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Analysis of the state grants' impact on the economic sustainability and efficiency of agricultural production

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Abstract. The estimation of the state support efficiency for agriculture in the Russian Federation is actively discussed in economic spheres. The grants received by farmers should be justified by an increase in the production and an increase in its profitability. It makes this research topic relevant. The article considers the degree of state grants influence on the stability of agricultural production and financial performance on the example of agricultural organizations of the Slavyansk region of Krasnodar Territory. The economic indicators of the agro industrial complex (AIC) of the region are considered. The main agricultural crops capacity, production and sales volumes, average prices for products, cost value and profitability of sales are analysed. The volume of grants received per hectare, the degree of costs compensation, the impact of grants on returns on investments and product profitability are considered using rice as an example. The analysis of the grants impact on the volume of net profit is given. It was proposed to determine the profitability of capital using the net profit reduced by the volume of grants in the calculations to improve the objectivity of the analysis and estimation of the efficiency of agricultural producers.

1. Introduction

Nowadays, the scientific community is actively discussing the problem of determining the efficiency of government grants directed to various sectors of the national economy, and first all, to agriculture. Economists propose various criteria and methods for estimating the results of state support provided for comparing actual growth rates of production volumes with the level planned in government programs, increasing returns on investment or increasing tax revenues based on 1,000 rubles of grants. There is no any single approach to evaluating the efficiency of state support for the agricultural sector in the Russian Federation. It makes this research topic relevant.

2. Analysis of governmental grants

It seems to be necessary first of all to consider the support measures, to what extent they allow to compensate for the costs for new equipment, seeds, and to estimate their impact on the results of business activity of enterprises. The study considers the volumes of state grants to support agriculture and their impact on the economic situation of Russian farmers on the basis of indicators of enterprises in the agro industrial complex of the Slavyansk district of the Krasnodar Territory.

The changes in the structure of the turnover of the agro industrial complex of the district are shown in figure 1. The trade turnover from 2011 to 2017 increased from 3,700.3 million rubles up to 8188, 9



million rubles or in 2.2 times. The crop production has the largest share. Rice, wheat, soy, as well as pome and stone fruit are mainly grown in the region. The turnover of livestock products for the period from 2011 to 2017 years decreased from 469.0 million rubles up to 210.4 million rubles and it accounts 2.2% of the turnover of agricultural products. It is connected with the reduction in the number of dairy cattle and the almost complete elimination of the pig industry due to epidemics of swine fever. The yield of livestock is significantly lower than the production of crop, and it is more labour-intensive. For the period 2011-2017 the milk sales volumes decreased from 192.9 million rubles to 135.7 million rubles, i.e., by 29.7%. The production of fish and fish products is gradually decreasing. At the same time, the turnover of crop production for the period under review increased to 7978.5 million rubles or in 2.5 times.

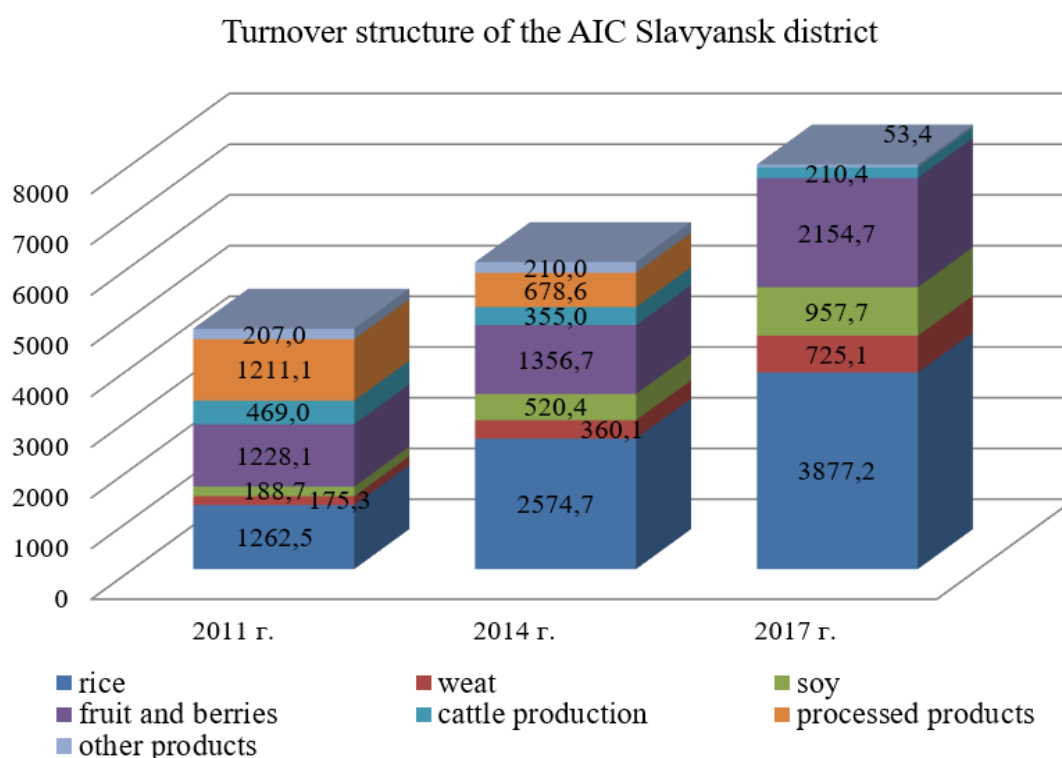


Figure 1. Structure of the turnover of the agroindustrial complex of the Slavyansk district of the Krasnodar region in 2011-2017 years, mln. rubles.

The main agricultural products of the Slavyansk district are rice. For 7 years, the return of agricultural producers from the sale of rice increased from 1,262.5 million rubles up to 3877.2 million rubles or in 3.1 times. The return from the sale of wheat increased in 4.1 times and in 2017 was 725.1 million rubles. The return from the sale of soybeans increased in 5.1 times and was 957.7 million rubles. A significant increase in turnover is due to both an increase in production volumes and a significant increase in prices for products.

The impact of changes in return from the sale of certain types of products to the change of the total turnover of agricultural products can be determined by the formula:

$$\Delta V_{T,\%} = Pr_{return_{Abase}} \cdot T_{prA,\%}, \quad (1)$$

where ΔV_T is a change of the total turnover, %, $Prreturn_{Abase}$ is a proportion of revenue from the sale of product A in total turnover (coefficient), $T_{prA,\%}$ is a growth rate of return from the sale of products A, %.

For example, we define the impact of changes in revenue from the sale of rice on the growth of total turnover. In 2011, the revenue of agricultural organizations from the sale of rice was 1,262.5 million rubles; in 2017 it was 3,877.2 million rubles. Thus, it increased in 3.07 times or by 207.1%. The share of revenue from the sale of rice in commodity turnover was 27.7% in 2011 (figure 1). Substituting the data into Formula 1, we will find the effect of changes in the return from the sale of rice on the change in the total turnover of agricultural organizations ($0.277 \cdot 207.1\% = 57.37\%$). So, due to the growth in return from the sale of rice, the total turnover of agricultural organizations in the district grew by 57.37%. Rice, like the wheat crop, is an export product and in recent years it brings a good income to producers.

Table 1. Production of the main types of crop production in agricultural organizations of the Slavyansk district.

Indicator	On average for 2010-2012 years	2013	2014	2015	2016	2017	2017 г. in % to On average for 2010-2012 years	2016
Gross yield, ths. tons:	550	650	667	890	1067	997	181.3	93.4
-wheat								
- rice	2333	2226	2428	2947	2863	2629	112.7	91.8
- soy	181	311	350	323	366	390	2.2 p.	106.6
Productivity, cwt. per 1 ha:	38.0	48.1	51.8	58.0	57.1	60.3	158.7	105.6
- winter wheat								
-rice	59.2	58.6	66.5	64.1	63.4	63.6	107.4	100.3
-soy	25.7	22.7	22.3	20.2	26.3	24.9	96.9	94.7

The growth in crop production in the Slavyansk district is connected with an increase in crop yields. The volume of wheat crop production in 2017 is 997 thousand tons, which is by 81.3% higher than the average value in 2010-2012. The yield of wheat increased by 58.7%. The volume of rice production increased to 2629 thousand tons or by 12.7% in 2017. The yield of this crop rises slowly and almost reaches its biological maximum. A significant increase in soybean production is connected with an increase in the acreage under this crop. The decrease in soybean yield is associated with adverse weather conditions and very hot, dry summer observed in recent years.

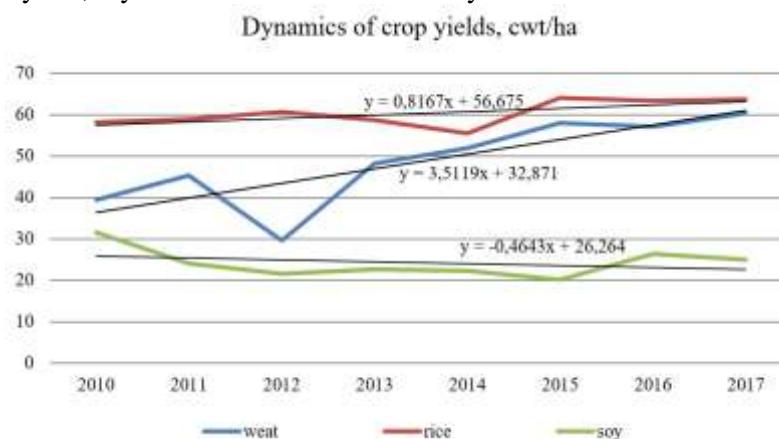


Figure 2. Dynamics of yields of major crops in the organizations of the Slavyansk district.

The sales volumes of wheat and soybeans for the period under review increased due to an increase in production volumes and a reduction in the feed crop. The feed crop used for the cattle feeding is currently being sold. Wheat grain sales volumes increased in 2.6 times and soybeans sales volumes increased in 1.8 times. Rice sales are growing at a slow pace. Growth in sales volumes has a positive effect on farmers' return. Since in the commodity turnover of agricultural enterprises of the district rice constitutes the largest share, using the example of this product, one can consider the effect of government grants on the production efficiency indicators (table 2).

State grants allocated for the production of rice to agricultural producers of the Slavyansk district increased during the analyzed period and in 2017 they were 54.9 million rubles. The grants were equal to 308 rubles, in 2017 - 1327 rubles calculated per 1 hectare of sowing on average for 2011-2013. That is, in 2011-2013 the grants were compensated 0.71% of costs, in 2017 - 1.45% of all costs of rice production. In 2016, farmers received 0.10% compensation of all rice production costs. The cost recovery was the highest in 2015, when the highest jump in prices for agricultural products was observed.

By 2017, stable economic relations between producers and consumers of products had formed in the agricultural sector, and the cost recovery in the production and sale of rice were at the level of 1.45 rubles. That is, a manufacturer received 1.45 rubles of returns for 1 investment ruble.

Table 2. Grants and efficiency of rice production in agricultural organizations of the Slavyansk district.

Indicator	On average for 2011-2013 years	2014	2015	2016	2017	2015 year in % (times) to	
						on average for 2011-2013 years	2015
Fields under rice, ha	43311	36525	45958	45182	41354	95.5	90.0
Cost for rice production, mln. rubles	1723.6	1995.9	3192.1	3900.2	3709.4	2.2 p.	116.2
Government grants for rice, mln. rubles	12.2	17.3	22.9	2.4	54.9	4.5 p.	2.4 p.
in % to rice production costs	0.71	0.87	0.72	0.10	1.50	x	x
Grants per 1 ha of sowing, rubles	308	473	498	54	1327	4.3 p.	2.7 p.
Sales return, mln. rubles	1895.2	2574.7	3832.1	3595.9	3877.2	2.0 p.	101.2
Cost value of rice, million rubles	1608.6	1757.7	2107.0	2709.2	2679.5	166.6	127.2
Returns on investments (coefficient)	1.18	1.46	1.82	1.33	1.45	122.9	79.7
Returns on investments based on grants received (coefficient)	1.19	1.47	1.83	1.33	1.47	123.5	80.3

The returns on investment taking into account the grants received for the rice production in 2017 were 1.47 rubles, or by 0.02 rubles more. In previous years, the grants have increased the returns on investment rate by no more than 0.01 rubles. That makes it possible to conclude that the grants have little effect on the economic efficiency of production. Farmers of the region received no state support for the wheat production at all.

The profitability of the main types of products on average by the agricultural organizations of the Slavyansk district is considered in table 3. If in 2011-2013 wheat prices slightly exceeded the cost, then by 2017 they grew by 47.4%. It had a positive impact on the profitability of these products.

The profitability of rice for the analysed period (for 7 years) also increased significantly. This was due to the rapid growth rates of average prices for products as compared to the rates of increase in production costs. Also the growing tendency in demand for soybeans is noted. Prices for soybeans increased at a faster pace than investments until 2016. Therefore, the highest level of the profitability of soybeans at the level of 38.3% was observed in 2016. In 2017, the profitability decreased to 33.9%. But soybeans production remained a highly profitable activity.

Table 3. Dynamics of sales profitability according to the types of agricultural products organizations of the Slavyansk district.

Indicator	On average for 2011- 2013 years	2014	2015	2016	2017	2017 year in % (times) to	
						on average for 2011- 2013 years	2015
Wheat							
- average selling price 1 cwt., rubles	549	669	817	808	809	147.4	99.0
- total cost value of 1 kg, rubles	527	517	532	559	612	116.1	115.0
- profitability of return, %	4.0	22.7	34.9	30.8	24.4	x	x
Rice							
- average selling price, cwt. per 1 ha	964	1405	1800	1533	1648	171.0	91.6
- total cost of 1 kg, rubles	818	959	990	1155	1139	139.2	115.1
- return on sales, %	15.2	31.7	45.0	24.7	30.9	x	x
Soy							
- average selling price cwt. per 1 ha	1365	1721	2164	2458	2373	173,8	109,7
- total cost value of 1 kg, rubles	937	1170	1353	1517	1569	167.4	116.0
- profitability of return on sales. %	31.4	32.0	37.5	38.3	33.9	x	x

The volume of grants influencing the production performance can significantly increase the volume of net profit presented in "Report on financial results". Accordingly, it can increase the profitability of capital that shows the ratio of net profit to the average annual value of capital. If an organization's investments are high and almost equal to returns, then the volume of grants can have a significant impact on the level of return of capital, thereby distorting the actual results of operations. Therefore, it should be adjusted by the volume of grants received for the objective efficiency estimation of the economic activity of the enterprise:

$$Ra = \frac{\text{Net profit}}{\text{Average annual of capital}} \times 100, \quad (2)$$

where Ra is the profitability of the total capital, %.

The adjusted calculation of the capital profitability of the organization will more accurately reflect the efficiency of its activities, and the value of the efficiency indicator will be less than the one determined according to the generally accepted method. The impact of grants on of the total capital profitability is considered on the example of Joint Stock Company "Kuban" of the Slavyansk region of the Krasnodar Territory (table 4).

Table 4. Estimation of the impact of grants on the return on equity of "Kuban", LTD of the Slavyansk district.

Indicator	2014	2015	2016	2017	Change in 2017 (+, -) compared to	
					2014	2016
Total amount of grants, thousand rubles	11505	12971	5123	4315	-7190	-808
Net profit with grants, thousand rubles	69687	168457	126833	72656	2969	-54177
Net profit without grants, thousand rubles	58182	155486	121710	68341	10159	53369
Profitability of return on total capital with grants, %	12,66	25,66	16,57	8,81	-3,85	-7,76
Profitability of return on total capital without grants, %	10,57	23,69	15,90	8,28	-2,29	-7,62
Profitability of return with grants, %	22,58	40,01	23,06	12,05	-10,53	-11,01
Profitability of return on equity without grants, %	18,85	36,93	22,13	11,33	-7,52	-10,80

The total capital profitability determined by the net profit indicator less grants, in 2014 was 10.57%. That is by 2.09 points lower than in the case of using the volume of net profit taking into account grants. In 2017, the adjusted return on equity was 8.28%. This is by 0.53 points less than when we applied the standard methods. If we examine the dynamics of profitability indicators, we can note that over 4 years the return on assets, calculated using the traditional method, decreased by 3.85 percentage points. This indicator decreased only by 2.29 points of the proprietor using the refined method of calculation. Thus, one can note a lower rate of decline in profitability using in the calculations of profitability of the indicator of net profit, reduced by the amount of grants.

3. Conclusion

In conclusion, it should be noted that the governmental grants to crop production are small; their size does not allow for accelerating the renewal of equipment and they do not have a significant impact on the production efficiency. In recent years, agriculture in the Krasnodar Territory has been actively developing mainly due to the closing of the agricultural market for Western producers and a significant weakening of the ruble in 2014, which led to an increase in the price competitiveness of Russian farmers. Therefore, the preservation of the embargo on the supply of imported products will contribute to the sustainable development of agriculture.

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