

Oksana V. Takhumova¹, Valentina V. Lovyannikova², Irina A. Konovalova³

INNOVATIVE MECHANISM FOR INCREASING THE EFFICIENCY OF REGIONAL AGROINDUSTRIAL SECTOR

The article grounds the need to increase the efficiency of the development of agroindustrial units by means of innovative mechanism. A number of problems are identified and classified by stages of reproduction process. We offer a tax relief encouragement scheme for small business which is based on the payments made in the base year taking into account advance payments of the reporting period. Integration as a means of infrastructure modernization is described on the example of agriculturally depressed Russian region.

Keywords: innovative mechanism; small business; agriculture.

Оксана В. Тахумова, Валентина В. Ловянникова, Ирина О. Коновалова ІННОВАЦІЙНИЙ МЕХАНІЗМ ПІДВИЩЕННЯ ЕФЕКТИВНОСТІ АГРОПРОМИСЛОВОГО СЕКТОРУ В РЕГІОНІ

У статті обґрунтовано необхідність підвищення ефективності розвитку підприємств АПК на основі інноваційного механізму. Визначено низку проблем, структурованих за етапами відтворювального процесу. Запропоновано схему стимулювання підприємств малої форми власності на основі надання спеціальних податкових пільг. На прикладі аграрно депресивного регіону РФ розглянуто інфраструктурну модернізацію за допомогою створення інтеграційного об'єднання.

Ключові слова: інноваційний механізм; малий бізнес; сільське господарство.

Форм. 7. Рис. 3. Табл. 1. Літ. 13.

Оксана В. Тахумова, Валентина В. Ловянникова, Ирина А. Коновалова ІННОВАЦИОННЫЙ МЕХАНИЗМ ПОВЫШЕНИЯ ЭФФЕКТИВНОСТИ АГРОПРОМЫШЛЕННОГО СЕКТОРА В РЕГИОНЕ

В статье обоснована необходимость повышения эффективности развития предприятий АПК на основе инновационного механизма. Определен ряд проблем, структурированных по этапам воспроизводственного процесса. Предложена схема стимулирования малых предприятий на основе предоставления специальных налоговых льгот. На примере аграрно депрессивного региона РФ рассмотрена инфраструктурная модернизация посредством создания интеграционного объединения.

Ключевые слова: инновационный механизм; малый бизнес; сельское хозяйство.

Problem statement. Transition of Russian economy to the innovative type, which is inextricably connected with qualitative improvements in the institutional structure of market economy, justifies the relevance of this research. However, alongside with such positive development trends as the increase in the output of goods (services) and the creation of competitive environment, there are some factors hindering the process of its successful development (Agalarova et al., 2010). The current situation is characterized by the overall economic instability, imperfect systems of taxation and legislation etc.

¹ North Caucasus Federal University, Stavropol, Russia.

² North Caucasus Federal University, Stavropol, Russia.

³ North Caucasus Federal University, Stavropol, Russia.

Insufficient investigation of the abovementioned and other issues in the field of innovative development of small business in Russia have determined the choice of our objectives and the direction of further research.

Review of recent publications. Issues related to the investigation of methodological aspects of various innovative projects have been recently highlighted in the works of the following scientists: I. Blinov (2006), M. Golyshev (2009), S. Gorlov (2015), N., K. Kirilenko and O. Takhumova (2011), V. Korolev and E. Butenko (2015), V. Nazarenko and N. Shmevel (2006), D. Storey (1994) etc.

A lot of works analyze the economic aspects, types and evolutionary stages of small business development. They include, inter alia, the studies conducted by P. Akinin (2011), A. Vilensky (2006), A. Thompson and A. Strickland (1984), L. Ushvitskiy (2005) etc.

The objective of this study is to ground theoretical and methodological issues aimed at organization and development of an innovative mechanism for entrepreneurship in depressed regions as well as to suggest practical recommendations on the formation of competitive small business sector within national economy.

Key research findings. The analysis of the current state and development of the agricultural areas at the regional level allowed us identify a number of problems which have been classified according to the reproduction process (Figure 1).

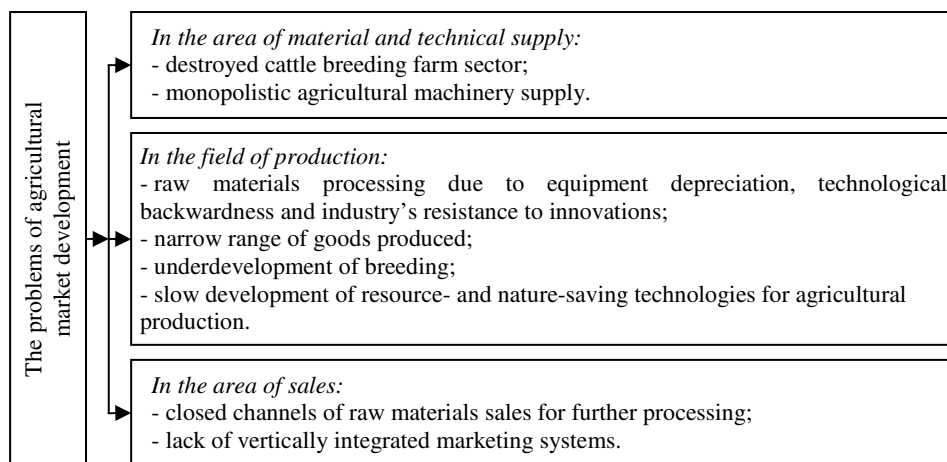


Figure 1. The problems of agricultural sector at different stages of its development at the regional level, authors'

The abovementioned problems arise as a result of the traditional approach to the management of fruit market as the whole production unit and evaluation of its performance efficiency on the whole disregarding the leading regions and territories where the development of the industry could be promising and profitable. In our opinion, to increase regional management efficiency, we should apply the innovative cluster approach which allows both analyzing production structure within traditional agricultural management and taking into account the development of the complementing sectors.

Therefore, we have developed the model of cluster organization of agricultural sector (Figure 2). The model represents the interaction mechanisms of economic

entities with customers (final and intermediate ones), as well as with public authorities in the field of the indirect industry regulation.

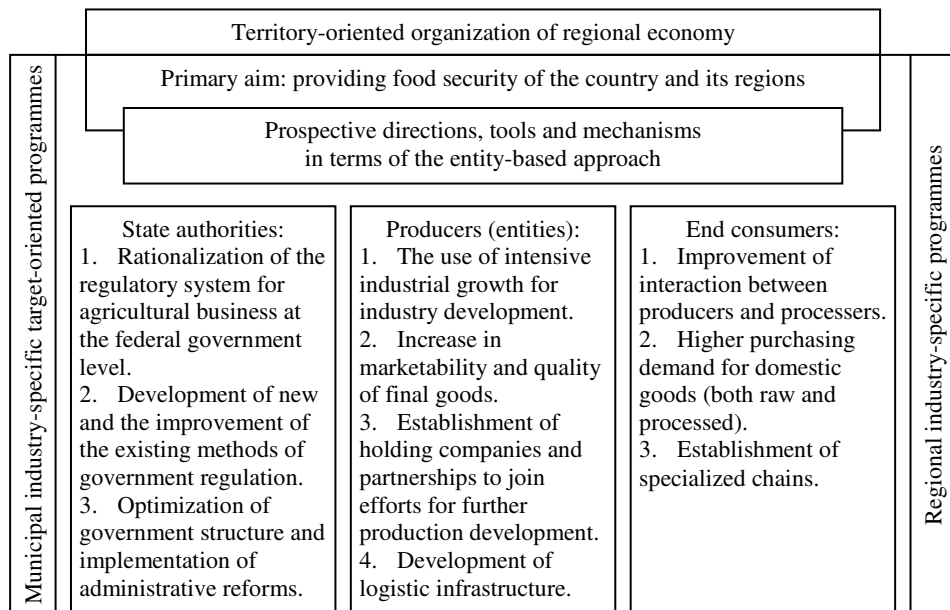


Figure 2. The conceptual model of the establishment and development of agricultural sector, authors'

To estimate the economic effect of the suggested union we applied linear programming. Mathematical description can be divided into two parts: efficiency function and restrictions. The main purpose is to maximize the economic effect of every member of the union formed at the basis of meat production subsector of the region by grouping them into a single technological chain (Kirilenko and Takhumova, 2011).

The efficiency function Z expresses the maximum profit from final product sales, meat and sausage products in particular, due to the highest possible balance achieved between final product price and the total costs of production. It includes six segments:

$$Z = \{V_P - C_P - C_F - C_R - C_T - C_M\} \rightarrow \max, \quad (1)$$

where V_P is the final product sale segment; C_P is the meat production cost segment; C_F is the feed production cost segment; C_R is the meat processing cost segment; C_T is the segment which includes transportation costs and final products sale costs; C_M is the bank loan payment segment.

$$V_P = \sum_{i=1}^I \sum_{j=1}^J \sum_{l=1}^L \sum_{q=1}^Q p_{ijlq} \times v_{ijlq}, \quad (2)$$

where I is the number of periods; J is the number of technological chains within the union; L is the number of meat product types; Q is the number of sales channels; p is the sale price, RUB/tons; v is the volume of sales, tons.

$$C_P = \sum_{i=1}^I \sum_{j=1}^J \sum_{h=1}^H c_{ijh} \times v_{1ijh}, \quad (3)$$

where H is the number of meat types produced; c is the production costs of 1 ton of meat, RUB/ton; v_1 is the output of goods produced, ton.

$$C_F = \sum_{i=1}^I \sum_{j=1}^J \sum_{h=1}^H c_{1ijh} \times v_{2ijh}, \quad (4)$$

where c_1 is the production costs of 1 ton of feed, RUB/ton; v_2 is the amount of feed produced, ton.

$$C_R = \sum_{i=1}^I \sum_{j=1}^J \sum_{h=1}^H c_{2ijh} \times v_{3ijh}, \quad (5)$$

where c_2 is the processing costs of 1 ton of meat, RUB/ton; v_3 is the amount of processed meat, ton.

$$C_T = \sum_{i=1}^I \sum_{j=1}^J \left(\sum_{l=1}^L c_{3ijl} \times v_{4ijl} + \sum_{n=1}^N \sum_{h=1}^H c_{4ijnh} \times v_{5ijnh} \right), \quad (6)$$

where c_3 is the sale costs of 1 ton of meat products, RUB/ton; v_4 is the amount of meat products sold, ton; N is the number of transportation hubs; c_4 is the transportation costs, RUB /tonxkm; v_5 is the amount of meat products transported, ton.

$$C_M = \sum_{i=1}^I \sum_{j=1}^J \sum_{h=1}^H m_{ijh} \times p_{1ijh}, \quad (7)$$

where m is the amount of loans, the RUB; p_1 is the interest rate on bank loans, %.

The developed model was applied to calculate the profit which can be earned by companies being union members within a single technological meat production chain which includes the following stages: production, storage, processing and sales of final product.

The North Caucasus Federal District (NCFD) plays an important role in the country's economy and in protection of its strategic interests. It possesses unique natural resources and climate conditions. The big share of the agricultural sector in the industrial specialization of its economy is of great importance for the development of the NCFD. The production structure in the NCFD agro-industrial sector is rather balanced: crop production makes up 53%, while cattle breeding accounts for 47%. According to the data as of 2014, the pace of agriculture development in the NCFD overtook the average national and now equals to 105.3%, including 107% in the crop production and 103.4% in cattle breeding.

The second stage included the identification of mesoclusters with the worst indicators and justification of organizational and economic mechanism formation in the agro-depressive region. The developed economic-mathematical model allowed calculating the amount of profit to be received by firms being the participants of the same meat-producing technological chain within the union, which includes the following stages: production, storage, processing and sales of final product.

We used the actual data on "Saturn" farm in 2014 as the benchmark data to form and optimize economic-mathematical model. Earlier, this farm had been selected to perform the function of meat processing within the union. Then, basing on the machine load and, consequently, on the corresponding amount of the processed product which this meat-processing company had in a one-year period, we calculat-

ed the major economic indicators of agricultural companies selected by to their output in the meat-processing company.

Agricultural union businesses will be financed by banks at all stages of the technological chain.

The decision-seeking procedure which included 35 iterations resulted in the best possible decision. The agricultural union's optimal profit from meat sales under the given conditions is 11,709.4 ths RUB.

Profit is distributed among the union members in the following way: first, 100% of loans are paid to the bank, the remaining share of profit is distributed among all the members in proportion to their expenses at every stage of the production cycle; this leads to the 41.0% of profitability for all enterprises (Table 1).

Table 1. Economic efficiency of the suggested union in the meat processing subsector of the region, compiled by the authors on the basis of the annual reporting of the enterprise "Saturn", 2012–2014

Union members	Indicators on types of performance					
	Outside the union			Within the union		
	Revenue, ths RUB	Profit, ths RUB	Profitability, %	Revenue, ths RUB	Profit, ths RUB	Profitability, %
"Saturn" farm	4,932.5	1,209.5	2.7	9,432.8	2,741.0	41.0
Feed-processing plant	8,769.2	128.8	1.5	2,816.6	8,18.5	41.0
Agricultural companies	11,807.2	-3,819.3	-24.4	22,027.4	6,400.7	41.0
Households	4,526.3	256.2	6.0	6,019.4	1,749.1	41.0

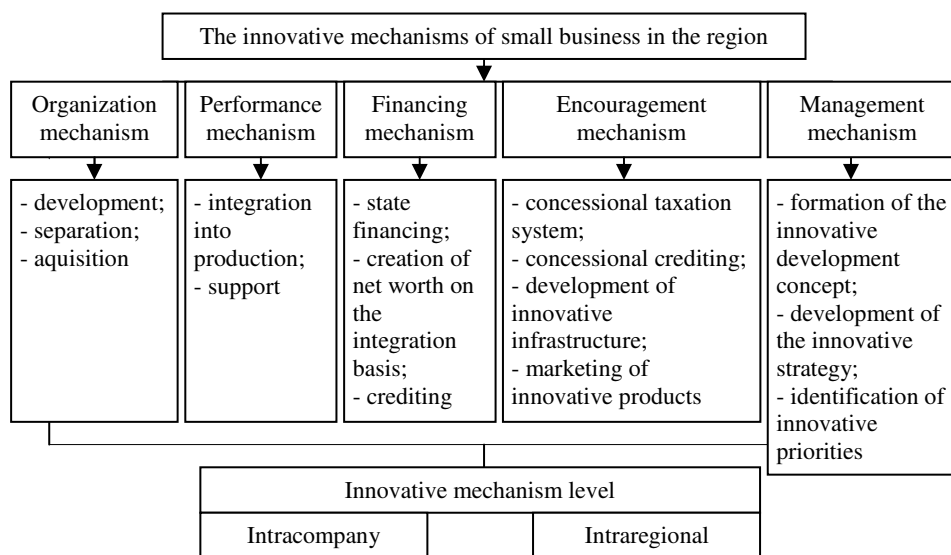


Figure 3. The mechanism of the small business innovative development, authors'

So, taking into account the indicators calculated, we can make the following conclusion: if the meat-processing plant joins the agroindustrial union, its profit will be 2.3 times higher than the one outside the union, the profit of feed-processing plant

will increase 6.4 times, agricultural enterprises will receive profit from growing live-stock, and the profit received by households will rise 6.8 times. In general, to increase the efficiency of these enterprise we offer the following innovative mechanism (Figure 3).

Thus, the developed model provides the opportunity to optimize the income of the agricultural enterprises at the regional level by creating the efficient system of production, storage, processing and sale of meat and meat products within the agro-industrial union. To increase the efficiency in work the innovation mechanism of the organization is offered (Figure 3).

Conclusions. The conclusions made form the basis for the following suggestions:

1. Nowadays there is a need for innovative approaches which allow effective use of available resources and resistance to negative external factors. Cluster approach meets the current requirements in the best possible way. Thus, the results of this research led us to the following conclusions. If intensive – growth technologies are introduced into the seed orchards sector, the total fruit output will increase more than 4 times and will reach 40,000 tons by 2020 due to raised yields.

2. We should develop the integrational relations between the NCFD entities to encourage rational and efficient use of the agricultural sector resources. We suppose that formation of the diversified structures of the holding company type which integrate material, technical and financial resources of member companies on the corporate basis to be the most efficient form of business in terms of economic benefits. We believe that the development of the sectoral agroindustrial union model will contribute to the increase of agricultural entities profitability. The advantage of the developed model is its contribution to the increase in this sector efficiency as well as to the extended market capacity mainly due to domestic consumer goods, which will eventually produce a positive impact on the socioeconomic state of the country.

References:

Акинин П.В. Современное социально-экономическое развитие Северо-Кавказского Федерального округа, как новый виток диалектической спирали // Региональная экономика.– 2011.– №29. – С. 2–7.

Akinin P.V. Sovremennoe sotcialno-ekonomicheskoe razvitie Severo-Kavkazskogo Federalnogo okruga, kak novyi vitok dialekticheskoi spirali // Regionalnaia ekonomika.– 2011.– №29. – С. 2–7.

Блинов А.Е. Малое предпринимательство в современной модели рыночного хозяйствования в России // Проблемы прогнозирования.– 2006.– №1. – С. 66–75.

Blinov A.E. Maloe predprinimatelstvo v sovremennoi modeli rynochnogo khoziaistvovaniia v Rossii // Problemy prognozirovaniia.– 2006.– №1. – С. 66–75.

Виленский А.К. Этапы развития малого предпринимательства в России // Вопросы экономики.– 2006.– №7. – С. 30–38.

Vilenskii A.K. Etapy razvitiia malogo predprinimatelstva v Rossii // Voprosy ekonomiki.– 2006.– №7. – С. 30–38.

Годовой отчет предприятия СХК «Сатурн». – Ставрополь, 2015. – 125 с.

Godovoi otchet predpriatiia SKhK «Saturn». – Stavropol, 2015. – 125 s.

Голышев М. Агропромышленная интеграция в условиях многоукладной экономики // АПК: экономика, управление. – 2009.– №11. – С. 38–41.

Golyshev M. Agropromyshlennaia integratsiia v usloviakh mnogoukladnoi ekonomiki // APK: ekonomika, upravlenie. – 2009.– №11. – С. 38–41.

Горлов С.М. Институциональные проблемы финансовой поддержки сельского хозяйства // Вестник Северо-Кавказского федерального университета. – 2015.– №3. – С. 84–88.

Gorlov S.M. Institutcionalnye problemy finansovoi podderzhki selskogo khoziaistva // Vestnik Severo-Kavkazskogo federalnogo universiteta. – 2015.– №3. – С. 84–88.

Кириленко К.В., Тахумова О.В. Инновационные механизмы малого предпринимательства депрессивного региона (на материалах Карачаево-Черкесской республики): Монография. – Ставрополь, 2011. – 208 с.

Kirilenko K.V., Takhumova O.V. Innovatcionnye mekhanizmy malogo predprinimatelstva depressivnogo regiona (na materialakh Karachaevo-Cherkesskoi respublik): Monografiia. – Stavropol, 2011. – 208 s.

Королев В.А., Бутенко Е.Д. Кластеризация региона как форма эффективного использования ресурсов территории // Научное обозрение. – 2015. – №5. – С. 229–236.

Korolev V.A., Butenko E.D. Klasterizatsiia regiona kak forma effektivnogo ispolzovaniia resursov territorii // Nauchnoe obozrenie. – 2015. – №5. – S. 229–236.

Назаренко В., Шмелев Н. Государственная политика в аграрной сфере // Вопросы экономики. – 2006. – №9. – С. 40–49

Nazarenko V., Shmelev N. Gosudarstvennaia politika v agrarnoi sfere // Voprosy ekonomiki. – 2006. – №9. – S. 40–49

Увицкий Л.И. Социально-экономическая устойчивость региона: состояние и проблемы развития // Региональная экономика: теория и практика. – 2005. – №8. – С. 23–26

Ushvitskii L.I. Sotcialno-ekonomicheskaia ustoichivost regiona: sostoianie i problemy razvitiia // Regionalnaia ekonomika: teoriia i praktika. – 2005. – №8. – S. 23–26

Экономика регионов: тенденции развития / Е.Г. Агаларова, Е.С. Алехина и др.; Под общ. ред. докт. филос. наук, проф. О.И. Кирикова. – Воронеж, 2010. –Т. 12. – 398 с.

Ekonomika regionov: tendentsii razvitiia / E.G. Agalarova, E.S. Alekhina i dr.; Pod obshch. red. dokt. filos. nauk, prof. O.I. Kirikova. – Voronezh, 2010. –T. 12. – 398 s.

Storey, D.J. (1994). Understanding the small business sector. London, Routledge.

Thompson, jr., A.A., Strickland, III, A.J. (1984). Strategic Management: Concepts and Cases. 3rd ed. Business Publications.

Стаття надійшла до редакції 4.03.2016.