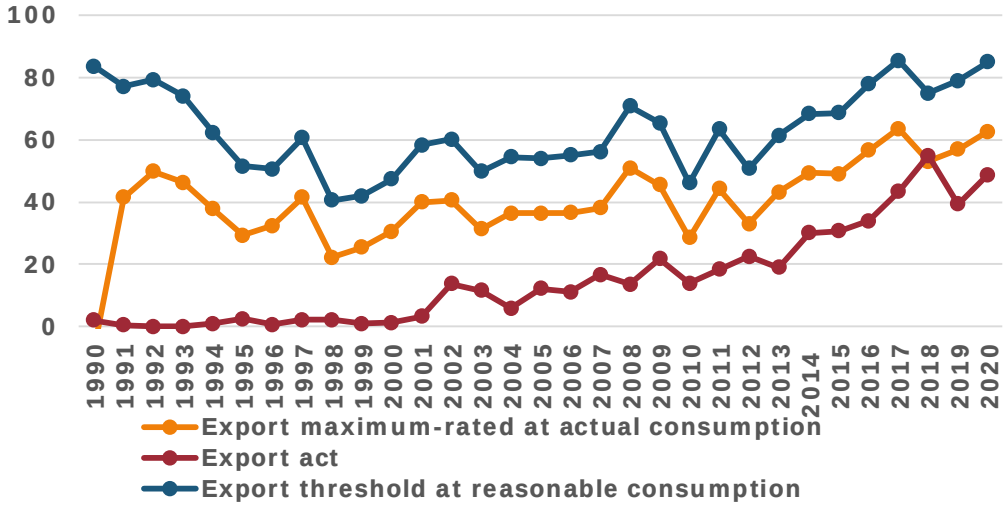

Figure 2: Maximum-rated and Actual Volume of Exported Russian Grain in 1990-2020, Million Tons.

In 2018, there was a threat to food security related to grain supplies in Russia, when the actual volume of exports (54.8 million tons) was over the maximum-rated volume of exports with the actual consumption of 53.1 million tons. In 2020, foods actually exported from the country (48.7 million tons) were less than the volume that could threaten food security (62.67 million tons) and much less than the volume of exports that would reduce reasonable consumption of grain products in the country. The quota for grain exports in the amount of 17.5 million tons is significantly less than the maximum export volume.

With the volume of Russian supplies in the world market at the level of 20%, export prices of Russian wheat cannot but influence world prices and vice versa. Our research shows that the dependence of the wheat national wholesale price (*y*) on the export price (*x*) correlates to 0.8176. This means that there is high price interdependence (Figure 3).

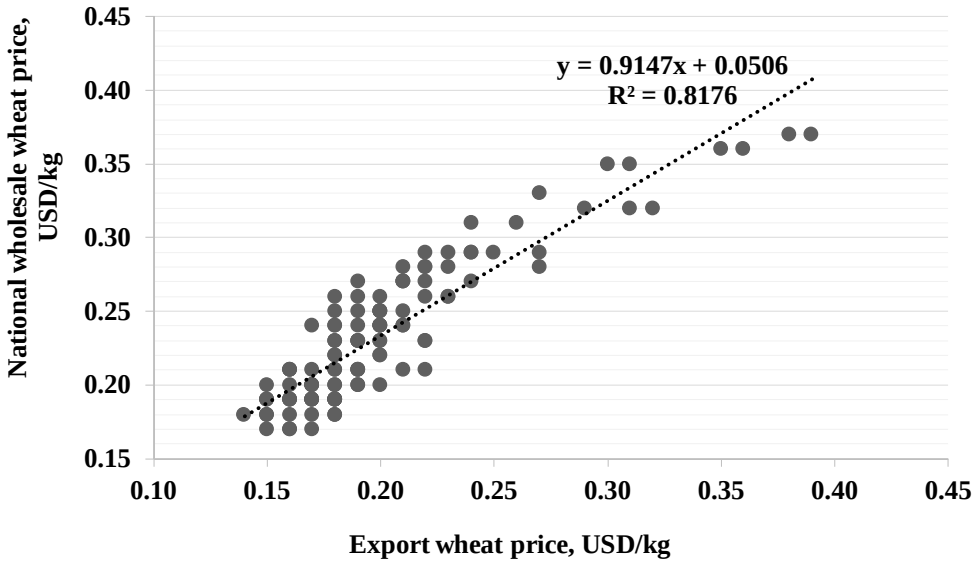

Figure 3: Graph of Dependence of the National Wholesale Wheat Price on Export Price
Sources: FAO. FPMA (2021a); FAO. FPMA (2021b).

Introduced export duties and other price regulation measures (in terms of very close dependence of national wholesale prices on export prices) will inevitably lead to higher national wholesale prices.

On the one hand, non-regulated grain exports with high world prices might cause excess grain exports compared to a maximum-rated volume and might damage food security. On the other hand, a food grain chain does not only include end links (farmers-manufacturers and consumers) but also many intermediate links (elevators, flour mills, grain traders, etc.), export regulation with no control over intermediaries' prices, and internal retail prices do not give an expected effect of price reductions for consumers. Thus, the 9% decrease in the wholesale price in December 2020-February 2021 was available together with the increase in retail prices for flour and bread, which, in USD, showed 9.6% and 8.6% increases respectively (Table 1).

Table 1: National Retail and Wholesale Prices for Bread Products and Export Wheat Price

Date	Retail prices						Wholesale price
	Nominal, RUB/kg		Realistic price, RUB/kg		USD/kg		USD/kg
	bread	flour	bread	flour	bread	flour	flour
12.2019	50.67	36.29	27.81	19.92	0.81	0.58	0.20
01.2020	51.31	36.55	28.05	19.98	0.83	0.59	0.20
02.2020	51.89	36.60	28.27	19.94	0.81	0.57	0.20
03.2020	52.02	36.72	28.19	19.90	0.71	0.50	0.18
04.2020	52.36	38.20	28.14	20.53	0.70	0.51	0.19
05.2020	52.58	38.99	28.18	20.90	0.72	0.54	0.20
06.2020	53.01	39.26	28.35	21.00	0.77	0.57	0.22
07.2020	53.34	39.67	28.43	21.14	0.75	0.56	0.19
08.2020	53.65	39.84	28.60	21.24	0.73	0.54	0.18
09.2020	54.05	39.85	28.84	21.26	0.71	0.53	0.18
10.2020	54.40	40.13	28.90	21.32	0.70	0.52	0.20
11.2020	55.02	40.61	29.02	21.42	0.71	0.53	0.22
12.2020	55.70	41.41	29.14	21.66	0.75	0.56	0.23
01.2021	56.04	41.94	29.12	21.79	0.76	0.57	0.22
02.2021	56.21	42.44	28.98	21.88	0.76	0.57	0.21
03.2021	56.35	42.49	28.92	21.81	0.76	0.57	0.20
04.2021	56.85	43.00	28.98	21.92	0.75	0.56	0.20

Sources: FAO. FPMA (2021a); FAO. FPMA (2021b).

The population's medium-term demand for cereals and their processed products (2-3 years) is inelastic: the population's consumption volume for bread and pasta, calculated as flour, for flour, cereals, and legumes was at the level of 119 kg with various price levels in 2011-2012. In 2013-2015, it was 118 kg. In 2016-2017, it was 117 kg, and in 2018-2020, it was 116 kg with various price levels (Rosstat, 2021a). This means that the Russians have more concerns about healthy eating and gradually cut back on excessive consumption of bread products. On the other hand, this suggests that with a changed price and the same consumption, the consumers' gain will only depend on the price difference. This means that consumers' welfare worsens because of export regulation.

The decline in grain purchase prices (from farmers), which followed the announcement of introduced export restrictions, caused a partial loss of their income. Thus, we might understand the introduction of the export duty as an additional tax for farmers.

The export growth rates higher than the growth rates of national consumption suggest that export is indeed a catalyst for the development of the grain economy. Reduced incomes of farmers from grain exports to international markets will inevitably reduce the volume of investments in the sector's modernization and technological development.

Recently, Russia has established export regulation practices. In the framework of it, people consider export a kind of reserve, which in crisis times we use to ensure food security. Its achievement and preservation are key strategic priorities of the government (Ksenofontov, Polzikov, & Urus, 2019). The introduction of export restrictions against the background of export growth as a strategic goal and large-scale investments in the development of export-grain infrastructure established by the Russian government is only reasonable if export becomes excessive and threatens food security. The food security index in 2020 confirmed that there are no real threats to Russian food security. The index was, as *The Economist* estimates (The Global Food Security Index, 2021), 73.7 points, i.e. 3.4 points higher than in the previous year.

Export restrictions, if economically reasonable, undermine Russia's image as a reliable supplier, hit the competitiveness of Russian grain, narrow Russia's presence in the global market, and worsen investment opportunities in the grain sector (Vorotnikov, 2021). The negative impact of imposed and unwarranted export restrictions with the aim of better food security is a deterrent to investments in agricultural production and export opportunities. This also seriously cuts farmers' income (Clapp, 2017).

In Fellmann *et al.* (2014), researchers show that wheat exports if reduced by three large exporters (Russia, Kazakhstan, and Ukraine) might lead to a 23% increase in prices on the world market. Although, in the short term, the rise in world prices provides an increase in the incomes of exporters from other countries. For instance, in Canada, wheat exports from 31 March 2020-to 31 March 2021 grew by 28.9% (Cross, 2021). The consequence of this is worse consumers' welfare and security in the markets of importing countries.

The efficiency of export restrictions for the normalization of national prices of agri-food products and foods is questionable (World Bank, 2018). These measures do not solve the problem that we state as economic and physical affordability of agri-food products for national consumers.

Previous export restrictions in Russia have not resulted in noticeable price damping effects for consumers. When in the spring of 2008, Russia introduced the export duty, the decline in wheat prices did not cause a corresponding decrease in flour prices. Götz, Djuric, and Glauben (2015) show that the 50% decrease in wheat prices in the Central Region of Russia leads to the 5% decrease in bread prices in Moscow only. Thus, the 20%-growth in grain prices for flour mills, for instance, all other things being equal, should not lead to higher retail bread prices (not more than a 3% rise).

Like in the cases of other large exporters, wheat price in the national market directly relates to global prices (Baquedano & Liefert, 2014). In the second half of 2020, the growth in global wheat prices, as in Russia, caused higher national wheat prices. At the same time, this growth was not over the price level of 2019. We can explain wheat production at lower real prices, when wheat

price growth rates are behind inflation, by sustainable better performance in the grain sector owing to technological and technical improvements.

Agents' strategic behaviors influence fluctuations in national prices. In anticipation of a price rise, grain traders might prefer stock accumulation instead of sales (Götz, Koester, & Glauben, 2015). Such behaviors of grain market participants reduce a constraining effect of export restrictions on national prices and cause higher growth in national prices for some time (Fellmann *et al.,* 2014). Welton (2011) says that in 2010-2011, the prohibition of exports in Russia did not lead to an expected decline in national food prices.

Thus, the introduction of export restrictions in the grain market has no huge potential for food inflation regulation. Measures to stimulate the agri-food sector and currency movements have a significantly larger effect on the dynamics of prices in the food market.

The consumer subsidy program might be an alternative to export restrictions (Liefert & Westcott, 2015). Another alternative that deserves attention is the establishment of a quota for mandatory supplies of products to the national market at predetermined prices in the amount not lower than the required self-sufficiency level as well as permission to sell any volume of products (more than quotas allow) to the international market at world prices.

5 Conclusion

The research on the causes and consequences of Russian grain export restrictions regarding food self-sufficiency shows that in 2020, the Russian economy had no real threat in terms of worsened grain self-sufficiency. At the year-end, the export volume was significantly lower than the maximum-rated one, the overrun of which would damage grain self-sufficiency. At the same time, the growing national retail prices for processed cereal products (bread, flour, and pasta) make foods less affordable for the population, and, consequently, worsen food security. From this perspective, we find reasonable those price regulation measures that the government introduced. However, as the food grain chain includes many intermediary elements, in the absence of control over agents' prices and national retail prices, export regulation does not lead to expected lower prices for consumers.

6 Availability of Data and Material

Data can be made available by contacting the corresponding author.

7 Acknowledgement

The RUDN University's Strategic Academic Leadership Program supported this study.

8 References

Advanced biofuels summit 2021. (2021). https://www.worldbioenergy.org/uploads/210324%20Advanced%20Biofuels%20Summit.pdf

Aragie, E., Pauw, K., Pernechele, V. (2018). Achieving food security and industrial development in Malawi: Are export restrictions the solution? *World Development, 108*, 1-15. DOI: 10.1016/j.worlddev.2018.03.020

Baquedano, F.G., & Liefert, W.M. (2014). Market integration and price transmission in consumer markets of developing countries. *Food Policy, 44*, 103-114. DOI: 10.1016/j.foodpol.2013.11.001

Beckman, J., Estrades, C., Flores, M., & Aguiar A. (2018). *The impacts of export taxes on agricultural trade* (NBER Working Papers 24894). National Bureau of Economic Research, Inc. DOI: 10.3386/w24894

Bloomberg. (2021). *Putin Thrusts Global Food Markets into Russian Politics*. https://www.bloomberg.com/news/articles/2021-01-25/putin-thrusts-global-food-markets-into-russian-politics

Brinkman, M., Levin-Koopman, J., Wicke, B., Shutes, L., Kuiper, M., Faaij, A., & van der Hilst, F. (2020). The distribution of food security impacts of biofuels, a Ghana case study. *Biomass and Bioenergy, 141*, 105695. DOI: 10.1016/j.biombioe.2020.105695

Casey, C.A., & Cimino-Isaacs, C.D. (2021). *Export restrictions in response to the COVID-19 pandemic* (IF11551). https://crsreports.congress.gov/product/pdf/IF/IF11551

Clapp, J. (2017). Food self-sufficiency: Making sense of it, and when it makes sense. *Food Policy, 66*, 88-96. DOI: 10.1016/j.foodpol.2016.12.001

Cross, B. (2021). *Brisk exports cut into grain, oilseed stocks.* https://www.producer.com/markets/brisk-exports-cut-into-grain-oilseed-stocks-2/?module=author-bio-recent&pgtype=article&i=

Deuss, A. (2017). *Impact of agricultural export restrictions on prices in importing countries* (OECD Food, Agriculture and Fisheries Papers, No. 105). OECD Publishing, Paris. DOI: 10.1787/1eeeb292-en

Durisin, M., & Fedorinova, Y. (2021). P*utin thrusts global food markets into Russian politics*. (Bloomberg, 25 January). https://www.bloomberg.com/news/articles/2021-01-25/putin-thrusts-global-food-markets-into-russian-politics

EIU. (2021). *The Global Food Security Index*. https://foodsecurityindex.eiu.com

Enriquez, J.P. (2020). Food self-sufficiency: Opportunities and challenges for the current food system. *Biomed J Sci & Tech Res, 31*, BJSTR. MS.ID.005061. DOI: 10.26717/BJSTR.2020.31.005061

Espitia, A., Rocha, N., & Ruta, M. (2020). *COVID-19 and food protectionism: The impact of the pandemic and export restrictions on world food markets* (Policy Research Working Paper; No. 9253). World Bank, Washington, DC. DOI: 10.1596/1813-9450-9253

Estrades, C., Flores, M., & Lezama, G. (2017). *The role of export restrictions in agricultural trade* (Documentos de Trabajo - working papers – 0417). Department of Economics - dECON.

FAO. (1999). Implications of economic policy for food security: a training manual. http://www.fao.org/docrep/004/x3936e/x3936e03.htm

FAO. (2009). The state of agricultural commodity markets 2009. High food prices and the food crisis – experiences and lessons learned. http://www.fao.org/3/i0854e/i0854e.pdf

FAO. (2015). *The Democratic People's Republic of Korea: outlook for food supply and demand in 2014/15* (GIEWS Update, 3 February). http://www.fao.org/giews/english/shortnews/20150203DPRK.pdf

FAO. (2021). *Food price index. The FAO food price index continues to rise unabated.* http://www.fao.org/worldfoodsituation/foodpricesindex/en/

FAO. FPMA. (2021b). Food prices. International prices. https://fpma.apps.fao.org/giews/food-prices/tool/public/#/dataset/international

FAO. FPMA. (2021b). Food prices. International prices. https://fpma.apps.fao.org/giews/food-prices/tool/public/#/dataset/international

FAO. FPMA. (2021a). *Food prices. Domestic prices*. https://fpma.apps.fao.org/giews/food-prices/tool/public/#/dataset/domestic

FAO. FPMA. (2021a). *Food prices. Domestic prices*. https://fpma.apps.fao.org/giews/food-prices/tool/public/#/dataset/domestic

Fellmann, T., Helaine, S., & Nekhay, O. (2014). Harvest failures, temporary export restrictions and global food security: the example of limited grain exports from Russia, Ukraine, and Kazakhstan. *Food Security, 6*(5), 727-742. DOI: 10.1007/s12571-014-0372-2

Global Trade Alert. (2021). *Global dynamics*. https://www.globaltradealert.org/global_dynamics/area_goods/year-from_2020/flow_export

Götz, L., Djuric, I., & Glauben, T. (2015). Wheat export restrictions in Kazakhstan, Russia, and Ukraine: Impact on prices along the wheat- to-bread supply chain. In: A. Schmitz & W.H. Meyers (Eds.), *The emerging role of KRU in global agricultural markets: Promise and concern*. Commonwealth Agricultural Bureaux International.

Hoekman, B.M., Fiorini, M., & Yildirim, A. (2020). *Export restrictions: a negative-sum policy response to the COVID-19 crisis* (EUI RSCAS, 2020/23, Global Governance Programme-389, [Global Economics]). Cadmus, European University Institute Research Repository. http://hdl.handle.net/1814/66828

Interfax. (2021). *RF introduces a grain export quota and a wheat duty* (February 15th). https://www.interfax.ru/business/750900

Kheifets, B.A., & Chernova, V.Yu. (2019). Impact of foreign trade on the economic availability of food products in Russia. *Society and Economy, 10*, 62-75. DOI: 10.31857/S020736760007150-4

Ksenofontov, M.Yu., Polzikov, D.A., & Urus, A.V. (2019). Regulation of the grain sector in the context of the tasks of ensuring food security in Russia. *Problems of Forecasting, 6*, 22-31.

Kulistikova, T. (2020). Security will be provided in a new way. Can a new food security doctrine promote the development of the agro-industrial complex? https://www.agroinvestor.ru/markets/article/33321-bezopasnost-obespechat-po-novomu-mozhet-li-sposobstvovat-razvitiyu-apk-novaya-doktrina-prodovolstven/

Kurowska, K., Marks-Bielska, R., Bielski, S., Kryszk, H., & Jasinskas, A. (2020). Food security in the context of liquid biofuels production. *Energies, 13*, 6247. http://doi.org/10.3390/en13236247

Kuzmin, E. A. (2015). Food security modelling. *Biosciences Biotechnology Research Asia, 12*, 773–781. DOI: 10.13005/bbra/2095

Kuzmin, E. A. (2016). Sustainable food security: Floating balance of markets. *International Journal of Economics and Financial Issues*, 6(1), 37–44.

Liefert, W.M., & Westcott, P.C. (2015). *Alternative policies to agricultural export taxes that are less market distorting* (ERR-187, U.S. Department of Agriculture, Economic Research Service, June 2015).

Martin, W., & Anderson, K. (2012). Export restrictions and price insulation during commodity price booms. *American Journal of Agricultural Economics, 94*(2), 422-427. DOI: 10.1093/ajae/aar105

Puma, M.J., Bose, S., Chon, S.Y., & Cook, B.I. (2015). Assessing the evolving fragility of the global food system. *Environmental Research Letters, 10*(2), 024007. DOI: 10.1088/1748-9326/10/2/024007

Rosstat. (2021a). *Official statistics*. http://www.gks.ru

Rosstat. (2021b). *Official statistics*. https://rosstat.gov.ru/folder/10705

RussGov. (2020). *Decree of the President of the Russian Federation of January 21, 2020 No. 20*. On Approval of the Food Security Doctrine of the Russian Federation. https://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=343386&dst=1000000001%2C0#09263595395042915

Schramski, J.R., Woodson, C.B., Steck, G., *et al*. (2019). Declining country-level food self-sufficiency suggests future food insecurities. *Biophys Econ Resour Qual, 4*, 12. DOI: 10.1007/s41247-019-0060-0

Siddhartha, M., & Tim, J. (2009). Agricultural export restrictions: Welfare implications and trade disciplines. IPC Position Paper. https://clck.ru/YdNY7

Voegele, J. (2020). *Three imperatives to keep food moving in a time of fear and confusion. World Bank Voices (April 3, 2020).* https://blogs.worldbank.org/voices/three-imperatives-keep-food-moving-time-fear-and-confusion

Vorotnikov, V. (2021). *Grain export restrictions taking toll*. https://www.world-grain.com/articles/15108-grain-export-restrictions-taking-toll

Welton, G. (2011). *The impact of Russia's 2010 grain export ban* (Oxfam. Research Report, June 2011). Oxfam International, Oxfam.

World Bank. (2018). The impacts of the El Niño and La Niña on large grain producing countries in ECA: yield, poverty and policy response. World Bank, Washington, DC. https://openknowledge.worldbank.org/handle/10986/30191

Wright, B. (2011). The economics of grain price volatility. *Applied Economic Perspectives and Policy*, *33*, 32-58. DOI: 10.1093/aepp/ppq033

WTO. (2020). WTO report shows slowdown in G20 trade restrictions as COVID-19 impacts world economy. https://www.wto.org/english/news_e/news20_e/trdev_18nov20_e.htm

Professor Dr. Boris A. KHEYFETS is a Professor, Chief Researcher, Institute of Economics of the Russian Academy of Sciences (Moscow, Russia); Financial University under the Government of the Russian Federation (Moscow, Russia). His professional interests are Economic Globalization, Risks, International Relations, Import-substitution, TNCs, development Strategies, World Economy, Credit Policy, Competitiveness, Economic Partnerships, Industrial Policy.

Dr. Veronika Yu. CHERNOVA is an Associate Professor at the People's Friendships University of Russia, Department of International Economic Relations. Her interests are World Economy, Marketing of Transnational Companies, Import Substitution,

Natalia N. SHURAKOVA is a researcher, at Financial University under the Government of the Russian Federation (Moscow, Russia). Her professional interests are Food Security, Agro-industrial Complex, World Food System.
ORCID ID: orcid.org/0000-0001-7425-5362