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## **Perspectives of Development of Agriculture in Crisis by the Example of Present-Day Russia**

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**Abstract:**

*The purpose of the article is to determine perspectives of development of agriculture in crisis by the example of modern Russia. The authors offer a methodology of complex evaluation of economic dynamics of agriculture in crisis which supposes aggregated evaluation of growth rates of key economic indicators systematized by four groups of evaluation parameters of overcoming the crisis situation. The authors also develop a model of formation of organizational and economic mechanism of sustainable development of agriculture in crisis. As a result of the research, the authors come to the conclusion that in order to overcome crisis phenomena, it is necessary to systemically implement the offered mechanisms of sustainable development of agriculture and corresponding strategic directions.*

**Key Words:** *global crisis, crisis factors, exchange disproportions, development of strategy for enduring crisis, system approach in strategy of management.*

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## **Introduction**

Under the conditions of crisis, development of agriculture, together with other spheres of economy, slows down, which leads to aggravation of the problem of national food security. Methods of forecasting of emergence and depth of crisis phenomena in the sphere of agriculture, used within agrarian policy, which is conducted currently in Russia and other countries, are characterized by low effectiveness. They did not allow forecasting the recent financial crisis nor overcoming its consequences up to this time.

This explains high actuality of development of effective methodological instrumentarium for determination of crisis phenomena in the sphere of agriculture and organizational & economic mechanisms for determination of perspective directions of fighting the crisis in this top-priority sphere of economy. The purpose of the article is to determine perspectives of development of agriculture under the conditions of crisis by the example of modern Russia.

## **Materials and method**

Specifics of anti-crisis management of agrarian sector of economy is viewed in the works of such authors as (Y. Kozenko, 2011), (Y. Kozenko, 2014), (Ovchinnikov et al., 2015), (Filin, 2011), (Filin & Korobeynikov, 2011), (Filin 2010), (Kanishchev, 2014), etc.

Consequences of crisis in food sector for economy on the whole and means of fighting agricultural crisis in various countries are viewed in studies by such scientists as (Popkova et al., 2015a), (Popkova et al., 2015b), (Regan et al., 2016), (Smart et al., 2015), (Rakopoulos, 2015), (Morley et al., 2014), (Crescimanno et al., 2014), (Gliessman, 2014), (Sommerville et al., 2014), etc.

The studies by the stated authors form fundamental theoretical & methodological foundation of the viewed problem – however, these works do not pay attention to specifics and consequences of modern crisis in agrarian production, evaluating and forecasting parameters, organizational & economic mechanisms of fighting it, and developments of strategic directions for overcoming crisis and sustainable development of Russian agrarian production.

The authors of this article had a task of determining internal and external factors of emergence and deepening of crisis in Russia, forming evaluating parameters for forecasting possibilities of sustainable development of production under the conditions of crisis, evaluating the current state, and determining preconditions for overcoming the crisis in production. The task included analysis of influence of crisis on financial state of enterprises, supplementing and systematizing the content of anti-crisis measures in the country as to levels of realization. Practical measures

included development and approbation of the methodology of complex evaluation of economic dynamics by the example of enterprises in crisis for the purpose of forecasting of possibilities of overcoming it, as well as determination of perspective strategic directions of sustainable development of country's production.

Within the general systemic approach to study of the problem, the authors use instrumentarium of abstract & logical, economic & statistical, economic & mathematical, comparative, and calculation & constructive methods of research, and schematic interpretation of the viewed phenomena and processes.

## **Results**

Preconditions for overcoming the agrarian crisis are based on strong sides and possibilities of organization and management of the sphere, which include experience of anti-crisis management, diversification of agrarian structure, ecological compatability of products, formation of market infrastructure, conditions for import substitution and overcoming technological underrun, state agrarian policy, and anti-crisis measures.

For optimization of anti-crisis policy at the federal level, this work offers establishment of temporary moratorium for bankruptcy of agricultural organizations, preservation of subsidized tax regime, stimulation of rational placement of production, ordering of land relations, and development of consumer cooperation. Special role is assigned to coordination of national agrarian policies within the CIS and the EurAsEC.

Additional anti-crisis measures at regional and municipal levels are provision of guarantees for creditors, development of infrastructure, support for small agricultural business, organization of informational and consultation services, support for strategic processing enterprises, and ousting intermediaries from municipal markets.

At the federal level, realization of anti-crisis policy requires the following measures: preservation of stimulating tax regime, including possibilities of restructuring of debt before the budget, solving structural and institutional problems, stimulation of rational placement of production, ordering of land relations, and development of consumer cooperation.

Additional measures at regional and municipal levels include provision of guarantees for creditors, support for development of market infrastructure (including on the cooperative basis), monitoring of employment of rural population and cooperation for small entrepreneurship, and organization of information & consultation services and training & methodological anti-crisis centers.

At the level of enterprise, it is necessary to mobilize internal reserves, use operative anti-crisis management (control over expenses and unfinished production, toughening of the policy of collection of accounts receivable, and reduction of

cooperation risks), unification of the part of economic functions with other manufacturers on a cooperative basis, and use of managerial and marketing analysis for determination of internal economic reserves.

This work offers to use a specially developed proprietary methodology of evaluation of indicators of economic dynamics of agriculture (enterprise) under the conditions of crisis. In its general form, the algorithm of calculations, according to the offered methodology, could be presented in the form of the following sequence:

$$W_{\tau(\Pi)} = \sqrt[n]{W_1 \cdot W_2 \cdot W_3 \cdot \dots \cdot W_n} \quad (1)$$

$$V_{\tau(\Pi)} = \sqrt[n]{V_1 \cdot V_2 \cdot V_3 \cdot \dots \cdot V_n} \quad (2)$$

$$W_{o-n} = \sqrt{W_{\tau} \cdot W_{\Pi}} \quad (3)$$

$$V_{\phi-\vartheta} = \sqrt{V_{\tau} \cdot V_{\Pi}} \quad (4)$$

$$K_j = \sqrt{W_{o-n} \cdot V_{\phi-\vartheta}}, \quad (5)$$

where:  $W_1, W_2, W_3 \dots W_n$  – coefficients of growth (reduction) of each organizational & production indicator for calculation of complex evaluation ( $\tau$  – current,  $\Pi$  – perspective);

$V_1, V_2, V_3 \dots V_n$  – coefficients of growth (reduction) of each financial & economic indicators for calculation of complex evaluation ( $\tau$  – current,  $\Pi$  – perspective);

$n$  – number of indicators;

$W_{\tau(\Pi)}$  – complex evaluation of separate current ( $\tau$ ) and perspective ( $\Pi$ ) organizational & production indicators;

$V_{\tau(\Pi)}$  – complex evaluation of separate current ( $\tau$ ) and perspective ( $\Pi$ ) financial & economic indicators;

$W_{o-\Pi}$  – generalized complex evaluation of organizational & production indicators;

$V_{\phi-\vartheta}$  – generalized complex evaluation of financial and economic indicators;

$K_j$  – complex evaluation of indicators of economic dynamics of agricultural enterprise under the condition of crisis, viewed for determination of attributes of overcoming it.

Complex evaluation of production sphere is more significant from the position of long-term forecasting, as positive evaluation of dynamics of organizational and production indicators will point at expansion of resource potential, production capacities, and production volumes, i.e., growth of long-term factors of sustainability. Accordingly, complex evaluation of financial and economic parameters will have predominantly short-term character.

Complex evaluation of the viewed indicators ( $K_j$ ), obtained with the use of formula 5, provides a generalized characteristics of economic dynamics and effectiveness of measures for sphere or enterprises' overcoming the crisis. Positive dynamics of this indicator will show that agrarian production of the region overcame the crisis and

passed to sustainable development. A constant of comparison for complex evaluation ( $K_j$ ) is one. The value of  $K_j$  that exceeds one shows domination of tendency for growth of indicators which characterize production and financial parameters of the sphere. Specification of possible results could be the following:

- if  $W_T > 1.0$  – in the studied period – as compared to the basic period – there is increase of volumes of agricultural production expressed in growth of production and sales volumes, expansion of crop areas and cattle population, which creates conditions for formation of positive financial results;
- if  $W_{II} > 1.0$  – there is strengthening of production base expressed in development of personnel, technical, and technological potential, which forms preconditions for sustainable growth of production results in future period;
- if  $W_{O-II} > 1.0$  – economic parameters of production and its resource provision increase, which is a foundations for economic effectiveness and sustainable development;
- if  $V_T > 1.0$  – there is strengthening of financial state of agricultural manufacturers which is expressed in growth of financial sustainability, liquidity, creditworthiness, and business activity, which creates conditions for activation of investment activities and increase of rates of return for invested capital;
- if  $V_{II} > 1.0$  – there is increase of economic effectiveness of agricultural production, expressed in growth of intensity of use of resources and increase of profitability of products and assets, which is a necessary condition for expanded reproduction;
- if  $V_{\Phi-\Theta} > 1.0$  – there is improvement of parameters of financial state and economic effectiveness, which stimulates the growth of business and investment activities in the sphere, overcoming the negative tendencies, and increase of financial position and resistance to external factors;
- if  $K_j > 1.0$  – in the studied period – as compared to the basic year – agrarian production of the region (or a separate organization) overcame the crisis situation, which is expressed in growth of main production, economic, and financial results.

Positive dynamics of complex evaluation for a range of periods shows subjects of agrarian production overcoming the crisis situation and transition to sustainable development. As the value of the indicator reflects average rate of economic growth of agricultural production (of enterprise or region), evaluation of its significance requires comparing the received results to the growth rates of gross domestic product in the sphere on the whole or to the national economy for the same period.

The developed system of financial and economic indicators allows determining positive recovery dynamics or growth (stagnation) of the crisis state. It is maximally unified with the content of typical accounting forms of enterprises of agro-industrial complex. The indicators are unified into four groups according to classification of evaluation parameters for determination of overcoming the crisis situation: organizational & production current and perspective, financial & economic current and perspective.

The system of analytical indicators for the specific agricultural enterprise repeats the system of indicators for the sphere. Formation of a complex indicator is possible through aggregated evaluation of the dynamics of initial indicators on the basis of geometrical mean of their growth rates which reflects the dynamics of development and effectiveness of agriculture in crisis.

Approbation of the methodology is performed in the period which characterized the transition from a relative sustainable recovery of the sphere to the stage of financial crisis and further macro-economic instability. The analysis showed aggravation of conditions of products' sales, overstocking, slowdown of the speed of business turnover, productive cattle killing for compensating the lack of working assets, reduction of energy capacities, number of employees, and agricultural areas, violation of the balance proportions – reduction of financial sustainability, liquidity, paying capacity, formation of deficit of own working capital, and growth of debtor indebted and credit indebtedness.

Especially quick decline was observed for financial results and economic effectiveness of production. It is substantiated that under the conditions of crisis in agriculture, special importance belongs to formation of mechanisms which ensure its recovery and long-term sustainable development.

The performed analysis showed preservation – under the crisis conditions – of factors in each element which require development of strategic directions of their optimization, the top-priority of which are improvement of the system of education, increase of personnel qualification, improvement of apparatus of management of agro-industrial complex, and creation of state system of informational provision.

In technical and technological aspect, special significance belongs to recovery (including by the principles of public-private partnership) of national agricultural machine building, subsidizing investment credits for it, implementation of adaptive efficient sorts of croppers, technologies of seed industry, zonal high-precision technological of croppers cultivation, resource-saving technologies, and methods of animal breeding organization.

In scientific and innovational aspect, a special role belongs to activation of research in the sphere of monitoring of agricultural areas, biotechnologies, stock breeding, and other actual directions. In social aspect: overcoming rural poverty and improvement of demographic situation. In motivational aspect: sustainable development of rural territories and increase of employment and level of labor efficiency.

In ecological aspect: increase of rationality of nature management, increase of financing of the program for soil fertility recovery. In legal aspect: scientific support for the State programs of development of agriculture, improvement of laws in the

sphere of anti-monopoly regulation, conduct of pledge operations and purchase and product interventions, and purchases for state purposes.

The offered model of formation of organizational and economic mechanism of sustainable development of agriculture under the conditions of crisis integrates four interconnected blocks: agrarian policy of the state which sets a vector for development of agriculture in the short-term and long-term; complex of elements which form the basis of its sustainable functioning; forms of state support for agriculture which create necessary economic stimuli for top-priority directions; internal economic mechanism which determines the level of their sensitivity to the formed stimuli and possible innovations.

Within the offered model of building the mechanism of sustainable development of agriculture, state support is viewed in view of three main forms: direct (direct budget payments); indirect (budget assets have a stimulating character); and mediate (through organizational and economic measures, including ones that are not directly related to agrarian sector).

## **Conclusion**

As a result of the research, it is possible to conclude that recently the realization of separate substantiated strategic directions stimulated overcoming the crisis in Russian agriculture. However, there's necessity for systemic performance of the offered mechanisms of sustainable development of agriculture and corresponding strategic directions for overcoming the crisis phenomena.

Theoretical and practical significance of the results of the performed research consist in the fact that separate methodological developments and offers could be used by specific agricultural enterprises and regional agricultural authorities for monitoring of economic dynamics, determination of possibilities of overcoming the crisis, and increase of effectiveness of anti-crisis regulation, as well as during development of regional and federal targeted programs of development of agriculture.

A limitation of results of the performed research is orientation of the authors' conclusions and recommendations at agricultural enterprises and agrarian sector of Russia. Thus, development of corresponding methodological and practical recommendations for overcoming crisis phenomena in agriculture of other countries is a perspective direction for further research.

## **References**

Crescimanno, M., Galati, A. and T. Bal, 2014, "The role of the economic crisis on the competitiveness of the agri-food sector in the main Mediterranean countries", *Agricultural Economics (Czech Republic)* 60 (2), 49-64.

- Filin, M., Korobeynikov, D.A., 2011, "Methodology of analytical evaluation of economic aspect of agrarian production", *Bulletin of Low Volga Agro-University Complex: science and higher education* 2, 243-248.
- Filin, M., 2011, "Organizational and economic mechanism of sustainable development of agro-industrial complex in crisis", *TERRA ECONOMICUS* ("Environment of economics") 9, 2 (2) 119-121.
- Filin, M.A., 2010, "Measures of anti-crisis regulation in agriculture", *Bulletin of Volgograd State University. Series 7. Economics. Ecology. Scientific and theoretical journal* 1, 63-69.
- Gliessman, S., 2014, "A food crisis spawns an alternative food movement", *Agroecology and Sustainable Food Systems* 38 (1), 1-2.
- Kanishchev, S.N., 2014, "Preconditions of formation of anti-inflation areas. Anthropogenic transformation of geo-space: history and present time: proceedings of the Russian scientific and practical conference, Volgograd, April 28-29, 2014" (Volgograd).
- Kozenko Z., 2011, "Conceptual approaches to transition from optimization to innovational model of economy of enterprises of oil and fat sector of agro-industrial complex". *Bulletin of Low Volga Agro-University Complex: Science and higher education* 3, 270-279.
- Kozenko, Y., 2014, "Anti-crisis system in agrarian production: theoretical foundations, modern state, and paths of development", *Problems of development of the region's agro-industrial complex*, 18, 2-18 (18), 105-108.
- Morley, A., McEntee, J. and T. Marsden, 2014, "Food futures: Framing the crisis", *Sustainable Food Systems: Building a New Paradigm*, 30-61.
- Ovchinnikov, Z. Kozenko, M. Bichkov, V. Kabanov and A. Karpova, 2015, "Strategic Management of Sustainable Development of Agro – Industrial Complex with Economic Integration European Research Studies" 18, 303-311.
- Popkova, E.G., Khmeleva, G.A. and V.I. Ostrovskiy, 2015a, "Innovative approach to providing economic security", *Actual Problems of Economics* 169 (7), A002, 99-105.
- Popkova, E.G., Menshchikova, V.I. and A.V. Sayapin, 2015b, "Economic security of Modern Russia: Current state and trends", *Mediterranean Journal of Social Sciences* 6 (4), 48-53.
- Rakopoulos, T., 2015, "Responding to the crisis: Food co-operatives and the solidarity economy in Greece", *Anthropology Southern Africa* 36 (3-4), 102-107.
- Regan, A., Raats, M., Shan, L.C., Wall, P.G. and A. McConnon, 2016, "Risk communication and social media during food safety crises: A study of stakeholders opinions in Ireland", *Journal of Risk Research* 19 (1), 119-133.
- Smart, J., Nel, E. and T. Binns, 2015, "Economic crisis and food security in Africa: Exploring the significance of urban agriculture in Zambia's Copperbelt province", *Geoforum* 65, 37-45.
- Sommerville, M., Essex, J. and P. Le Billon, 2014, "The 'Global Food Crisis' and the Geopolitics of Food Security", *Geopolitics* 19 (2), 239-265.