

## The State Regulation of the Input Market

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In this study, on the basis of the data obtained as the result of the investigation in three regions as well as the information obtained as the result of work in other subjects of the federation the regional policy of the market of purchased inputs regulation has been analyzed and the attempt to estimate the effect of application of the state support programs of inputs use was made. We consider only the three most significant programs of subsidizing for the costs of inputs — the support of the use of fertilizers, the support of fuels and lubricants purchase, and the support of machinery purchase.

For the quantitative estimation of the efficiency of the state support of inputs use we are based on the supposition that the aim of the support programs of inputs use is the reduction of the actual price for inputs for agricultural producers. The efficiency of the support program can be measured by the reduction of the price for inputs by agricultural producers as the result of its realization. The following question rises: “From what level is it necessary to measure the fall in prices?” Theoretically — from the equilibrium price for inputs, i.e., from the price fixed in the analogous market by the absence of any state interference. The conventional NPR (nominal protection rate) index was used as an index of efficiency.

The index compares the value of inputs for agriculture in the actual and equilibrium prices. It is expressed as a percentage:

$$NPR_{inputs} = \frac{\sum_i P_i^b Q_i - \sum_i P_i^d Q_i}{\sum_i P_i^d Q_i}$$

where  $P_i^d$  — actual prices for inputs  $i$ ,

$P_i^b$  — equilibrium price for inputs  $i$ ,

$\sum P_i^d Q_i$ ,  $\sum P_i^b Q_i$  — value of inputs  $i$  in the actual and equilibrium prices.

For the empirical calculations we took for the equilibrium price either the price for inputs at which farmers buy the analogous inputs (in the regions where farmers are not included in the support programs) or an average price for such inputs in Russia.

It is obvious that the negative meaning of the NPR coefficient testifies that the program has led to the rise in prices for inputs, i.e., agricultural producers do not receive compensation as the result of its realization, but, on the contrary, pay an abnormally high price and a final receiver of the compensation is not an agricultural producer but a producer or a supplier of inputs. The higher the meaning of the nominal protection rate, the more reduced is the price for inputs for an agricultural producer.

But the fall in prices for inputs is not an end in itself — more often the aim of the state programs of subsidizing for the costs of inputs is the development of its use in the agrarian production. That is why the index of increase of the use of inputs and the efficiency of its use is chosen as the second criterion of the program efficiency.

On the basis of the analysis of support programs Russia regions are grouped according to the type of the agrarian policy, and the connection of the type of the agrarian policy in a region with the efficiency of support programs is investigated.

## 1. The programs of the input market regulation

### 1.1 Mineral fertilizers

From the beginning of the reforms in Russia the program of subsidizing agricultural producers for a share of costs of fertilizers acts at the federal level. The subsidizing for a share of value of purchased inputs results in the growth of demand for fertilizers. The growth of demand by inelastic supply leads to the rise in prices and, according to the most researches,<sup>1</sup> the inner supply with fertilizers is inelastic in Russia. As the result of this measure, the prices for fertilizers increased for agricultural producers. In some years, the losses of producers caused by the rise in prices were higher than paid subsidies.

From 1999, the scheme of subsidies for fertilizers at the federal level has been changed. At present, the subsidies are paid not to purchasers but to producers of fertilizers. It caused a short-term fall in prices for agricultural producers. However, in the middle-term prospect it should lead to monopolization of the sector: each region receives a restricted quantity of suppliers who, in addition, get the advantage in the form of the interest-free state loan.

Practically in all regions, the federal program of subsidizing for the costs of fertilizers is supplemented one way or another with the analogous regional programs. Subsequently, in many regions the authorities approve the list of suppliers of fertilizers — receivers of the state subsidy without any competition. The administrative allotment of producers of fertilizers with the monopolistic power within a region results in the rise in prices for inputs for agricultural producers.

Practically anywhere in regions, the subsidy is paid directly to agricultural producers not to suppliers of inputs (Table 1). Such a scheme may result in the rise in prices and taxation of agricultural producers.

**Table 1. Peculiarities of the regional support programs of the purchase of fertilizers, 2001\***

	RF	Chelyabinskaya oblast	The Chuvash Republic	Vologodskaya oblast	Permskaya oblast	Rostovskaya oblast	Ivanovskaya oblast	Nizhegorodskaya oblast
Restricted choice of suppliers	+	+	+	-	-	+	0	-
Subsidy is paid to agricultural producers	-	+	+	+	+	-	0	+

\*0 – there is no corresponding program

Source: the regional Departments/Ministries of Agriculture, Consultant Regions

### 1.2 Fuels and lubricants

The subsidizing for costs of fuels and lubricants in the agrarian sector is implemented in the form of the so-called commodity credit. In the recent years, the programs of commodity crediting are used only in regions. The commodity credit hampers the development not only of the input market for agriculture but the market of agricultural production as well. The coordination of the commodity credit with the supplying for the regional funds gives the regional authorities the formal grounds for prohibitions on export of agricultural production that results in the separation of the singular market in the country and the deterioration of the exchange proportions for agricultural producers.

<sup>1</sup> Е. Серова, Н. Карлова, О. Мелюхина, И. Храмова, Т. Тихонова, А. Тарасов. Повышение эффективности использования бюджетных средств в АПК России. Москва, 2000. [www.iet.ru/afe/projects/budget.pdf](http://www.iet.ru/afe/projects/budget.pdf); Рынки факторов производства в АПК России: перспективы анализа. Материалы научной конференции 6-7 июля 2001 г. Голицино - П. М., ИЭПП, 2002

As far as the structure of the regional programs of commodity crediting copies the structure of the federal program that turned to be inefficient, they cannot solve the problems of providing agricultural producers with fuels. In the recent years, this problem becomes more serious owing to the sharp rise in prices for fuels and lubricants.

In regions, the programs of subsidizing for rates of interest on credit received by agricultural producers to purchase fuels and lubricants occur, and such a form seems to be more effective because it makes no provision for the participation of the authorities in the choice of a range of receivers of subsidies and determination of the price proportions.

**Table 2. Peculiarities of the regional support programs of the purchase of fuels and lubricants, 2001\***

	RF	Chelyabinsk aya oblast	The Chuvash Republic	Vologodskaya oblast	Permskaya oblast	Rostovskaya oblast	Ivanovskaya oblast	Nizhegorodskaya oblast
Commodity credit	+	+	0	0	-	-	+	-
Coordination of the commodity credit with the supplying for the regional reserve funds	-	+	0	0	-	-	+	-
Subsidizing for rates of interest on the commercial credits	+	-	n/a	n/a	+	+	-	+

\*0 – there is no corresponding program

n/a – not available

Source: the regional Departments/Ministries of Agriculture, Consultant Regions

### *.1.3 Agricultural machinery*

The development of the agrarian sector in the recent years allows agricultural producers to solve the problem of re-equipment of its production and the state programs could take part in the intensification of this process. However, the scheme of realization of the federal leasing program resulted in the fact that the machine works and the state leasing company turned to be its main beneficiaries.

In June 2002, the program of subsidizing for the share of interest on three-years credits for the purchase of agricultural machinery and equipment started at the federal level. The terms of this program are much more profitable for agricultural producers than the terms of the state leasing program. Probably, it will result in the increase in middle-term investments in the agrarian production, in the beginning of re-equipment of the branch.

In many regions, the regional leasing programs began to act simultaneously with the federal program of the state leasing. The most of them are analogous to the federal ones. The organizations-leaseholders are chosen through the competition and machinery is given by the order of the authorities that lead to monopolization of the delivery and the discrepancy of the nomenclature of leased machinery to the needs of producers.

However, there are positive examples. Thus, in the Vologodskaya oblast the assignment of the only manager of expenditure apportioned for the leasing programs was rejected. As the result, about a half of the total purchase of machinery and equipment in this region is implemented owing to the state (federal and regional) leasing schemes of machinery delivery. In the region, there are several intermediate structures that provide agricultural producers with machinery and relatively many representations of foreign companies.

In some regions, leasing is supplemented with other systems. Thus, in 2001 in the Chuvash Republic the program of subsidizing for interests on the middle-term credit for agricultural

machinery purchase started in addition to leasing. In the Permskaya oblast, leasing was rejected in favour of subsidizing for the costs of machinery purchase.

In the Rostovskaya oblast, in order to provide agricultural producers with harvesters they are given the budgetary credit to purchase the production of the open joint-stock company "Rostselmach." The return of credits is implemented through the delivery of cereals for the regional food fund. A restricted number of participants the list of which is adopted by the law have access to this program. Harvesters are delivered at a fixed price that breaks the competitive environment of the region.

**Table 3. Peculiarities of the regional support programs of the purchase of agricultural machinery, 2001**

	RF	Chelyabinskaya oblast	The Chuvash Republic	Vologodskaya oblast	Permskaya oblast	Rostovskaya oblast	Ivanovskaya oblast	Nizhegorodskaya oblast
The only leasing company	+	+	+	-	-	+	-	0
Restriction of machinery suppliers/nomenclature of the delivery	-/+	+/+	n/a/ n/a	-/-	-/-	+(Rostselmach)/+	-/+	0/0
Subsidizing for interest on the investment credit	+	0	+	0	+	0	0	+

\*0 — there is no corresponding program

n/a — not available

Source: the regional Departments/Ministries of Agriculture, Consultant Regions

## 2. The estimation of the efficiency of the support programs of purchased inputs at the regional level

### 2.1 Results

The results from **Ошибка! Источник ссылки не найден.** for 2000 show that whether the high or low *MP* value is used, fertilizer's *VMP* greatly exceeds its domestic price. The results suggest that an additional ton of fertilizer to produce grain would increase farms' revenue two to four times the fertilizer's cost. Farms are using fertilizer at far below the profit-maximizing volume.

On the basis of the data of the investigation it is possible to try to implement the quantitative estimation of the efficiency of the support programs of inputs in the sample regions. In Table 4, the calculations of the NPR index for fertilizers in Rostovskaya and Nizhegorodskaya oblasts are show.

In the Rostovskaya oblast, the NPR coefficient for fertilizers is less than zero, correspondingly, the aim to make inputs cheaper is not reached: the prices at which producers purchased fertilizers within the framework of the program were higher than they would be by its absence. The quantity of applying fertilizers is lower by one ha than in other regions. It may be the result of the existing situation when the authorities of the region choose both suppliers of fertilizers and agricultural producers that take part in the program, and the distribution of guarantees between them is approved by the decree of the government.

**Table 4. Efficiency of the support programs of the purchase of fertilizers for agricultural enterprises in the sample regions, 2001**

	Rostovskaya oblast	Nizhegorodskaya oblast
Restrictions on the choice of suppliers	+	-
Subsidy is paid for agricultural producers	-	+
Actual price, rubles/1000 kg	2895	2125
Equilibrium price, rubles/1000 kg	2735	2357

<b>NPR</b>	<b>-6%</b>	<b>11%</b>
Quantity of applying fertilizers, kg/ha	42	62
Subsidies from the budget of the subject of the RF, thousand rubles	27 190	20 064
<b>Efficiency of subsidy</b> (Subsidy+ $\Sigma P_i^d Q_i$ ,- $\Sigma P_i^b Q_i$ )/ $\Sigma P_i^b Q_i$	<b>10%</b>	<b>43%</b>

Source: own calculations according to the data of the investigations and Goskomstat of the RF.

In the Nizhegorodskaya oblast, the program makes provision for subsidizing for the costs of fertilizers for all agricultural producers independently of the source of purchase. The structure of the program in the Nizhegorodskaya oblast turns to be more effective from the standpoint of making resources cheaper, especially from the standpoint of the intensification of its use than the program used in the Rostovskaya oblast when the authorities strictly regulate the delivery of fertilizers.

## .2.2 Fuels and lubricants

Let us consider the use of the support programs of fuels and lubricants in the sample regions. In the Ivanovskaya oblast, as well as in other regions that use the delivery of fuels and lubricants on the commodity credit, the role of the regional authorities in the approval of the list of receivers of the commodity credit is very significant. The calculation of the NPR showed the inefficiency of the program in connection with the fall in prices for inputs for agricultural producers. The prices for fuels and lubricants are relatively lower than the inquiry prices only in the Nizhegorodskaya oblast and the prices for diesel — in the Ivanovskaya oblast.

**Table 5. Efficiency of the support programs of the purchase of fuels and lubricants for agricultural enterprises in the sample regions, 2001**

	Rostovskaya oblast	Ivanovskaya oblast	Nizhegorodskaya oblast
Commodity credit	-	+	-
Subsidizing for the rates of interest	+	-	+
Actual price, rubles/1000 kg	6139	6346	6737
Equilibrium price, rubles/1000 kg	6158	6337	7043
NPR for gasolin	0,3%	-0,1%	3,3%
Actual price, rubles/1000 kg	5476	5923	6184
Equilibrium price, rubles/1000 kg	5191	6115	6452
NPR for diesel	-5,2%	3,2%	3,1%

Source: own calculations according to the data of the investigations and Goskomstat of the RF.

## .2.3 Agricultural machinery

**Table 6. Efficiency of the support programs of the purchase of machinery for agricultural enterprises in the sample regions, 2001**

	Rostovskaya oblast	Ivanovskaya oblast	Nizhegorodskaya oblast
The authorities regulate suppliers/nomenclature	+/+	-/+	0
Price through all channels, tractors, rubles/1 tractor	376169	316780	170750
Leasing price, tractors, rubles/1 tractor	357089	316780	250000
Correlation of the leasing prices with the prices of purchase through all channels, tractors	95%	100%	146%
Price through all channels, harvesters, rubles/1 harvester	839022	347708	-
Leasing price, harvesters, rubles/1	1239759	664000	-

harvester			
Correlation of the leasing prices with the prices of purchase through all channels, harvester	148%	191%	-
Price for harvesters in the open joint-stock company "Rostselmach" subsidized from the budget, rubles/1 harvester	1124000	-	-
Correlation of the prices following the Rostov program with the prices through all channels for surveyed enterprises	134%	-	-
The share of subsidizing from the regional budget	25%	0	0
The share of leased tractors (up to 8 years)	9%	15%	3%
The share of leased harvesters (up to 8 years)	15%	20%	4%

Source: own calculations according to the data of the investigations and Goskomstat of the RF.

In the Ivanovskaya oblast, any organization that possesses the corresponding license can be a leaseholder, however, the authorities determine nomenclature of the supplying. The investigation showed that the share of leased machinery in the Ivanovskaya oblast was higher than in two other regions. Subsequently, there is no monopoly of the sole leasing company in the region.

In the Rostovskaya oblast, the regional leasing program demands from producers of machinery to coordinate the nomenclature of leased production, as well as its prices with the regional Ministry of Agriculture and Food.

Table 6 shows that the price for harvesters produced in the open joint-stock company "Rostselmach" for which purchase the budgetary credit is given to producers is higher by 34% than the average price in the region. At the same time, on the average 25% of the value of harvesters is subsidizing from the regional budget, i.e., such a scheme of the "support" is not profitable for agricultural producers even not taking into account the interests on credit and the distortion of the price proportions by its return in the form of production.

In the Nizhegorodskaya oblast, the prices for leased tractors are raised too high, and the share of machinery leased by agricultural producers is low, that shows the non-attractiveness of the federal leasing program for producers.

On the whole, the correlation of the leasing prices for machinery with the prices of purchase through other channels shows the inefficiency of the leasing schemes.

### **3. The grouping of regions by the type of the agrarian policy**

#### *.3.1 The main factors of the grouping of regions by the type of the agrarian policy*

To analyze the efficiency of the regional programs we propose to pick out the groups of regions with the similar type of the regional agro-food policy. Suggested grouping of regions is based on the analysis of measures aimed to the support of agricultural producers in seven regions of the RF (Chelyabinskaya oblast, the Chuvash Republic, Vologodskaya oblast, Nizhegorodskaya oblast, Ivanovskaya oblast, Rostovskaya oblast, Permskaya oblast) and makes provision for two main directions of differences between regions: by the level of ability of a regional budget of supporting agriculture (its financial state) and by liberality of the regional agrarian policy (i.e., by the level of the administrative interference by its realization).

To group regions by clusters according to these two directions there were chosen six indices (Table 7). Three variables determine the place of a region among other ones by the level of expenditure ability and three of them — by the type of the agrarian policy.

**Table 7. Variables for clusterization of the regions by the level of ability of a regional budget of supporting agriculture and the type of the agrarian policy, 2001**

Index	Prescription of variables								
		Chelyabinskaya oblast	Chuvash Republic	Vologodskaya oblast	Permskaya oblast	Rostovskaya oblast	Ivanovskaya oblast	Nizhegorodskaya oblast	
1. The share of transfers from the federal budget in the income of the regional budget, %	determines the financial state	1,9	16,6	0	0	11,1	26,7	1,6	
2. Gross regional product per capita, rubles/apiece	determines the financial state	41744	24996	53699	63552	29203	18538	46604	
3. Correlation of the per capita income and the rate of living wage, %	determines the financial state	1,54	1,18	1,96	2,00	1,68	0,84	1,65	
4. Number of the general services support programs	determines the type of the agrarian policy	5	4	12	4	3	4	5	
5. The share of expenditure for the formation of the food reserves in the agrarian budget, %	determines the type of the agrarian policy	34,4	21,8	0	0	1,3	0	1,4	
6. Number of restrictions of the authorities and executive power bodies of the region in the field of regulation of the agri-food sector	determines the type of the agrarian policy	19	13	7	3	11	12	4	

Source: Consultant Regions, Goskomstat of the RF, the Ministry of Finances of the RF

Within the framework of this investigation there was the task to determine by what criteria it was possible to estimate liberality of the agrarian policy. We have chosen the following variables. The number of the general services support programs testifies as far as the regional authorities aim at the creation of conditions and rules of a play in the market to counterbalance the direct interference in the market processes.

The share of expenditure for the formation of the regional food reserves is used as approximation of the share of means re-distributed by the authorities because in the most regions the reserves are the less transparent item of expenditure and the food corporations that dispose of this fund relate to the market least of all.

The last variable — the number of restrictions of the authorities and the subject in the field of regulation of the agro-industrial complex — is formed from the sum of restrictions in the markets of inputs and other restrictions of trade and competition. The point for restrictions in the markets of inputs was calculated by the following way. In the regions, where the programs of the support of inputs purchase are used with the high level of the administrative interference in the determination of the sources of inputs purchase, the direct distribution of subsidies between agricultural producers, and restrictions of competition, one point was given for every restriction. The point was subtracted for each program that retained the opportunity to purchase inputs in the free market with the next subsidizing for expenditure independently from the source of purchase.

Other restrictions include direct and indirect restrictions of trade used under the implementation of the agrarian policy, in particular, the coordination of subsidies with the delivery of production for the regional funds as well as payment of subsidies by the delivery of production within a region.

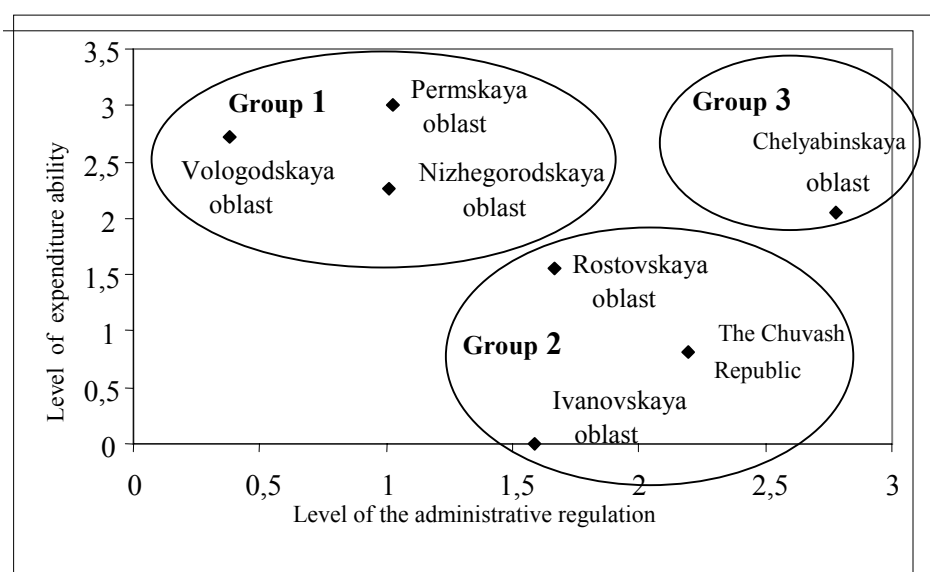
In the figure (Figure 1), it is shown the negative dependence between the type of the agrarian policy and the level of expenditure ability. It means that rich regions with high expenditure for the support of agriculture conduct more liberal agrarian policy. Subsequently, the poorer

region and the less opportunities to spend budgetary means for the support of agriculture the region has, the more measures of the support that result in the administrative interference in the market relations are used in the region.

Thus, basing on the figure it is possible to make a conclusion about the existence of two types of regions. The first type (Group 1) consists of rich regions with the liberal agrarian policy. Such regions are characterized by the low dependence from the federal transfer, high standards of living, great number of the general services support programs, by the low share of purchase in the regional food funds and little quantity of agricultural support programs that result in the formation of monopoly or the restriction of competition. The second type (Group 2) consists of poor regions where the agrarian policy is based on the extreme interference of the regional authorities in the functioning of the agrarian sector.

In the figure, the Chelyabinskaya oblast does not keep within the trend of the negative dependence between the type of policy and financial state (Group 3). In this region, the highest level of the administrative interference is combined with considerably high indices of the budget provision. It makes to assume that the Chelyabinskaya oblast is a representative of the third type of the regions where the high level of regulation is not connected with the lack of the budgetary means but it is determined by the general formed structure of the regional economy that relates to the administrative, not market type.

**Figure 1. Grouping of the regions by the type of the agrarian policy**



Source: own calculations

To check the existence of three types of the regions that we can see in the figure the cluster analysis was conducted. The results of clusterization confirmed the grouping of the regions.

As far as only seven regions are investigated, each group is represented by small quantity of regions. However, we made an attempt to choose the system of stable criteria according to which a region belongs to the certain type. That is why there are grounds to suppose that by the increase in number of investigated objects they will keep within the chosen system of classification and belong to one of the three described types.

One of the factors according to which a region belongs to a certain type of the agrarian policy was the degree of the distorting interference on the market of the support programs of the use of inputs. Let us consider how the conclusions of the previous part regarding the efficiency of such programs and the results of the grouping cross.



The Nizhegorodskaya oblast turned to be in Group 1. In this region, the support programs of the purchase of fertilizers, subsidies for the rates of interest on credit for fuels and lubricants purchase and the support program of the agricultural machinery producers act more effectively than other programs.

In the Ivanovskaya oblast, the programs have ineffective structure: the commodity credit with the coordination of the delivery for the regional funds and restrictions of the nomenclature of leased machinery. Under the conditions when the quantity of inputs is limited, its effective use is especially important and the significant step toward the increase of efficiency is the substitution of the regional leasing and commodity credit for compensation from the budgetary means for the rates of interest on the commercial credit.

The Rostovskaya oblast turns to be in the second group of the regions with the high level of the administrative interference in the markets. In this region, the efficiency of the support programs of purchased inputs is considerably lower than in the first group. As far as the level of expenditure of the Rostovskaya oblast does not cause such serious restrictions on the programs of the agro-food policy, as in two other regions of the second group, it is necessary to develop the support of the budgetary services, to reject from the direct participation of the authorities in the distribution of subsidies and to improve the programs that stimulate the development of the market relations and competition in the markets of agricultural machinery and fertilizers, but not to suppress them.

Thus, by the example of three regions it is shown that more liberal agrarian policy will result in the growth of efficiency of the regulation programs.

#### **4. Conclusions**

The regional programs of the state regulation of inputs have a common defect: the suppliers of purchased inputs are the final beneficiaries of such programs to a greater degree than agricultural producers.

The main reason of such a situation is the participation of the regional authorities in the distribution of subsidies that results in the raising the administrative expenditure too high and corruption. As the result, the programs do not reach their aims.

Thus, in spite of the difficulties with re-equipment of production an extremely small share of surveyed enterprises used the state leasing programs to purchase machinery.

Suggested grouping of the regions by the type of the agrarian policy shows the connection between the level of the administrative interference in the markets and the efficiency of the programs of regulation of the agro-industrial complex, in particular, that permits to work out single recommendations on the improvement of the policy for all regions from each group.

The limited nature of the nomenclature of inputs granted with the state subsidy, the administrative approval of agricultural enterprises that have access to the program as well as the allotment of a restricted range of producers with the right to supply inputs within the framework of the program result in the setting prices too high and deterioration of the stimulating effect of the state regulation.

The schemes under which the regional authorities do not take part in the direct distribution of subsidies but subsidy producers for a share of expenditure for purchase of inputs independently of the source of purchase, nomenclature of production and the form of agricultural enterprise are considerably more effective. Such forms of the state regulation are more effective both from the standpoint of the fall in prices for inputs and from the standpoint of the increase of the efficiency of production.

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