A study of the effectiveness of state support for agriculture in the region (based on material from the Krasnoyarsk Territory)

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Abstract. Agriculture is a key sector of the economy that ensures food security in the region and the country as a whole. The peculiarity of the functioning of agriculture is determined by such factors as the riskiness of activity, high intersectoral competition, dependence on natural and climatic conditions and seasonality. Agriculture is the industry most dependent on state support, and the provided state support is not sufficient to increase the profitability of agricultural production and ensure investment attractiveness. A significant differentiation between the necessary resource support for agricultural production and the state support received determines the need for a science-based approach to studying the issue of state support for agriculture. The article provides an assessment of the institutional features and the effectiveness of the distribution of state subsidies in the region. The sources of subsidies, organizational and legal forms of recipients, and directions of state support were selected as estimates. The analysis shows that most of the subsidies are received by agricultural organizations having the legal form of a limited liability company. The level of state support for agriculture did not affect the number of small and medium enterprises and the value of their turnover, which allows us to assess the effect of subsidies as insufficient. The greatest effect of state support was identified among producers of grain and milk.

1. Introduction
State support for agricultural producers is an important element in the system of national security and food security of the Russian Federation. The problem of the adequacy of the volume of funds allocated by the state, the fairness of their distribution between agricultural producers and the effectiveness of support is an acute issue of scientific and political discussions. Critics point out several controversial positions in modern state agricultural policy.

Firstly, they note the insufficient level of state support funds, especially when compared with the EU countries, the USA, New Zealand. So, for example, A. Altukhov speaks of the need to increase the volume of funds by 2–3 times, and also highlights the problem of the growth of taxes and fees that exceed the level of state support [1]. Secondly, in a number of studies, researchers indicate an unfair distribution of funds between agricultural producers. The priorities of state support are large agricultural holdings and agricultural organizations, which receive more than 60% of all funds [2]. At the same time, small and medium agribusiness receives funds on a residual basis. Thirdly, an incorrect distribution of emphasis and goals of state support is noted. So, I. G. Ushachev indicates that the current measures are...
aimed at stimulating the growth of production and export of agricultural products, while the emphasis should be on improving the sustainability of organizations [3]. In the works of Kornilova L.M. a comparison is made of the financing of various subcomplexes of agriculture, where the tendency to finance the most cost-effective crop-growing subcomplex is revealed [4]. A large number of authoritative researchers agree that the approaches to state support should be reviewed, and the mechanisms for the distribution of funds should be made more transparent and fairer.

The purpose of this study was to assess the institutional conditions and the effectiveness of the distribution of state subsidies on the example of the Krasnoyarsk Territory.

2. Research methods
Institutional conditions for the distribution of subsidies for agricultural support were selected:

- sources of subsidies - federal and regional budgets;
- organizational and legal forms of recipients of subsidies;
- industry leaders in subsidy volumes;
- directions of state support.

Assessment of the effect of state support was calculated for the following types of agricultural products: grain, raw cow's milk, beef (in slaughter weight) and pork (in slaughter weight).

As the economic effect, the difference was chosen between the selling self-value of products from the manufacturer (excluding subsidies) and the cost of products including subsidies. The calculation of the effect was carried out according to the formula derived by the authors:

\[
E = C_p - \frac{U}{1 + \frac{R}{100}} \quad (1)
\]

- E - economic effect in the form of offset costs per 1 ton, rubles;
- \(C_p\) - selling cost of 1 ton, rubles;
- \(C\) - the selling price of 1 ton of products, rubles;
- \(R\) - profitability of products, taking into account subsidies, %.

Efficiency was defined as the ratio of the effect of subsidies to 1 ruble of total costs of production and sale of products.

3. Research results
In the Krasnoyarsk Territory, state support for agriculture is provided in 49 areas, including from the federal budget in 13 areas. The volumes of state support by years are presented in figure 1.

![Figure 1](image_url)  
**Figure 1.** The size of state subsidies to agriculture of the Krasnoyarsk Territory for the period 2016-2019, million rubles.
In 2019, 4.834 billion rubles were allocated, of which 21.1% (1.02 billion rubles) were allocated from the Federal budget and 78.9% (3.8 billion rubles) from the regional budget. In general, an annual decrease in the share of the Federal budget in the amount of state support should be noted. There is also a decrease in overall government support (figure 2).

Figure 2. The structure of state support for agriculture in the Krasnoyarsk Territory, %.

Among agricultural producers, limited liability companies predominate. Together, societies account for about 80% of all state support funds, the share of peasant (farm) households is 13%, and consumer cooperatives account for less than 3% of all funds.

Figure 3. Distribution of state support by organizational and legal forms of activity in 2019, %.
The number of recipients of subsidies for 2019 was 832 agricultural producers, of which 667 agricultural producers were recipients from the Federal budget. Of these, the first 10 account for 35.2% of the total subsidies. Also, 50% of subsidies are received by 21 agricultural producers (2.5% of the total number of recipients), 75% of subsidies are received by 65 agricultural producers (7.8% of the total number of recipients). The data presented indicate the uneven distribution of public funds among producers in the region.

Table 1. List of leading organizations by the amount of funds received from all budgets in 2018-2019

| Name of company                  | The amount of subsidies received in 2018, thousand rubles | The amount of subsidies received in 2019, thousand rubles | Share in the total amount of subsidies,% |
|----------------------------------|----------------------------------------------------------|----------------------------------------------------------|------------------------------------------|
| LLC "Sayanmoloko"                | 187 136.8                                                | 320 636.20                                               | 6.63                                     |
| CJSC "Nazarovskoe"               | 207 565.4                                                | 263 615.60                                               | 5.45                                     |
| LLC "Filimonovsky milk canning factory" | 140 135.1                                                | 194 787.00                                               | 4.03                                     |
| JSC "Iskra"                      | 147 990.3                                                | 160 980.80                                               | 3.33                                     |
| JSC "Kansk variety testing station" | 150 932.5                                                | 157 642.30                                               | 3.26                                     |
| JSC "Solgon"                     | 145 815.7                                                | 148 692.30                                               | 3.08                                     |
| Agroholding Sibiryak JSC         | 140 064.6                                                | 106 939.30                                               | 2.21                                     |
| JSC "Tubinsk"                    | 127 422.7                                                | 103 193.10                                               | 2.13                                     |
| Amount                           | 1 717 347.00                                              | 1 717 347.00                                             | 35.52                                    |

An analysis of the effects and effectiveness of state support for agriculture is presented in table 2.

Table 2. Effects of state support for certain types of products

| Products     | 2014 | 2015 | 2016 | 2017 | 2018 |
|--------------|------|------|------|------|------|
| Grain        | 655.7| 497.5| 528.1| 639.3| 781.4|
| Milk         | 537.94| 511.99| 1444.06| 1617.55| 2850.79|
| Beef         | 3017.3| 2097.7| 1677.2| 2967.3| 17894.1|
| Pork         | 3201.276| 68.2| 118.7| 71.5|

| Products     | 2014 | 2015 | 2016 | 2017 | 2018 |
|--------------|------|------|------|------|------|
| Grain        | 12.40| 8.59| 8.61| 8.96| 11.19|
| Milk         | 3.34| 3.03| 7.98| 8.23| 13.66|
| Beef         | 2.28| 1.44| 1.13| 1.74| 9.72|
| Pork         | 3.94| 0.30| 0.08| 0.15| 0.09|

4. Conclusion

The analysis shows that most of the subsidies are received by agricultural organizations having the legal form of a limited liability company. The level of state support for agriculture did not affect the number of small and medium enterprises and the value of their turnover, which allows us to assess the effect of subsidies as insufficient. The highest efficiency from state support, in the structure for certain types of products in 2018, was found among grain and milk producers, a pig breeding subcomplex with the lowest effect indicator. In general, the data presented allow us to judge the effectiveness of the implementation of state programs, but to achieve the targets it is necessary to consider not from the point of view of one enterprise, but a specific sub-complex as a whole [4].
References
[1] McNaughton R 1959 Scheduling with deadlines and loss functions *Manag. Sci.* **6**(1) 1-12
[2] Rothkopf M 1966 Scheduling with random service times *Manag. Sci.* **12**(9) 707-13
[3] Kovalev M Y, Shafranskij Y M and Tanaev V S 1989 Approximation scheduling algorithms: a survey *Optimization: A Journal of Mathematical Programming and Operations Research* **20**(6) 859-78
[4] Lawler E L and Moore J M 1969 A functional education and its application to resource allocation and sequencing problems *Manag. Sci.* **16**(1) 77-84
[5] Tanaev V S, Sotskov Y N and Strusevich V A 1994 *Scheduling Theory. Multi-Stage Systems* (London: Kluwer Academic Publishers)
[6] Moore J M 1968 An n – job, machine sequencing algorithm for minimizing the number of late jobs *Manag. Sci.* **15**(1) 102-9
[7] Strum L B 1970 A simple optimality proof of Moore’s sequencing algorithm *Manag. Sci.* **17**(1) 116-8
[8] Sidney J B 1973 An extention of Moore’s due date algorithm *Lect. Notes Econ. and Math. Syst.* **86** 393-8
[9] Emmons H 1969 One – machine sequencing to minimize certain functions of job *Operat. Res.* **4** 701-15
[10] Srinivasan V 1971 A hybrid algorithm for the one machine sequencing problem to minimize total tardiness *Nav. Res. Log. Quart.* **18**(3) 317-27