State Regulation of the Regional Agricultural Complex Development: Assessment and Rationalization Issues

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Abstract. The article discusses the current state and the main trends in the development of agriculture (on the example of agricultural enterprises in the Vologda Oblast). Nowadays there is a trend of decline in the production of basic agricultural products. The insufficient financing of agricultural enterprises is one of the key reasons for this situation. Internal and external sources of funding can be such tools. As world practice shows, the largest share in the funds, which are at the disposal of agricultural enterprises, accounts for direct budgetary financing. However, in the Russian Federation there is another trend: over the last decades there is noticeable reduction in direct state support of agricultural producers. In addition, in the framework of Russia's accession to the WTO there will be further decline in such support and simultaneous transfer of financial burden onto agricultural enterprises. Therefore, the government faces an acute problem of planning and forecasting volumes of state support and earnings of agricultural enterprises. In this regard, this work makes a forecast calculation of the amount of public support and the revenue size of agricultural enterprises. To make forecasts the author uses methods of econometric modeling and forecasting (in particular, the method of correlation and regression analysis). The forecasts are presented in 3 scenarios: most realistic, optimistic and pessimistic. The article offers recommendations on determining the actual needs of regional agricultural enterprises in the amount of state support.

Key words: Vologda Oblast, an agriculture branch, state regulation, modeling and forecasting, financial support, revenues of agricultural enterprises, identification of agricultural enterprises' needs in public assistance.

Transition to market economy has resulted in significant deterioration of Russia's agriculture. A typical pattern of decline in production and financial performance of agricultural producers can be observed in agriculture of the Vologda Oblast as well. The results of the studies [12, 19, 21] show that agricultural enterprises and households are the main agricultural producers in the Oblast. The structure of the cost of agricultural production in the last 13 years experienced significant changes: the share of agricultural products output increased from 50% in 2000 to 69% in 2013. Accordingly, the share of products of private subsidiary farming reduced by the amount specified. In addition, during this period, there was a noticeable fluctuation in the cost structure of the production: the linear coefficient of absolute structural shifts was about 1% per year. This indicates the presence of crisis phenomena in the Vologda Oblast agriculture.

At present, enterprises are main producers of grain (94%), eggs (97% in 2013), milk (91%), meat (80%) and flax (77%). In 2000–2013, the number of agricultural enterprises decreased from 467 to 214, that is, by 253 units or 54%. The decline is also observed in other indicators that characterize the scale of agricultural production in the region (tab. 1).

These indicators help assess the extent of agricultural production in the Vologda Oblast in the 13 years under consideration. The reduction affected every production factor: land, means and tools of labor, and human factor. If the number of agricultural enterprises decreased by 54%, then the number of workers employed there – in 2.6 times. The past 13 years witnessed a significant decline in the area of agricultural land used by agricultural enterprises: it decreased by 540.8 thousand hectares, i.e. by 53.6%. The area under crops also decreased, it was caused by the reduction in cattle stock and shutdown of several agricultural organizations. Approximately the same changes occurred in relation to the number of livestock in agricultural enterprises: in 2013, the cattle population was 56.5% from the number of livestock in 2000, the number of cows was 60.2%, pigs – 57.4%. However, despite the reduction in all the agricultural production factors, the decline has not affected all types of agricultural products: there was a reduction in the production of grain (28.5%), potatoes (21%), vegetables (7.5%) and meat (11.9%). The volume of production of milk and flax fiber, on the contrary, increased: milk yield increased by 43.2 thousand tons (by 12.8%), and the increase in flax production amounted to 1.5 thousand tons or 41.7%. Also there is a tendency toward the increase in egg production: in 2000–2013, the increase amounted to 88.4 million units or 18.4%.

We can point out the increase in the productivity of livestock and yield of agricultural crops [12, p. 58] as positive aspects of the activity of agricultural enterprises in the Vologda Oblast. Milk yield per cow increased especially significantly – in more than 1.8 times in the period of 13 years. Other indicators of livestock productivity increased, too. Crop yield increased by 2.3 centners per hectare or in 1.2 times.

As for the provision of agricultural enterprises of the region with basic tools and manpower, we can point out that in the period under consideration, the value of fixed assets

Table 1. Indicators of the scale of agricultural production in agricultural enterprises
of the Vologda Oblast in 2000–2013

Indicators	Value of indicators by years									Growth rate, 2013 to 2000, %
	2000	2002	2004	2006	2008	2010	2011	2012	2013	
Number of agricultural enterprises, units	467	465	365	348	291	250	239	233	214	45.8
Average annual number of employees of agricultural enterprises, thousand people	47	41	35	30	24	22	21	20	18	38.3
Area of agricultural land, thousand hectares	1009.8	993.6	972.7	923.3	738.2	603.8	578.4	554.2	469.0	46.4
Area under crops, thousand ha	628.5	590.1	531	476.4	444.2	382.1	386.6	370.5	323.8	51.5
Cattle population at the end of the year, thousand head	253.6	232.5	198	193.8	186.8	165.3	158.3	156.6	143.3	56.5
including cows	110.5	103.3	92.2	89.3	87.4	78.0	74.8	74.1	66.6	60.2
Pig population, thousand head	150	144.3	118.1	106.5	113.5	122.1	78.8	81.1	86.1	57.4
Production of agricultural products, thousand tons:										
grain	212.5	199.5	173.7	186.8	230.8	145.7	234.2	198.3	151.9	71.5
flax fiber	3.6	0.9	2.4	0.7	1.5	2.6	2.1	5.5	5.1	141.7
potatoes	40.5	32.5	29.3	35.3	36.3	27.0	44.0	36.5	32.0	79.0
vegetables	16.0	15	15	12.3	12.8	11.9	16.2	14.2	14.8	92.5
meat (in live weight)	55.3	58.5	65.2	61.9	64.3	66.8	64.2	57.6	48.7	88.1
milk	338.8	410.7	390.7	401.3	420.8	380.7	398.7	418.4	382.0	112.8
eggs, million pieces	480.2	494.3	546.5	599.8	490.2	569.7	583.2	670.5	568.6	118.4
Value of gross output at comparable prices of 1994, million rubles	317.2	329.0	345.3	351.7	353.0	343.3	362.7	356	307	96.8
Gross output produced, in comparable prices of 1994 per 100 hectares of agricultural land, thousand rubles	34	37	42	47	53	57	63	64	68	2-fold
Source: Vologda Oblast Department of Agriculture and Food Resources data.										

per unit area increased 7-fold, the real volume of capital equipment per unit of labor increased 8-fold, labor productivity in comparable prices per employee increased 2.5-fold. However, the increase in these indicators was actually caused by the decrease in the number of people employed in the agricultural sector and by the decrease in a more than twofold decrease in the area of farmland. Meanwhile, the research conducted by Vologdastat (Regional Office of the Federal State Statistics Service of the Russian Federation in the Vologda Oblast) forecasts that in 2014–2016 the cow population in farms of all categories will decrease by 7,379 head or 4.9%, and, as a result, total milk yield will also decrease [22, p. 14].

The nationwide situation is similar with regard to several key indicators that characterize the state of the industry. Thus, during the analyzed period, the share of agriculture in gross value added decreased from 6.6 to 3.9% (by 2.7 percentage points), the number of employed population decreased by 4.5 percentage points (from 13.9 to 9.4%) in value of fixed assets − 4.7 percentage points (from 7.1 to 2.4%). The area under crops decreased by 6,613 million ha or 7.8%, the number of energy facilities decreased in 2.4 times (from 240 to 98.9 million HP) [2, 5, 20].

Considering the issue of agricultural production efficiency, it should be noted that efficiency is measured by a set of indicators, and the increase in crop yield, milk production and average daily gain do not prove that agricultural performance is effective. Despite the presence of some positive trends in the Vologda Oblast agriculture, it is necessary to mention a significant share of unprofitable agricultural enterprises *(tab. 2)*.

Compared to 2000, their share has declined, but by the end of 2013, 38% of agricultural enterprises were unprofitable. We recall that

Table 2. Indicators of performance of agricultural enterprises in the Vologda Oblast in 2000–2013

Indicators	Value of indicators by years										Growth rate, 2013 to 2000, p.p.
	2000	2002	2004	2006	2008	2009	2010	2011	2012	2013	
1. Financial performance for all activities, million rubles	516.9	167.7	372.7	196.3	1111	328.2	780.4	653.9	-30.4	-3517	-
2. Proportion of unprofitable enterprises, %	47	53	35	42	23	45	35	33	37	38	-9
3. Level of profitability (unprofitability) for all activities (excluding subsidies), %	0.84	-3.1	-2.5	-6.0	-3.5	-8.1	-5.2	-2.8	-5.7	-34.7	-35.5
4. Level of profitability for all activities (including subsidies), %	23	3.5	5.8	2.5	9.9	3.0	6.5	4.5	-0.2	-24.4	-47.4
5. Profitability (unprofitability) of crop production (excluding subsidies) as a whole, % including:	32	20	12	15	11.2	4.7	5.9	10.0	-1.9	4.6	-27.4
grains and grain legumes	42	2	4	1	11.7	1.2	-4.9	4.8	7.7	18.9	-23.1
potatoes	95	60	41	76	52.5	47.7	51.1	97.8	5.6	21.2	-73.8
rotted straw	-39	-61	-59	-68	-80.1	-86.7	-89.0	-88.8	-88.6	-87.7	-48.7
6. Profitability (unprofitability) of the livestock industry (excluding subsidies and grants), total, % including:	-1	4	0	6	7.5	5.1	10.2	5.0	6.2	-2.1	-1.1
milk	23	17	17	18	26.9	11.2	21.5	20.1	15.5	15.3	-7.7
cattle meat	-31	-23	-34	-27	-33.1	-32.6	-32.5	-29.6	-30.2	-36.7	-5.7
pork	-9	11	1	5	-6.4	8.4	13.0	-8.1	16.5	-5.4	3.6
poultry	-23	-21	-10	9	2.6	13.4	18.2	4.8	1.4	-24.6	-1.6
eggs	20	28	16	24	9.6	35.1	20.6	21.1	25.6	3.0	-17.0
Source: Vologda Oblast Department of Agriculture and Food Resources data.											

the share of unprofitable agricultural enterprises in the region in 1990 was only 2%, and their profitability without subsidies was at the level of 38%. The effects of the global financial crisis with its peak in 2009 affected the functioning of agricultural enterprises in the Oblast. Thus, the share of unprofitable enterprises in 2009 compared to 2008 increased by 22 percentage points; profit (including subsidies) decreased 3.4-fold; the level of profitability (excluding subsidies) decreased by 4.6 percentage points, respectively. Research conducted at ISEDT RAS shows that "despite the implementation of many federal and regional programs in 2007−2010, it was impossible to stabilize the situation in agriculture in the Vologda Oblast... the return to pre-crisis positions alone will take at least 2−3 years, with the situation being exacerbated by a number of problems, most of which are systemic in nature..." [16]. Beef and rotted straw are among the most unprofitable agricultural products in the recent decade. On the contrary, it is most profitable to produce potatoes, milk and eggs.

Returning to the issue of agricultural production profitability in the Vologda Oblast (see tab. 2), we can point out its overall significant reduction: in 2000−2013, this ratio decreased from 0.84 to -34.7% (by 35.5 p.p.). At that, as a final result, we consider profitability without taking into account budget subsidies. Here we share an opinion expressed by experts at Vereshchagin Vologda State Dairy Farming Academy. They note that if subsidies and profits (losses) are combined, this will not provide reliable estimates concerning the situation in the industry as a whole, because these subsidies are in fact used

for the purpose of increasing (saving) the level of intensification of production and production volumes. It means that the activity of agricultural enterprises in the Oblast during the period under consideration is characterized as unprofitable. It is a negative aspect and it evaluates the activities of agricultural enterprises in the Oblast as ineffective.

The indicators of financial situation at agricultural enterprises in the Vologda Oblast demonstrate the impossibility of timely repayment of debts and the presence of debt load in the agricultural sector [8]. The research carried out at ISEDT RAS shows that "the financial performance of agricultural enterprises in the Vologda Oblast in general are far from those required for the organization of expanded reproduction at the expense of own sources. And many households lack sources even for simple reproduction..." [19, p. 72].

This raises the question of the ratio of the volume of internal to external funding sources. Direct funding is still the main external source for agricultural producers in the Vologda Oblast and in the Russian Federation as a whole. On the one hand, enterprises are in critical need of financial support from the state, and on the other hand, after Russia's accession to the WTO, the RF Government aimed its policy at reducing direct state support of agricultural producers. Amid these conflicting interests there emerges a particularly relevant issue of modeling and forecasting both internal sources of funding economic activity of enterprises and external sources − amounts of state financial support from budgets of all levels in relation to agricultural enterprises. This information helps agricultural producers make

decisions in assessing their opportunities of functioning and development; it is also useful to the RF Government in analyzing its budget obligations.

Revenue from the sales of agricultural products is the main domestic source of agricultural enterprises' funding. Modern economic science has many methods of modeling and forecasting of indicators for assessing the economic performance of objects at the meso- and macrolevel (such objects include agricultural enterprises of the Vologda Oblast, Northwestern Federal District and Russia as a whole). The most common among these methods are statistical and econometric modeling and forecasting.

Statistical methods of forecasting help reveal past trends in the indicator under consideration and extend them into the future. The basic method of statistical modeling is the method of analytical alignment of levels of the rows of dynamics by equation of the curve selected. For this purpose we used the data of the Vologda Oblast Department of Agriculture and Food Resources on the amount of the revenue of agricultural enterprises for 2000−2013. In the course of the simulation, we chose one equation of the trend that from a mathematical point of view describes most adequately the change in the revenues of agricultural enterprises in the retrospective period: $y_t = 2163.80 + 940.04 \cdot t$. The accuracy of this equation is 96.1%. According to the equation, the revenues increased by 940.04 million rubles on average for each year during these thirteen years. Therefore, starting in 2013 (13,873.2 million rubles), by the end of 2016, its forecast value will have reaches 18,144.5 billion rubles.

Forecasting that uses statistical methods implies that the researcher plugs $y_t = 2163.80 + 940.04 \cdot t$ the promising time periods t in the equation of the linear trend and estimates the amount of agricultural enterprises' revenue for each year out of these years (y_t). However, in this case, the researcher obtains only a point and specific value of the parameter under consideration [29]. The forecasting of economic indicators of functioning of meso- and macro-objects involves the obligatory construction of interval forecasts that take into account one or another probability of their execution. The most common is a 95% probability of the forecasts reliability. Taking it into consideration, one obtains the probable forecast error and, consequently, the lower and upper limits of the forecast of the index under consideration. Economic literature often calls these limits the "fork" of the forecast or an optimistic and pessimistic option of the forecast. In our case, the forecasted lower limit of the amount of revenue of agricultural enterprises in 2016 was 10,185.7 million rubles, and the upper limit − 26,103.2 million rubles *(fig. 1)*.

Point and interval forecasts for the amount of external source of funding the activities of agricultural enterprises − the amount of government aid to the Oblast's agricultural enterprises − were constructed similarly. The amount of financial assistance provided to the region's agricultural enterprises in 2000−2013 was chosen as the initial data. The following trend equations were originally chosen: the equation of straight line, parabola, hyperbola and the exponential trend equation. The analysis of indicators of the quality of each of these equations revealed the

Figure 1. Point and interval forecasts of the revenue of the Vologda Oblast agricultural enterprises in 2014–2016 constructed by the method of analytical alignment of the row of dynamics by the linear trend equation
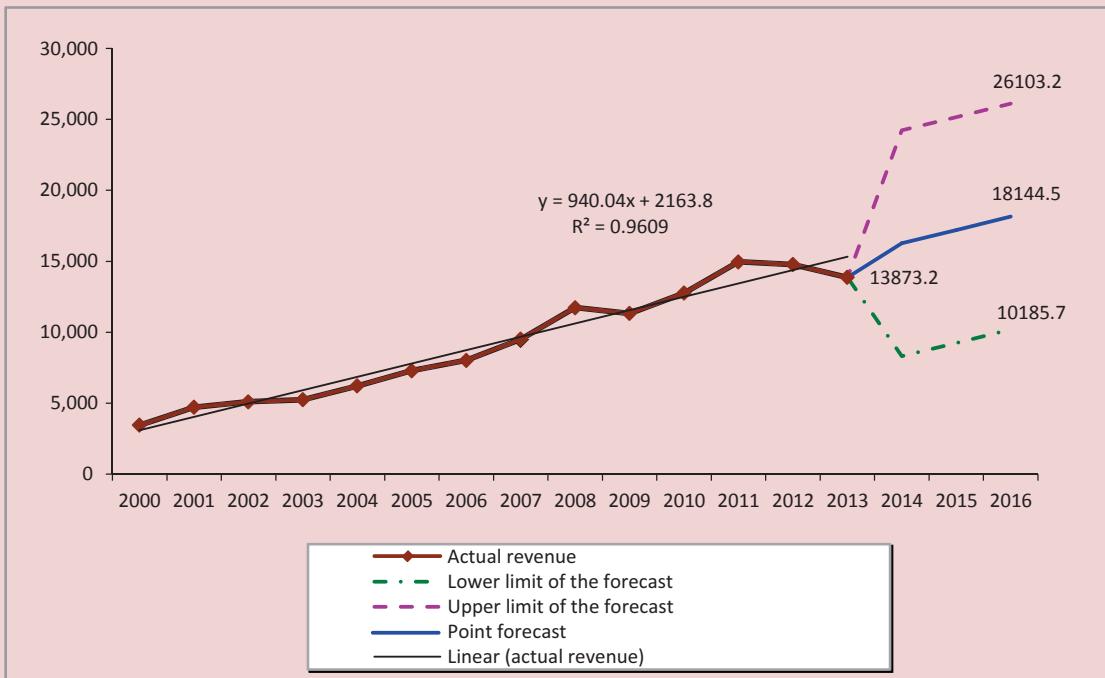
curve that described most adequately the dynamics of the amount of state support in the retrospective period. Such a curve was represented by the exponential trend equation $y_t = 337.57 \cdot e^{0.1107t}$ *(fig. 2)*.

The determination coefficient of this equation reached 67.4%. This means that the statistical modeling helped describe mathematically about 70% of the dynamics of the amount of aid to agricultural enterprises. The quality of the equation can be assessed as satisfactory and suitable top be used in econometric forecasts. Accordingly, the point forecasted value of the amount of state support in 2016 should be 2,475.9 million rubles, the lower limit of the amount of state aid that agricultural enterprises are to get in 2016, according to the forecasts, was 1,457.6 million rubles, and the upper limit was 3,494.2 million rubles.

As we can see, the limits of the interval forecasts of both economic indicators – the revenue of agricultural enterprises and the amount of state support – are wide: the numerical values of optimistic and pessimistic forecasts differ almost 2.5-fold. This discrepancy is explained by flaws in the forecasting methodology applied hereto. The analytical method of aligning the row of dynamics by the equation of the curve selected suggests that both financial indicators are not linked logically and they

Figure 2. Point and interval forecasts of the amount of state assistance
to agricultural enterprises of the Vologda Oblast in 2014–2016 constructed by the method
of analytical alignment of the row of dynamics according to the exponential trend equation
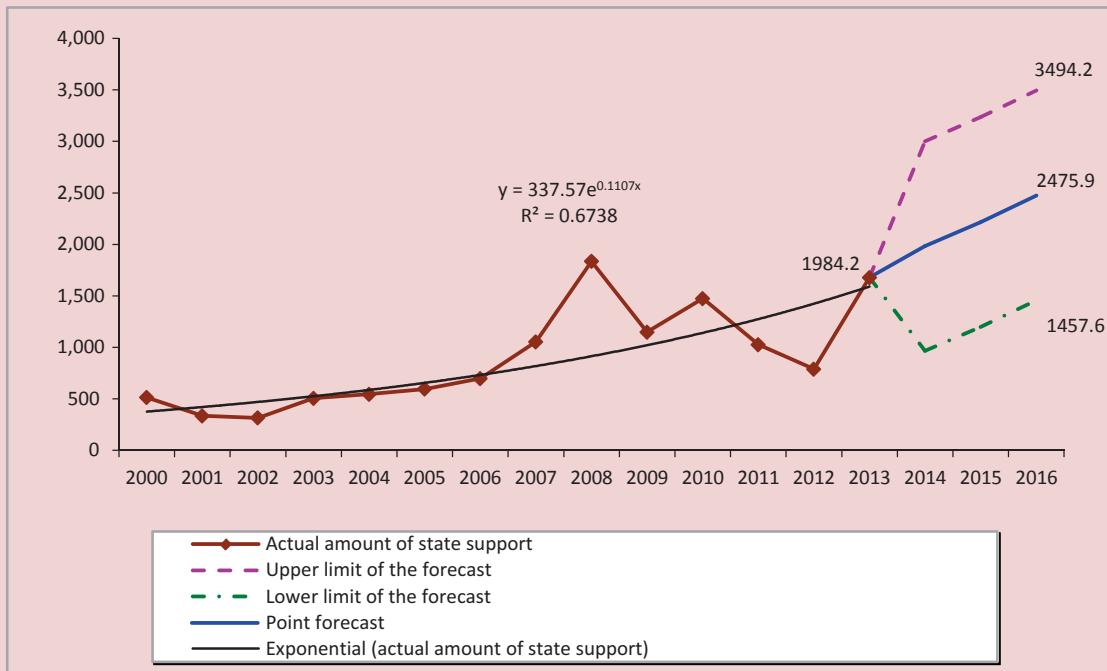
are developing in the retrospective period of time independently from each other. This assumption is fundamentally wrong, because the amount of state aid affects the amount of enterprises' revenue. This method cannot be an independent forecasting tool, but it can act as a separate stage in more sophisticated forecasting methods.

It is possible to overcome the disadvantages of the above mentioned modeling and forecasting statistical method by using econometric analysis methods. This class of methods, among other things, helps select and assess the factor properties that have a significant impact on economic indicators of object's performance; it also helps forecast

the behavior of factor properties in the future and evaluate the corresponding change in economic indicators of object's functioning in the coming period of time [28, 29].

Thus, at the first stage of correlation and regression analysis, we revealed a strong direct connection between the two economic indicators. At the second stage of the research, we built the equation that shows the dependence of the amount of revenues of the Vologda Oblast agricultural enterprises on the amount of direct state aid provided to them. Among the set of initial regression equations, the following equation of linear relation was most appropriate: $y_x = 3724.711 + 6.138 \cdot x$. According to the regression coefficient, each

ruble of budgetary funds leads to an increase in the revenues of the region's agricultural producers by 6 rubles 14 kopecks (or a 1% increase in state funding, ceteris paribus, leads to a 0.6% increase in the revenues of agricultural enterprises). The correlation index of this equation was 0.752 (*R = 0.752*), indicating the strong relationship between the amount of state aid and revenues of agricultural enterprises. Therefore, direct government regulation is an effective tool to stimulate the development of the industry.

The next stage of the correlation analysis is to make an independent forecast of the identified factor property – the amount of state financial support for 2014–2016 In this case we can use a forecast previously constructed with the help of statistical methods, in particular, the method of analytic alignment of state support by the equation of the exponential curve.

By substituting the forecasted values of the amount of direct state support in the regression equation, we can determine the expected amount of revenue of agricultural enterprises *(fig. 3)*.

According to the figure, it can be argued with a 95% probability that by the end of 2016, the revenue of agricultural enterprises will be from 12,671.7 to 25,172.3 million rubles. We emphasize that these figures are achievable only if the government grants financial assistance in the amount of 1,457.6–3,494.2 million rubles. However, by the end of this period, we

Figure 3. Point and interval forecasts of revenues of agricultural enterprises of the Vologda Oblast in 2014–2016, made according to the linear regression equation
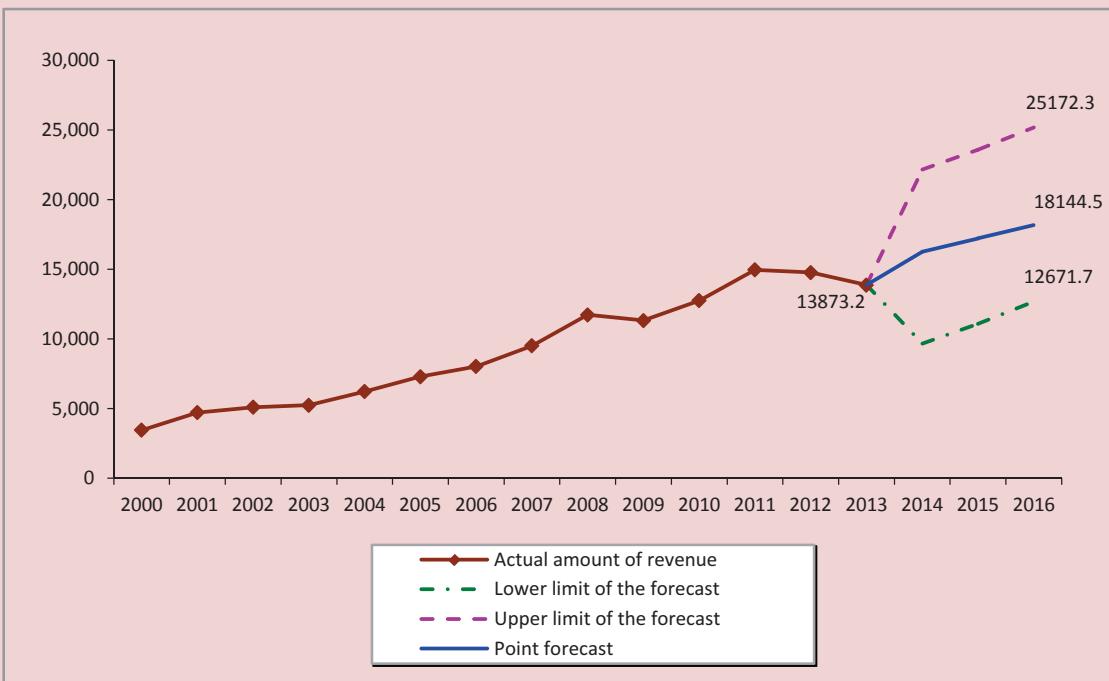
can most likely expect the realization of the pessimistic scenario for allocations from the budget – the reduction in the amount of state support to the lower limit of the forecast (due to Russia's accession to the WTO), which is an adverse factor and is viewed as being very negative by domestic experts [3, 7, 10, 26, 27].

Research findings indicate that under the inertial scenario of development of the agro-industrial complex in the Vologda Oblast its long-term sustainable development will not be promoted [25, p. 109]. The results of the surveys conducted by ISEDT RAS specialists among the heads of agricultural enterprises show that insufficient budgetary support was most frequently named as a factor preventing their stable functioning. Thus, this factor was named by 72% of respondents in 2005, and in 2011 this figure increased to 98% [4, p. 125].

In this regard, government authorities in Russia need to develop measures to minimize negative consequences of Russia's accession to the WTO and maximize the potential winnings. According to the Minister of Agriculture, a way out of this situation consists in introducing amendments to the law "On agriculture" for the purpose of determining criteria to classify regions as unsuitable for agricultural activities, because support for these regions will be related to the "green basket" and payments to farmers will not be subject to limitations. In Russia there are quite a few of such regions [9, 24].

The amount of subsidies in areas with unfavorable natural and economic conditions can be increased considerably. According to preliminary estimates, such areas account for half the territory of Russia. The share

of such areas in the EU constitutes 57% of farmland. The vast majority of farmers' and other agricultural enterprises located in these territories get extra subsidies from the budget under WTO conditions. Thus, Russian agricultural producers have opportunities to get more support without violating WTO rules [1, 6].

February 2015, the Resolution of the RF Government "On approval of the Rules for classifying territories as unsuitable for agribusiness areas" of January 27, 2015 No. 51 entered into force [13]. The document established the following criteria for classifying the territories as unfavorable: condition of soil of agricultural land; natural and climatic conditions; integral indicator of socio-economic development of rural territories of a Russian Federation subject. The Ministry of Agriculture of the Russian Federation makes the list of Russian Federation subjects that are unsuitable for agricultural production; the RF Government reviews the list when necessary, but not less than once in three years. Federal Agency for Scientific Organizations, Federal Service for Hydrometeorology and Environmental Monitoring, and Federal State Statistics Service provide the necessary data for calculating the indicators in order to form the list by August 1 of the relevant year. The author of the present paper is not given an opportunity to determine whether the Vologda Oblast belongs to such territories. However, we referred to scientific research on this issue that was carried out previously.

The study [1, p. 19] notes that out of the 10 criteria of the preliminary list of the regions with the right to receive additional subsidies,

the Vologda Oblast meets six criteria such as: 1) bonitet of agricultural land; 2) cadastral value of agricultural land; 3) bioclimatic potential; 4) normative yield of crops; 5) differentiated rental income; 6) risk of denudation of areas.

Experts [6] carried out an integrated assessment of differentiation of RF subjects by level of socio-economic development of rural areas that was formed in 2013. This system included 10 indicators for the last 5 years of research (2009−2013). Partial indicators were as follows: 1) average annual agricultural production index, %; 2) the share of profitable entities in agriculture, hunting and forestry, on average for the period under consideration; 3) the average annual index of rural population; 4) the level of employment of the rural population of economically active age; 5) the ratio of disposable resources on average per member of rural household to the regional value of subsistence level for the last reporting year; 6) endowment of rural population with the total area of housing with full amenities for the last reporting year, square meters per inhabitant; 7) the level of gasification of houses (apartments) with pipeline gas in rural areas for the last reporting year; 8) the share of rural population provided with pathogen-free drinking water from all sources for the last reporting year; 9) the number of feldsher-midwife stations per 100 rural settlements for the last reporting year; 10) the coverage of children aged 1−6 by rural pre-school facilities for the last reporting year. The integral coefficient was defined as the sum of deviations of particular indicators from the national average. The upward deviation of a particular indicator

from the average RF value is a positive value, and the larger it is, the better the situation in the region; the downward deviation is a negative value, and the larger it is, the worse the situation. For those RF subjects in which the integral indicator was below average, the number of negative deviations was additionally determined; the regions with a large number of such deviations of partial indicators (7−8) were classified as **critical**, the **Vologda Oblast** is one of them.

According to the document [13], an area is classified as unfavorable, if the integral indicator of socio-economic development of rural areas is below national average. The research [6] proves that there is a high probability of the Vologda Oblast entering the list of such territories. Consequently, there is a need to develop a methodology for granting additional subsidies to these territories. A variant of such a technique proposed by the author [see 11] includes guaranteed prices for livestock products, and livestock insurance. The minimum amount of additional funds from the budget, given the standard level of profitability that ensures simple reproduction, was about 2.0 billion rubles per year in the prices of 2013, and it will require about 3.0 billion rubles to ensure expanded reproduction. According to the research conducted by specialists at ISEDT RAS [19, p. 86], if we look at the amount of state support for rural areas in developed countries, it turns out that the Vologda Oblast requires annual allocations of about 4−5 billion rubles of budget resources compared to 1.5 billion rubles allocated at present. Our estimates are also close to the figure specified.

In conclusion, we would like to point out the role of macroeconomic environment in the development of the agricultural sector. A positive aspect of support provided to agricultural producers in the Vologda Oblast and Russia as a whole was the introduction in 2014 of food embargo on certain agricultural products, raw materials and foodstuffs and its extension to the middle of 2016 [14, 15]. In 2014, according to N.I. Anishchenko, Head of the Vologda Oblast Department of Agriculture and Food Resources, a significant part of regional producers successfully increases production of products that fall under the sanctions; the projected pre-tax profit of agricultural enterprises is about 1.5 billion rubles in 2014 against a loss of 3.5 billion rubles in 2013. Budget support to the industry also increased. If in 2013 it was 1.7 billion rubles, then in 2014 and 2015, the total amount of subsidies exceeded 2.5 billion rubles [17, 18].

Thus, the research allows us to make the following conclusions:

1. The analyzed period (2000−2013) experienced a decrease in the volume of agricultural production produced by the enterprises of the Vologda Oblast, the decline involved all production factors: land, tools and objects of labor, and the human factor; the activity of agricultural enterprises of the Oblast during the period under consideration is characterized as unprofitable. It is a negative aspect, which shows that the activities of agricultural enterprises in the Vologda Oblast are ineffective.

2. State support still remains the major source of funding for agricultural enterprises of the Vologda Oblast. Under the conditions of a market economy, the issue of determining and forecasting the amount of this support is particularly acute.

Modern science has many methods for assessing and forecasting economic indicators. The basic methods are statistical forecasting (in particular, the method of analytical alignment of the row of dynamics by equation of the curve selected). However, these methods have significant drawbacks:

− they are designed to extend the retrospective trends of the indicator under consideration into the future; they assume either the absence of its noticeable variations in the past (which is especially not typical for the financial indicators) or the presence of a clear tendency toward increase or decrease in most of the numerical values of the indicator under consideration in the retrospective period;

− they do not consider the interaction between the indicator under consideration and other economic indicators that show the functioning of the objects at the meso- and macrolevel.

Such drawbacks can be eliminated with the help of several econometric methods of modeling and forecasting of economic indicators (in particular, the method of correlation and regression analysis). Among other things, they help, with a certain degree of probability, to build optimistic and pessimistic and the most probable scenarios of the forecasts of economic indicators of functioning and development of a region, industry and the country as a whole (at that, statistical forecasting methods can be individual stages of correlation and regression analysis).

3. The research described in this article was based on economic methods of modeling and forecasting, and it obtained the forecasted amount of state support to agricultural enterprises of the Vologda Oblast and the amount of revenue that they can obtain. According to the forecast, by the end of 2016, the forecasted value of the volume of public support will be 1.5—3.5 billion rubles (the most likely value will be 2.5 billion rubles), while the revenue of agricultural enterprises of the Vologda Oblast (if the trends in the financing remain) will be 10.2—26.1 billion rubles (at a median value of 18.1 billion rubles).

4. The forecast of the volume of state support to agricultural enterprises of the Vologda Oblast is "growing": from 0.5 billion rubles in 2000 to 2.5 billion rubles in 2016. This trend corresponds to the actual need of the industry in financial support from the state. However, in connection with Russia's accession to the WTO, the government of the Russian Federation reduced amounts of direct financial assistance to agriculture. This contradiction between the fact that agriculture needs more resources for its functioning and development, and the efforts of the government to decrease its budget commitments is the main problem when reaching the most probable values of the forecast (2.5 billion rubles). If the amount of state assistance decreases to the pessimistic scenario (1.5 billion rubles), then the crisis phenomena in this economic sector will aggravate.

We think that if the Vologda Oblast is acknowledge to be a depressive territory (according to [13]), this can be the way to improve the situation. This provides an opportunity to increase state support to the extent relevant to the actual needs of agriculture concerning financial assets. A mechanism for additional allocation of funds can be developed according to the methodology previously proposed by the author of the present article [see 11]. The purpose of this technique also lies in the elimination of territorial differentiation that exists in the Vologda Oblast. Payments can be made in the framework of green box subsidies in the crop production sector and as an additional payment per liter (kg) of milk sold.

5. The sanctions on the imports of certain types of food products in Russia have had a positive effect on the functioning of the Vologda Oblast agricultural enterprises and led to the increase in production and financial performance. In addition, the volume of budget support to the Oblast's agriculture also increased — from 1.7 billion rubles in 2013 to 2.5 billion rubles overall in 2014 and 2015.

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