Indicators of State Financial Support for Capital Reproduction in the Agricultural Economic Sector: The European Union and Russia

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Abstract Financial support of the agricultural sector of the economy in the current context is the leading function of state regulation since it is strategically important for national security. The effectiveness of state financing of the agricultural sector of the economy involves ensuring the positive dynamics of its development and establishing appropriate estimate indicators. In this regard, the cost and streams of state financial support for the agricultural sector of the economy should be as effective as possible. The purpose of the article is to substantiate the priorities of state financial support for the capital reproduction in the agricultural sector of the Russian economy based on a comparison with the European Union. The article clarifies the essence of various approaches and mechanisms, as well as indicators of state support for the agricultural sector of the economy of the EU and Russia, indicators of agricultural production volumes supported by the state, as well as nominal protection coefficients (NPC). The authors conclude that the financial policy of capital reproduction in the agricultural sector of the Russian economy is aimed at ensuring its long-term sustainable expanded intensive innovation-based reproduction. At the same time, the key to its implementation is a clear identification of the mission of financial policy, strategic and tactical tasks, ensuring their feedback and adaptation to changes in the internal and external environment of the agricultural sector of the economy, as well as considering the risks of capital reproduction. At that, the basis for supporting producers in the EU is the financing of capital investments of farmers, while the basis for supporting producers in Russia is providing support based on commodity products.

Keywords Agro-Industrial Complex, State Support of the Agricultural Sector, Agricultural Support Indicators,

Transfer, Nominal Protection Coefficient

1. Introduction

In the current context, particular attention is being paid to the agricultural sector, whose importance for the Russian economy has increased over the past decade, especially in the context of the need for food import substitution. On the other hand, the state financial policy in the agricultural sector is imperfect and contains several miscalculations, in particular, the lack of comprehensive strategic approaches and a clear justification of development priorities, the dispersion of public funds allocated for various programs and individual activities, the lack of clear criteria for allocating state support, which sometimes leads to irrational use of budget funds [1]. Other important problems of financing the agricultural sector of the Russian economy are insufficient efficiency of some agricultural enterprises; structural deformations in the production of certain types of agricultural products; commodity-dependent exports; the disparity between the price indices of producers of industrial products and sale prices of agricultural products; irrational use of agricultural land resources; and insufficient financing of the needs of rural development [2]. Therefore, the improvement of the state fiscal policy management in the agricultural sector requires a systematic approach to the creation of appropriate institutional frameworks and innovative regulators [3] based on international experience, in particular, European. The analysis of the experience on implementing state support mechanisms for the agro-industrial complex in the EU countries [4,5] shows the active role of the state in creating favorable financial conditions for the development and improvement of competitiveness of the agricultural sector. At that, the instruments of financial support for agriculture in the EU countries are quite diverse, based on the specifics of agricultural territories, the agricultural industries specialization, and the specifics of the EU general policy in the agricultural sector. Thus, about a third of the pan-European budget, which on average amounts to about 50 billion euros, is spent on supporting EU agriculture. While adding national co-financing, the total amount of support is about 6.100 billion euros. In 2014-2020, the EU budget allocated more than 373 billion euros to support agriculture [5].

The indicators of state financial support for the reproduction of capital in the agricultural sector of the economy are evidence of the effectiveness of the state financial policy in the agricultural sector. In this regard, their analysis is an urgent research area.

2. Literature Review

Indicators of state financial support for the reproduction of capital in the agricultural sector of the economy in different states depend on the institutional features of implementing this support [6]. Thus, R.S. Gaisin notes that in the economically developed countries of the world, the agricultural sector is usually considered as a system that is not capable of self-regulation, and therefore the means of state support are recognized as a loss reimbursement of the industry in the context of market instability [7]. Yu.L. Esina and N.M. Stepanenkova focus on the fact that most of the financial levers of state regulation of the agricultural sector of the Russian economy comply with world practice but they lack a systematic approach and focus on the eventual outcome [8]. Based on international experience, E.V. Rudoy and I.S. Poddueva also note that long-term state support can significantly increase agricultural production efficiency [9].

V.G. Bespakhotny [10] has developed and implemented an algorithm for a comprehensive assessment and modeling of the efficiency of the agricultural sector of the economy, considering the effect of state financing. We share the opinion of A.V. Tikhonova that ensuring the effectiveness of state financing of the agricultural sector is inextricably linked with the study of the relationship between the efficiency of financing and positive development dynamics [1]. That is, the effectiveness of state financing of the agricultural sector provides for ensuring its positive development dynamics and establishing appropriate estimate indicators.

According to the study [6], the countries of the European Union, the USA, have a long historical experience in the functioning of appropriate systems aimed at ensuring stable development rates of the agricultural sector and break-even of agricultural enterprises. All the variety of approaches to state support of the agricultural sector of the economy, common in world practice, can be reduced to two models, namely American and European [11]. Despite the differences, they both are aimed at supporting the state's current goals of agricultural development, which are important for national economies, based on a successful combination of the principles of complexity, flexibility, and long-term programming (Table 1).

Table 1.   Models of state support for the agricultural sector of the economy

Model	The essence of state support	State support mechanisms
American	Maintaining the competitiveness of farmers during unfavorable periods in terms of natural and climatic conditions or economic situation	Providing direct and counter-cyclical payments, marketing loans, equity participation in measures to reduce risks in agriculture (subsidies for insurance, assistance in case of natural disasters, creating stabilization funds), credit support programs to farmers, tax incentives
European	Solving social problems, since food prices in the EU countries are higher than world prices	Providing production quotas (limiting the crops areas and livestock density per unit area of land); direct income support payments (supporting credit subsidies per animal and hectare of crops); the three-tier pricing system: the target, intervention, and threshold prices

Source: Compiled by the authors based on [12-14].

Thus, one of the tools to support American agricultural producers is the collateral prices at which farmers deposit their products to the state in the event of a drop in prices on the agricultural market, which allows maintaining the continuity of the production process. This is the so-called sales loan system. A producer can get a sales loan through a federal agency named Commodity Credit Corporation after harvesting at the current rate of borrowing against the security of products. The loan is repaid by paying the principal amount and interest. In the event of a decline in market prices, the ownership of the harvested crop may be transferred to the Commodity Credit Corporation, or the loan may be repaid based on local market prices, without charging interest on the loan. If the market prices are higher than the loan rate, farmers can get the pledged products back, repay the loan and interest, and sell the products on the free market. From 2011 to 2013 the sales loan program provided subsidies for barley, rapeseed, peas, coffee, cotton, flax seeds, honey, lentils, oats, peanuts, rice, sorghum, soybeans, sugar, sunflower, wheat, and wool [15].

The European approach to state regulation of the agricultural sector of the economy is based on the Common Agricultural Policy (CAP) [16]. Its target is to ensure the efficiency of agricultural production based on innovative technologies and rational use of labor resources, sustainable development of the agricultural market, sufficient food supply, the establishment of equilibrium prices that meet the interests of both producers and consumers of agricultural products. The SAP is also focused on leveling the differential features of the agricultural markets of individual EU countries due to their convergence in terms of income of agricultural producers, as well as supporting the profitability of the agricultural sector at the level of other segments of the economy [4].

At that, interventional approaches to price regulation in the EU involve the use of market mechanisms. Thus, the state buys surplus agricultural products in case of overproduction, forming centralized reserves, and sells them if prices rise above the indicative level. These operations are carried out by specially created intervention agencies. Thus, 5.860 billion euros were spent on interventional purchases of wheat, butter, and milk powder in the 2016/2017 financial year [5].

At the same time, according to the researchers [14], according to both approaches, the main goal of the financial policy of capital reproduction in the agricultural sector of the economy is to ensure its long-term sustainable expanded reproduction in the framework of innovation-based intense development.

The Russian model of state support of the agricultural sector of the economy is to a certain extent mixed, i.e. represents a combination of the American and European models. The model simultaneously provides for maintaining the competitiveness of farmers through credit programs for agricultural producers, tax incentives, etc., and is aimed at solving social problems through a system of subsidies, establishing equilibrium prices, etc. However, since in the domestic Russian market before the embargo the main competitor among the agricultural product producer was the European Union, the analysis of indicators of state financial support for capital reproduction in the agricultural sector of the Russian economy is carried out below in comparison with similar indicators in the European Union. Thus, before the imposition of the embargo, in 2013, the EU countries delivered agricultural products to Russia for a total of 11.9 billion euros. At that, the countries of the European Union accounted for 42% of food imported to the Russian Federation, whose main part was dairy products and pork, as well as fruits; about 46% of apples and pears exported by Europe were exported to Russia. And even in 2018, the EU countries accounted for 23.4% of all food imports [17].

Research hypothesis: the key to the capital reproduction in the agricultural sector of the economy of Russia and the European Union is a clear identification of the financial policy mission, strategic and tactical tasks, ensuring their feedback and adaptation to changes in the internal and external environment of the agricultural sector of the economy, as well as considering the risks of capital reproduction.

Research objectives:

The research included the following objectives:
1.   to identify approaches to state support of the agricultural sector of the economy;

2. to present the state support indicators for the agricultural sector of the EU and Russian economies;

3. to compare the indicators of agricultural production volumes at state support, as well as nominal protection coefficients in the EU and Russia.

The article consists of an introduction, a literature review, research methods, results, discussion, and conclusion.

3. Research Methodology and Methods

3.1. Research Design

To achieve the set goals, the following research methods were used in the article:
- theoretical generalization, analysis, and synthesis were employed to define the concept of the essence and mechanisms of state support for the agricultural sector of the economy;
- analysis of statistical data was used to determine state support indicators of the agricultural sector in various countries, as well as to compare indicators of agricultural production volumes at state support and nominal protection coefficients in the EU and Russia.

3.2. The Procedure and Research Tools

In world practice, several specific indicators for assessing state support for agriculture are used, which are based on a comparison of domestic prices for agricultural products with world prices, and are calculated for agricultural products producers and consumers, as well as an indicator for assessing total support for agriculture. A positive value of the gap between domestic and reference prices (world prices, converted at the exchange rate of the national monetary unit) indicates support for the producer of agricultural products, while a negative value indicates its taxation.

The Organization for Economic Cooperation and Development (OECD) has developed the agriculture support indicators, which, despite their diversity in individual countries, can be used for comparative estimate [18]:
- Producer Support Estimate (PSE) concerns transfers provided to agricultural producers individually which consist of market price support, budget-based payments, and the value of income lost by the government and other economic agents. Producer Support Estimate in percentage (% PSE) concerns transfers to agricultural producers expressed as a share of Gross Farm Receipts (GFR).
- General Service Support Estimate (GSSE) represents total transfers provided to agricultural producers, i.e. services that benefit agriculture but that are initially distributed not at the level of individual agricultural producers.
- Consumer Support Estimate (CSE) represents transfers provided to consumers. The CSE is almost always negative because due to market price support policies, transfers from consumers outweigh any consumer subsidies that may be provided to them.
- Total Support Estimate (TSE) represents the sum of the three above-mentioned components adjusted for double-counting, given that some market price transfers are accounted for in both the PSE and CSE. The Percentage Total Support Estimate (%TSE) is the total amount of transfers to the agricultural sector, expressed as a share of GDP.
- Nominal Protection Coefficient (NPC) is the ratio between domestic and global food prices.

3.3. Statistical Analysis

When mathematically processing the results of the study based on statistical data from the public domain of the OECD portal [18], we conducted a comparative analysis of indicators of state support for the agricultural sector of the economy, as well as indicators of agricultural production volumes at state support, and nominal protection coefficients (NPC) in the EU and Russia.

4. Research Results

The state support indicators for the agricultural sector of the EU and Russian economies in 2019 are presented in Table 2.

Indicators of the agricultural production volume at state support, as well as the Nominal Protection Coefficient (NPC) in the EU and Russia, are presented in Table 3.

Table 2. Indicators of state support for the agricultural sector of the economy

Indicator	Unit	EU	Russia
Total Support Estimate (TSE), including	% GDP	0.62	0.81
- Producer Support Estimate (PSE)	% GDP	0.55	0.66
- Consumer Support Assessment (CSE)	% GDP	0.01	0.03
- General Service Support Estimate (GSSE)	% GDP	0.06	0.12
Producer Support Estimate in percentage (%PSE), including	% GFR	19.02	9.22
- marketable products-based support	% PSE	17.71	57.67
- payments based on the use of input resources	% PSE	13.81	25.62
- payments based on current production	% PSE	27.95	9.46
- payments based on capital production	% PSE	39.36	0.00
- other payments	% PSE	0.05	7.25
Share of the agricultural sector in GDP	% GDP	1.5	3.15
Employment in agriculture	%	4.0	5.84
Nominal Protection Coefficient (NPC)	-	1.04	1.07

Source: Compiled by the authors according to [18].

Table 3. Comparison of indicators of agricultural production volumes at state support, and nominal protection coefficients (NPC) in the EU and Russia

Product type	Indicator	Unit	EU	Russia	Russia's share, %
Milk	Production	kilotonne, kt	167,594.81	31,338.00	18.7
	NPC	unit fraction	1.00	1.14	
Beef and veal	Production	kilotonne, kt	8,163.96	1,367.40	16.7
	NPC	unit fraction	1.31	1.27	
Pork	Production	kilotonne, kt	24,188.64	3,399.91	14.1
	NPC	unit fraction	1.0	1.24	
Poultry meat	Production	kilotonne, kt	15,627.63	4,729.45	30.3
	NPC	unit fraction	1.28	1.07	
Eggs	Production	kilotonne, kt	7,065.02	2,492.28	35.3
	NPC	unit fraction	1.0	1.0	
Wheat	Production	kilotonne, kt	155,350.04	74,334.98	47.9
	NPC	unit fraction	1.00	0.99	
Corn	Production	kilotonne, kt	70,022.43	13,928.70	19.9
	NPC	unit fraction	1.00	1.19	
Sunflower seeds	Production	kilotonne, kt	10,124.41	16,007.53	158.1
	NPC	unit fraction	1.0	0.92	
Sugar	Production	kilotonne, kt	17,332.10	7,300.00	42.1
	NPC	unit fraction	1.11	1.21	
Potato	Production	kilotonne, kt	57,170.97	22,079.62	38.6
	NPC	unit fraction	1.10	1.0	

Source: Compiled by the authors according to [18].

5. Discussion

As shown by the analysis of statistical data (Table 2), the TSE and PSE indicators in the European Union are 0.62 and 0.55% of GDP, respectively. These figures are quite high, but in Russia, they have even higher values of 0.81 and 0.66% of GDP, which means, in fact, a greater infusion of budget funds into the agricultural sector in relative terms.

In the analyzed 2019, the GDP of the EU, according to the World Bank, was $15,593 billion and Russia's GDP – $1,700 billion. This means that in absolute terms in the EU, the total support for agriculture and agricultural producers, respectively, is equal to $96.68 billion and

$85.76 billion. The total support for agriculture and agricultural producers in Russia in absolute terms, respectively, is equal to $13.77 billion and $11.22 billion, which is significantly less than in the EU.

Russia has a large share of the agricultural sector in GDP (3.15%) against the EU (1.5%), i.e. more than twice, although the proportion of people employed in agriculture in Russia (5.84%) is only slightly higher than that in the EU (4.0%). The nominal protection coefficient (NPC) (the ratio between domestic and global food prices) in the EU is 1.04, while Russia – 1.07. This indicator means that the level of food prices in the EU countries is 4% higher than the world level, while in Russia – 7%.

During 1995-2019, the TSE indicator in the EU countries has shown a steady decline from 2.71 to 0.62% of GDP, as well as has changed in structure. Thus, at the beginning of the period, the producer support estimate (PSE) was 2.34%, consumer support estimate (CSE), represented by transfers to consumers from taxpayers amounted to 0.12 %, general service support estimate (GSSE) – 0.23%. Since 2006, by the end of the analyzed period, the CSE indicator was 0.01%, in 2019, the PSE level was 0.55%, while GSSE – 0.06%.

In Russia in 1995, the TSE indicator was 1.89%, including PSE – 1.65%, and GSSE – 0.23%. During 1997-2010, the TSE was positive with a maximum value at the beginning of the specified period equal to 2.92%, including PSE – 2.00%, and GSSE – 0.92%. The capacious value of the TSE in 2019 was 0.81%, including PSE – 0.66%, and GSSE – 0.12%.

At that, supporting producers in the EU is based on the financing of capital investments of farmers (39.36% PSE), while supporting producers in Russia is based on commodity products (57.67% PSE).

The nominal protection coefficients (NPC), shown in Table 3 indicate that domestic food prices in the EU are at or above world prices for some product groups, namely, beef and veal – by 31%, poultry meat – by 28%, and sugar – by 11%. Domestic prices in Russia are more competitive and lower than world prices, for example, for wheat – by 1%, and sunflower – by 8%. The excess of Russian prices over world prices is observed for milk – by 14%, pork – by 24%, poultry meat – by 7%, and sugar – by 21%. This indicates the need for state regulation of domestic prices for food products.

In terms of the European production scales, the proportion of agricultural production volumes at state support in Russia varies significantly by product groups. This proportion is low for milk (18.7%), beef and veal (16.7%), pork (14.1%), and corn (19.9%), medium – for poultry (30.3%), eggs (35.3%), wheat (47.9%), and sugar (38.6%), and high – for sunflower (158.1%). Thus, the export of sunflower to the EU is economically justified, but its uncontrolled cultivation, provided that the crop rotation technology is violated, negatively affects the quality of the soil (the content of organic substances in the upper layer of the soil decreases).

In general, the agro-industrial complex, especially its agricultural sector, is one of the most expensive in terms of financing the state economy sectors, since there is a constant need for state budget support and attracting credit resources, especially during the preparation for the new agricultural season [19]. The seasonal gap between the investment of working capital and income generation is quite large, which makes it necessary to attract credit resources and causes significant production costs [20-22]. In general, the high financial capacity of the agricultural sector requires adequate state support [23].

The standpoints on the objects of optimizing budget support for the agricultural sector differ. Thus, researchers [24] distinguish four areas of financing that complement each other: agricultural production (transfer payments, subsidies, product quality), resource potential (reproduction of fixed and working capital, development of credit, leasing, and insurance relations), the agricultural market (financial regulation, support of business activities, international integration), social development (rural areas, the social issues of the village, staffing).

Scientists [25-27] note that the concept of financial support is multidimensional and is characterized by the following features. First, it is a process of forming financial resources and spending them to finance the urgent needs of the socio-economic development of the agricultural sector, its subjects, territories, and so on. Second, its main forms are self-financing, lending and state financial support. Third, it is aimed at implementing the main strategic and tactical goals of the state agrarian policy.

Methods of forming state financial support for the agricultural sector of the economy are the accumulation of taxes, fees, and other mandatory payments, collection of penalties, mobilization of other budget revenues, and state loans.

Budget financing of the agricultural sector of the economy has several features. First, it is an act of transferring state and local budget funds to certain entities on an irrevocable and gratuitous basis; second, its forms are estimated funding, budget investment, and state transfers; third, the main goal is to cover the costs of the agricultural sector of the economy by its financial support by the state.

The expediency of providing financial support to business entities of the agro-industrial complex is not perceived by society unambiguously, since it is interpreted as a burdensome form of inappropriate use of state resources, which can distort the operation of market mechanisms. Akram W. et al. emphasize that international financial and credit institutions are recommended to refrain from using state support in the agricultural sector of the economy, and expect that within a certain time, economically weak business entities will go bankrupt and cease to exist as uncompetitive. At the same time,

economically strong ones will become stronger, expand the market size, improve technologies and, on this basis, ensure sustainable profitable activities [28].

The strategic objectives of the state financial policy for the capital reproduction in the agricultural sector of the economy are financial support for its innovative development through investments in high technological structures; ensuring the financial participation of the state in insurance programs and lending to agricultural producers, including mortgages; creating state financial reserves to regulate the agricultural market prices; eliminating structural imbalances in the reproduction of capital due to the withdrawal from circulation of degraded natural resources, morally and physically worn-out objects of fixed assets, and implementing sustainable technologies for a green economy, and environmentally safe production [29].

The state financial policy of capital reproduction in the agricultural sector of the economy implements the income regulating functions of agricultural producers, agricultural production structure, the agricultural market, reproduction proportions, intersectoral and inter-farm relations, and ensuring the development of rural areas.

6. Conclusions

According to the analysis of the dynamics and structure of the overall budget support for agricultural producers in the EU and Russia, it is based on support for producers in both the EU and Russia. However, over the twenty years, consumer support has significantly decreased to almost zero (0.01% of GDP in the EU, and 0.03% of GDP in Russia). An important object of state support in the EU is the financing of capital investments of farmers, while in Russia – support is targeted to marketable products. At that, the total state support for business entities in the agricultural sector of the economy in Russia in 2019 exceeded the European level in relative terms (in terms of percentage of GDP). Since the GDP of the EU exceeds that of Russia, in absolute terms, the overall support for agriculture and agricultural producers in Russia is significantly lower than in the EU.

A comparison of prices for individual product groups allowed concluding that Russian agricultural products are competitive to European ones, especially crop production. The production volume of wheat in Russia supported by the state is almost half of the same European indicator, while that of sunflower exceeds European indicator by one and a half times.

The study confirmed the hypothesis that the key to the capital reproduction in the agricultural sector of the economy is a clear identification of the mission of financial policy, strategic and tactical tasks, ensuring their feedback and adaptation to changes in the internal and external environment of the agricultural sector of the

economy, considering the capital reproduction risks.

Further research is targeted to improve the capital reproduction mechanisms in the agricultural sector of the economy.

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