

THE ANTI-CRISIS STRATEGY OF REPRODUCTIVE PROCESSES STATE REGULATION IN AGRICULTURE

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***Abstract:** In this article, the theoretical and methodological approaches are specified, regulations and practical recommendations on the justification of certain lines of development of the anti-crisis strategy of reproduction processes state regulation in agriculture were developed, ensuring the solution of import substitution issues, strengthening of national food security, the implementation of a vector for sustainable growth in the post-crisis development of the Russian economy. The study was carried out in using the abstract and logical, economic and statistical, computational and structural and computational and analytical methods of research. The goals, objectives and methods of state regulation of reproduction processes in the different concepts of social development were defined in the study; the basic trends of improvement of the state policy on the formation of a favorable investment climate in the agricultural sector and region were justified; the quality management concepts for the meat products subcomplex were developed and adapted to modern conditions; the mechanism of trade, purchase and mortgage intervention, eliminating the uneven movement of commodity flows in the meat products market and the price volatility in times of crisis was proposed; the proposals on improvement of state regulation of agricultural insurance in crop farming were substantiated. The possible trends of further research of theoretical and methodological problems of reproduction processes state regulation in agriculture and social attractiveness of rural areas were noted.*

***Keywords:** Anti-crisis strategy, state regulation, reproductive processes, agriculture.*

1. INTRODUCTION

The regulatory issues of reproductive processes in the real economy sector are the highest priority in the theory and practice of economics, and the activity and effectiveness of these processes determines the overall dynamics of the economic development of society. Many national and foreign scholars were involved in the study of these problems. The following modern national researchers have made significant

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contribution to the research methodology of regulatory issues and reform of the agrarian economy: A.I. Altukhov and I.G. Ushachev (2008), I.N. Buzdalov (2010), A.G. Gryaznova, M.A. Fedotova, A.N. Marinyuk and E.A. Utkin (1999), V.V. Kuznetsov (2009), V.V. Miloserdov and K.V. Miloserdov (2014), O.V. Sergienko (2015), S.O. Siptits (2011), V.Ya. Uzun and E.A. Gataulina (2010), and other scholars. The issues of state regulation of reproductive processes in agriculture and SFD, including Krasnodar Krai, are highlighted in the papers of I.T. Trubilin *et al.* (2013), A.I. Tribulin and I.M. Petrenko (2012), A.Yu. Adzhieva (2009), V.I. Nechaeva *et al.* (2007), P.F. Paramonova (2002), L.Yu. Piterskiy and I.V. Voroshilova (2012), A.G. Prudnikova (1995) *et al.*

The current state of the world economy is characterized by an accelerated dynamics of the main macroeconomic components that affect all its segments. These conditions require a constant adjustment of the policies and measures of state influence on the reproductive processes in specific sectors of the economy; it is especially relevant in today's system crisis.

In this regard, we believe that the topic of the research is relevant, not deep enough revealed in the works of selected authors and requires continued study.

2. METHODS

Basic and modern economic theories, the fundamental concepts and the developments of national and foreign scholars on the problems of anti-crisis management of the real economy sector and investment and reproductive process management, and the recommendations of scientific organizations have served as a theoretical and methodological basis of the research. A variety of research-based methods were used in the paper.

- In the formulation of the goals and objectives of the study, justifying a working hypothesis and the development of main directions of the crisis management, the abstract and logical method was used;
- the economic and statistical methods for determining the crop yield periodicity (Fourier analysis) were used to justify in the conditions of the insured event occurrence in the crop farming;
- the computational and analytical, computational and constructive and cartographic methods were used to justify the methodology for assessing the investment climate in the industry and the region, formation of food safety and quality systems, the development of the intervention mechanism, illustration of methods for determining the minimum level of crop yield reduction as a basis for providing state support for insurance.

Development of the theory and practice of anti-crisis strategy of reproductive processes state regulation in agriculture involves: setting goals, objectives, methods of reproductive processes state regulation in different concepts of social development; identifying the main areas of improvement of the state policy on the formation of a

favorable investment climate in the agricultural sector and region; development and adaptation to modern conditions of the quality management concept for the meat products subcomplex; formation of the mechanism for implementation of commodities, procurement and secured interventions allowing to eliminate the uneven movement of commodity flows on meat product market and price volatility in times of crisis; justification of proposals on improvement of the agricultural insurance state regulation in crop farming.

3. RESULTS

State regulation of agricultural production reproductive processes requires a systematic correlation of multiple components of the dynamic development of the company, such as: labor and production resources; financial and tax credit system; scientific and technical potential; social development; economic security, etc. In this context, state intervention should be of the multidimensional nature adequate for the specific concept of economic development of society. Compliance of the objectives and methods of state reproductive regulation with the general concept of the economic development of society is presented in Table 1.

In the study of the state regulation mechanism of the developed countries such as USA, UK, France (Altukhov, & Ushachev, 2008; Decree No. 322 "On Measures for Implementation of the Russian Federation President Decree No. 825 dated June 28, 2007 "On the Assessment of the Effectiveness of the Executive Authorities of the Russian Federation Constituent Entities", 2009; Prudnikov, 1995; Agreement on Agriculture, 2012; Strokin, & Zlochevskiy, 2012; Tlisheva, 2010; Trubilin, & Petrenko, 2012; United States Department of Agriculture – Farm Service Agency, 2011; United States Department of Agriculture, 1998; United States Department of Agriculture – Farm Service Agency, 1999; United States Department of Agriculture, 2016) the existing subsystems of the overall concept of the economy sustainable development were clarified and supplemented, the seventh anti-crisis concept (ACC) was highlighted, the goals were selected, the objectives and methods of the economy and reproductive process state regulation were specified. The main task of the state in the framework of anti-crisis concept is to stimulate innovative processes that will lead to an increase in gross domestic product and capital expenditures; business climate improvement, increase of household income, unemployment reduction, lending resumption, recovery in demand for consumer goods, reducing the budget deficit.

In our opinion, the anti-crisis strategy may include the following activities: stabilization of public debt and its use to promote the development of the real economy; recovery of external funding lost due to sanctions; an increase in the circulation of money and the money supply; the refusal of banks from the high margin; retention of low interest rates; investment in production and social infrastructure; support of purchasing power and resistance to reduction of consumption and others.

The current economic crisis is systemic one and is generated by a number of endogenous and exogenous factors, the effects of which, in some cases, are enhanced due to their mutual conditionality, imposed sanctions and geopolitical issues. The combined impact of selected groups of factors forms the specific characteristics of the current crisis, which are reflected in the forecast of socio-economic development of Russia for the period 2016-2018 (2015): the growth of investment decline rate in fixed assets more than 3 times, which resulted in a decrease in the rate of growth of gross domestic product (GDP) by 4%, a significant deterioration in the level and quality of life.

The anti-crisis policy of the state should focus not only on mitigating and overcoming the consequences of the crisis, but also on the formation of points of growth, the reliance on that will enable the implementation of sustainable development strategies after the passage of the acute phase of the crisis. In this connection, it is necessary to develop a program of actions aimed at the formation of the priority points of the systemic nature of growth and providing for a new growth after the crisis in resource-limited settings. An imbalance in this regard may lead to social upheaval, the prevention of which refers to the priorities of the state's anti-crisis policy. For these reasons, the processes of deterioration in the social sphere are particularly dangerous. The continuing rise in unemployment combined with a significant reduction in real wages and real income led to a contraction in consumer lending and the population's shift to the savings pattern of behavior, which led to a total decline in the consumption of goods and services by households. Preservation of market trends poses a threat of the consumer demand compression in the real sector of the economy and creating a favorable environment for the manifestation of social instability in various forms. Due to the specifics of the agricultural sector, the problems mentioned become even more acute therein. The result is that the condition of the real sector of the economy and social sphere shall become the priority objects of state regulation amid the crisis.

Condition of agricultural sector plays the most important role in ensuring economic stability, sustainability and future growth. By producing goods necessary to ensure

Table 1
The goals, objectives, methods of the reproductive process state regulation
in the context of the various concepts of the economy development

<i>Concepts</i>	<i>Purpose of state regulation</i>	<i>Problem of state regulation</i>	<i>State influence method</i>
1 Economic Restructuring Concept (ERC)	Economic Restructuring	Stimulating the development of new production and its re-orientation under the conditions of structural transformation	Public investment, punctual government support (accompanied by structural unemployment, rising prices, etc.)
2 The concept of balanced economic development (CBE)	Formation and support for sustainable production	- Optimal production rate growth - Optimal level of costs - Formation of the pricing mechanism	The impact on demand, prices and loans offering, savings, investments, support for innovative programs promoting regulation, etc.

(contd...Table 1)

<i>Concepts</i>	<i>Purpose of state regulation</i>	<i>Problem of state regulation</i>	<i>State influence method</i>
3 Demand Stimulation Concept (DSC)	Achieving a sustainable increase in demand over supply in order to accelerate and stabilize the rate of production growth	Ensuring full employment, prevention and mitigation of the crisis	Control of production and prices support, the system of preferential loans, export subsidies, subsidized food distribution, mechanism for conservation of land and water resources, crop insurance mechanism and payments in the event of natural disasters
4 Concept of stimulating export-oriented industries (CSEI)	Ensuring the development and growth of the export industry production	Increasing the efficiency of production in export industries	Public funding of research and development, public investment in infrastructure, modernization of financial incentives, medium-term forecasting, forecasting the development of industries and infrastructure. Export promotion through by one-time tax rebates, export premiums and currency devaluation are allowed, but are considered to be the conjunctural aid
5 Concept of the export-import balance (CEIB)	Formation of a balanced economy with a moderate increase in production	To provide for the external economic balance between exports and imports through the production balance	Manipulation of taxation; customs tariffs, restricting loans; reduction in investment, the price freeze, measures to stabilize the conjunctural economic equilibrium, economy stability maintenance programs. Feature – allows for consistently low GDP growth
6 Profit Growth Concept (PGC)	Stimulating the mechanization growth, promoting the growth of the rate of profit	The immediate impact on the rate of exploitation	Freezing or other wage restraint; increase in direct and indirect taxes, subsidies to private farmers, the reduction in income tax rate
7 Anti-crisis development concept (ACDC)	The economic recovery and overcoming the crisis	Growth in gross domestic product, an increase in capital expenditures; improving the investment climate, increase of population incomes, reduction of unemployment, the resumption of lending, a recovery in demand for consumer goods, reduction of the budget deficit	Stocks recovery, retaining low interest rates, investment in the construction of roads, hospitals, housing, the internal market development; reduction of public debt, capital inflow restrictions, the imposition of taxes thereon; refusal of banks from high-margin, financial institutions revision; stoppage the consumption reduction; stoppage of capital inflows, distorting the prices

the life of the population and processing industry, agriculture has a powerful synergistic effect, which increases its importance as an object of regulation amid the crisis. The complex nature of the causes of the formation of a crisis social and economic situation requires a diversified approach to the development of the anti-crisis strategy for the agricultural sector management. We share the position of V.A. Gorbov (2013) that the aggregate of such events should represent their system, and not the totality, since the effect can only be obtained by the systemic action on the existing imbalances in the reproduction of human, real, financial and social capital.

The objective of the anti-crisis management is to restore the proportionality between the different parts of the reproduction process, the search for a compromise between private and public interests, filling the market economy with social content, activating the state's participation in the technological upgrading of agriculture, regulation of labor relations and training of highly qualified personnel for work in the conditions of the 4th technological structure and adequate to the requirements of a modern economy.

We share the position of the Russian investigators that the anti-crisis policy of the state in the field of agriculture should take into account the following priorities:

- Ensuring the country's food and economic independence;
- Building capacity for further development based on improving the quality of human capital and formation of economic innovation system;
- Possibility to use the competitive advantages.

It should also be borne in mind that, in connection with a mixed agrarian economy, the aim of the anti-crisis strategy of Russia in modern conditions should be the interests of households, as the sources of growth are formed mainly due to the potential of domestic demand, which is mainly determined by households and private investors. In this regard, the domestic food aid development concept in the Russian Federation (RF) was included in the anti-crisis measures system, aimed at the creation of a new mechanism of state support for domestic agriculture and food industry. This concept provides for the provision of social catering to 32.5 million people (pregnant and lactating women, infants, and children of preschool and school age), at the expense of federal budget funds for the amount of over 400 billion rubles. Such a support measure is an economic incentive for local farmers, which will allow forming a new production, processing, supply and marketing system for agricultural and final products.

Taking into account a special socio-economic importance of the agricultural sector, the Russian government has developed a package of additional anti-crisis measures in agriculture, which is estimated at about 316 billion rubles, of 14% of the cost of the Russian economy support measures as a whole. These include measures of a different nature: 5% is directed to the prioritization of activities of state program of agricultural development and regulation of agricultural products, raw materials and food markets for 2013-2020; 4% of the funds is intended for the support of public institutions providing financing and logistical support of agricultural producers, i.e. the support

of financial and industrial infrastructure of agriculture; 1% of additional resources is directed to the agricultural insurance support; 6% – to ensure the availability of bank loans to agricultural producers and their direct material support.

Our studies show that the anti-crisis measures system in the field of agriculture proposed by the Russian government does not fully meet the proposed criteria, which reduces its effectiveness. In our opinion, it insufficiently accounts for the growing riskiness of the business, namely the instability in demand and prices for products, raw materials, energy and other production factors, and does not include measures aimed at the development of the innovation potential and human capital of the country. The currently implemented anti-crisis strategy of the state is characterized to a great extent as a policy of survival, aimed at maintaining reproductive processes during the recession and the impact of environmental factors in order to maintain their stability.

We believe that for the formation and use of the economic growth model potential in the post-crisis period, it is necessary to give the anti-crisis policy the expansionary character, which corresponds to the stated objectives of import substitution. Modern economics sees the crisis as a way to address the structural disease of the economy, and the anti-crisis policy as the economic growth and self-organization policy, and not a system of measures to ensure survival.

The implementation of the expansion policy in the framework of anti-crisis strategy requires a focus on the problem of improving the competitiveness and quality of domestic products.

Modern processes occurring in the global economy are characterized by destabilizing trends of goods exchange between countries on the raw materials and foodstuffs market, which gives rise to the search for optimal solutions to ensure high quality and safety of agricultural raw materials and food manufactured out of it in most countries.

In Russia, as in the whole world, the responsibility for the safety and quality of foodstuffs rests with the manufacturer, and the state has to control the process. In this regard, the need to address the issue of formation of a systematic approach to food product safety and quality monitoring is particularly actualized. The importance of the problem under research and its lack of scrutiny in relation to agricultural production activities and food processing industry as the single most important spheres of agriculture of the country determine the relevance of the study.

With respect to food products, the quality is the final result of the process steps in the manufacturing process. In the modern management theory, the quality category has a multidimensional nature and is applicable not only to the results of the activity – product or service, but also to the manufacturing processes.

Quality becomes a strategic goal of development and in modern management system represents a multi-level system category, reflecting the organization's ability

to meet the needs of the parties, interested in its activities, while achieving sustainable development in the ever-changing competitive environment.

Many national scholars were involved in the study of theoretical and methodological aspects and the development of practical recommendations for improvement of the food products quality management systems. A lot of attention has also been given to the problem of quality control of products in the domestic economy in the context of the command and control model of management. The integrated quality management systems have been created in many companies and associations, and the outgoing inspection has been tightened.

Functioning in the market environment significantly changes the ratio of producers to the problem of the products quality: the transition from the understanding of the problem as the directive necessity to its realization as a factor of success in the market as a result of the competitiveness increase. In this connection, the scope of problem solving has moved from the state level to the area of market relations between producers and consumers.

Currently, in Russia, a system providing for the transfer of quality issues to the sphere of market relations is created, as evidenced in the Federal Act "On Technical Regulation" adopted in 2003. This law defined the introduction of the country's two-tier structure of normative documents regulating the quality and safety of the final product (technical regulations and national standards), corresponding to the WTO Agreement on Technical Barriers. Technical regulations establish the requirements for products, processes of production, storage, transportation, marketing and utilization mandatory for the application and enforcement, and have the force of law. Any international, interstate and state standards may be the basis of these requirements. In order to confirm compliance with the requirements of technical regulations, the company must carry out the certification (voluntary or mandatory), which shall be carried out by special bodies accredited or adopt a Declaration of Conformity to the standards or regulations. There are several certification schemes (from the product certification to the quality management systems). The availability of the higher level Certificate with the company significantly enhances its competitive position on the market of products sold by it.

A transition from compulsory to the voluntary certification of production systems and the assigning of liability for the product quality on the manufacturer, which corresponds to international practice, is the core of methodological fundamentals of the quality management in market conditions. In this case, the manufacturer rests on the existing regulatory framework.

During the transition period of the Russia's familiarization with international approaches to solving the problem of increasing food quality and safety in the context of a low level of development of the market environment and the system of state regulation of this process, the low-quality products of domestic producers and imported products in high volumes began to enter the internal market. The lack of necessary

Table 2
Comparative analysis of generalized quality indicators of domestic and imported products as a result of inspections by Rospotrebnadzor, as of July 1, 2015

Type of product	The proportion of substandard products in the samples, %	including	
		imported	national
Food products in general:			
Physical and chemical indicators	109	65	44
microbiological indicators			
Meat and meat products:			
microbiological indicators	10	6	4
Fish and fish products	14	8	6

market infrastructure of quality management and food security in the modern small-scale nature of its production, storage and processing hampers the quality control issue solution that poses a threat to food security. Only in the first half of 2015, as a result of supervisory activities of Rospotrebnadzor (Control over Food Safety in the Russian Federation, 2015) withdraw from circulation more than 35,000 non-conforming batches of food products, totaling more than 720 tons. The rejected products were mainly the imported ones: in the “meat and meat products” category, it accounts for 80% of the total volume of defective products, including fruits and vegetables – more than 90% (Table 2).

Russia’s accession to the WTO, the creation of a common economic space between the member countries of the Customs Union has strengthened the need for an active solution of the issue if product quality improvement by domestic manufacturers to a level corresponding to world quality and safety standards.

In 2013, the Customs Union Technical Regulation “On food safety” prohibiting the release of products, which do not meet its requirements, entered into force. This document establishes the safety requirements for all kinds of food products, covering the processes of their production, storage, transportation, sale and utilization, as well as forms and methods of conformity assessment of such products. Technical Regulations of the Customs Union “On food safety” introduces several new mechanisms to regulate the food quality and safety problems:

- with regard to legal entities and individual entrepreneurs engaged in the production of food products, the system of their state registration shall be implemented;
- with regard to specialized food products, and new-type food products a new type of state registration having the permissive nature shall be introduced;
- manufacture of food products should be subject to a mandatory development, implementation and application of industrial control system based on the principles of HACCP (Hazard Analysis and Critical Control Point System);

- a manufacturer of food products is obliged to confirm the conformity of the products released to the requirements of the Technical Regulations by submitting a relevant declaration.

The EU Hazard Analysis and Critical Control Point System widely used at the present time gives positive results in this area.

Its essence lies in the systematic identification of hazards and “critical points” of technological process where the deviations from the standards may occur, which may lead to deterioration of product quality and reducing the level of security for the consumer. In general, the system sensitizes the staff to the system definition and implementation of the complex of preventive measures. The algorithm of functioning of the system consists of seven stages: 1 – hazard analysis; 2 – identification of critical control points; 3 – determination of critical limits; 4 – establishment of the monitoring procedure; 5 – development of corrective actions; 6 – effectiveness evaluation; 7 – documents storage and updating.

With regard to the first stage, the hazard factor identification and the subsequent selection of the critical control points (CCP) at the meat processing plants shall be carried out in accordance with the State Standard 51705.1-2002 (GOST R 51705.1-2002). In general, it is a certain stage of the process, in which the occurrence of the hazard threat is so great that it causes the special control of the stage by the company personnel, and all hazards that may be present in the production process and adversely affect the safety of products are assessed at the same time. The list of hazard factors is determined by the technological schemes of production, raw materials, labor organization of the production staff. Various specialized sources (state standards, regulations, etc.) are used when determining the list.

The second and third stages are associated with the identification of critical points and the justification of the risk for each hazard taking into account the probability of its occurrence in the course of the production process and the significance of the consequences. The need to address the hazard is determined depending on the probability of its implementation and the severity of the effects. It is necessary to define critical limits to be followed in order to ensure the critical point control. At the same time, one of the four variants of the effects severity shall be taken by expertise, according to GOST 5105.1-2001: is practically zero – light; limited – moderately severe; significant – severe and high – critical. The number of critical points depends on the complexity and type of production (production process, falling within the analysis area). Paragraph 4.4.2 of GOST R 51705.1-2001 recommends determining the control critical points using the “decision tree”.

The fourth stage involves the development of a monitoring system that provides control in the critical points of the process through the implementation of planned tests or observations. Monitoring in the HACCP system is a system of ongoing monitoring or measurement that allows to monitor the CCP and to do this based on records for audits. Monitoring procedures allow for the detection of critical points

outside the control area. In fact, the information obtained by monitoring, should provide the ability to quickly respond to the appearance of any deviations in the production process and ensure that the various corrective actions.

The fifth stage involves monitoring and represents a development of the corrective actions to be undertaken if the monitoring results indicate that the control is not carried out in certain critical point.

The sixth stage involves the development of verification procedures that allow to verify the system functionality effectiveness.

The seventh phase involves documentation of all procedures and data existing in the system.

During the study (Piterskaya, & Voroshilova, 2012), the HACCP system, which includes the commodity, financial and information flows and the mechanism of management thereof, was adapted to the characteristics of integration processes in the meat products subcomplex of Russia, and offered for use. This system is integrated into the quality management and food safety (SMKBPP) model, which provides a comprehensive approach to quality management and safety issues in the food industry due to the joint efforts of all parties involved in the production process.

The certification of production processes of all phases of production and bringing it to the consumer is a mandatory step in the implementation of SMKB in the marketing system in the production of meat and meat products of cattle and poultry gain, slaughter, primary processing of raw meat, deep industrial processing and production of ready-to-eat meat products, storage, packaging, packing, transportation and marketing.

In order to ensure consistent management of quality and safety in the production of meat and meat products we consider it necessary to create a system of information computer support for management and exchange of information between the marketing system subjects that provides the collection, processing, storage, protection and transmission of information on compliance of the technological process parameters in the control critical points with the requirements of the standards. The results of the information system functioning will serve as a basis for the adoption of adequate management decisions aimed at addressing the identified deviations by developing and applying corrective actions, accounting and document flow confirming the implementation of corrections, the system viability verification procedures.

The HACCP quality system is in a constant development. The number of hazards and control critical points in the ideal case, after the corrective measures, should aim at a minimum. The maximum number of the control critical points in the production process is revealed in the course of the initial work on the HACCP introduction. In the future, as a result of organizational and technical measures, this number must constantly be reduced, which will indicate the effectiveness of the HACCP quality system in the company.

Practical use of the HACCP model adapted and supplemented by a system of computer and information support in the activities of meat processing enterprises of Krasnodar Krai confirms its high efficiency. Thus, according to JSC "Sochi Meat Processing Plant", which was one of the first local producers who received the internationally recognized quality management system certificate of the ISO certification system on the compliance with GOST R 51702.1-2001, there is an annual increase in sales volumes by 1.5-2.0% only due to the implementation of the HACCP model. JSC "Medvedovsky Meat Processing Plant" uses the HACCP quality control system since 2005. To reduce the risk of poor-quality livestock supply, the company develops its own raw material base and is engaged in fattening pigs on the basis of "Industrialnyy Agropremzavod". JSC "Tikhoretskiy Meat Processing Plant" was registered by the international environmental organization "Greenpeace" in the "green list" of producers who do not use genetically modified ingredients in the production of meat and meat products. The meat processing plant uses raw materials from animals raised on two own specialized fattening complexes. Besides, 30 specialized fattening farms are engaged in the supply of raw materials. The quality management system of "Tikhoretsky" Plant was certified under the international quality management and food safety system based on HACCP principles and the International Organization for Standardization (ISO), which is a guarantee of safety and high-quality of the finished product.

The positive experience of national and regional leaders of meat product complex confirms the need for the creation of a national integrated quality control and food safety system, harmonized with international standards. The successful solution of the problem is possible through the implementation of target-oriented strategies, the instruments of which are the innovation and implementation of the principle of public-private partnership, and by giving it the state priority status.

The agreed terms of Russia's accession to the WTO reduce the volumes and trends of state support for agricultural production. The activities within the "green box" (Agreement on Agriculture, 2012) on the sector infrastructure development may be subsidized by the state budget funds without restriction. In their content, the measures on the creation of a national SMKB of food products are related to activities for the development of agricultural infrastructure and have good prospects for development on the basis of adequate financing, including from the budget. The successful implementation of the target-oriented strategy on the creation of a national quality management and food safety system will enhance its competitiveness, and provide for solving the problem of import substitution and ensuring the Russia's national food security.

The activation of investment processes as a priority anti-crisis policy of the state is equally important. The analysis of investment flows in the real economy sector of the Southern Federal District showed that in 2014, the volume of investment in fixed assets dipped down, and reached the level of 2012, and this trend can also be seen in Krasnodar Krai, which occupies a leading position (over 60%) by the amount of investment in the

real economy of the Southern Federal District (SFD) (Krasnodar Krai in Figures. 2014: Statistical Collection, 2015).

In order to stimulate investment flows into the sector and the region, investors require immediate and detailed information on the condition of the investment climate, and in this connection, the need for its periodic monitoring is updated. We have developed a methodical approach and tools for monitoring the investment climate of the region and the agriculture sector. At the same time, the author's position is in need for their comprehensive and complementary assessment including the social dimensions, which represents the novelty of the author's approach.

A comprehensive assessment of the investment climate in the region and the industry is performed according to the algorithm:

- 1) Formation of system of indicators of investment attractiveness assessment, potential, risks, and the activity of agriculture and the region and their calculation.
- 2) Implementation of the procedure for standardization of the regional investment climate and the agricultural sector indicators.
- 3) Calculation of average standardized parameters of the investment climate in the agricultural sector and the region – the calculation of private integrated indicators.
- 4) The classification of regions by the degree of the favorableness of the investment climate in the region and agriculture.
- 5) Graphical representation of the analysis results.

To bring the diverse indicators of the investment climate assessment of the sector and the region to the consistent type, the standardization procedure was applied by a methodology of assessment of the statistical analysis department of the United Nations Organization applied in determining the human development index.

When calculating the average standardized index for each indicator of the investment climate assessment, the following formula were used:

$$X_{ij} = \frac{x_{ij} - \min_i x_{ij}}{\max_i x_{ij} - \min_i x_{ij}} \text{ and } X_{ij} = \frac{\max_i x_{ij} - x_{ij}}{\max_i x_{ij} - \min_i x_{ij}}, \quad (1) \text{ and } (2)$$

where X_{ij} is the standardized value of the j-th indicator for the i-th region,

x_{ij} is the actual value of the j-th indicator for the i-th region.

If the monotonically increasing relationship between investment climate and its determining factor is found the standardization was carried out by scale variations

using the formula (1). If, however, a monotone decreasing dependence is between the investment climate and its determining factor, the formula (2) was applied.

As a result of testing of the author's technique on the example of agricultural regions of the Southern Federal District and the North Caucasian Federal District by specific statistical indicators, assessing the investment climate in the aggregate, the following has been identified:

- The investment attractiveness of agriculture of the region is large enough, and in general it is the best in the Southern Federal District;
- The investment potential of agriculture of Krasnodar Krai in general is positively characterized, but in relation to other regions there is not enough tractors per 1,000 hectares of arable land in the region; insufficient number of combine harvesters; the generating capacity per worker is insufficient; the level of overdue receivables is high and the equity ratio is not large enough;
- The investment efficiency of the agricultural sector is also high; however, the region takes a back seat with regard to the Republic of Kabardino-Balkaria in the rate of growth in the value of fixed assets of the food industry and the production of potatoes, vegetables, livestock and poultry for slaughter (slaughter weight) per capita;
- The investment risks in the agricultural sector of Krasnodar Krai and the region remain the lowest in the Southern and North Caucasus Federal District, but the region has a high level of environmental risks, as well as climatic risks caused by high temperatures in July.

The assessment of the investment climate of reproductive processes on average standardized indicators shows that a close relationship exists in Krasnodar Krai between the characteristics of the region and the agricultural investment climate, and the investment climate remains the highest one by almost all components. However, state regulation measures should focus on the following areas:

- 1) Economic and technological measures: quantitative and qualitative optimization of technical and technological base, pricing improvement that helps to increase the rate of growth of profit on sales; reducing the tax burden on agricultural producers, agricultural risks. All reproductive processes in agriculture are associated with high risks.
- 2) Socio-economic measures: activation of state regulation of the cost of housing and communal services; support for housing construction in rural areas; support for health services in rural areas and the level of health care; government regulation of environmental and ecological activities; increasing the minimum living wage in the countryside.

Taking into account the high risks in the agricultural sector of the economy, in the anti-crisis program the importance is given to insurance as an effective risk management

tool. It should be noted that over the last 10 years the state was making active attempts of state support of agricultural insurance development. However, as shown by the analysis, the agricultural insurance market is developing very slowly; besides, according to the Unified Association of Insurers of agro-industrial complex – the National Union of Insurers of Agro-Industrial Complex, over the past two years the agricultural insurance both with the state support and without was reduced by an average of 33% (2015).

Our analysis has revealed that there are several reasons for this situation, but the main, in our opinion, is unjustified criteria of an insured event occurrence in case of the agricultural risks insurance. From our point of view, the methodological flaws in the state support to agricultural insurance policies are as follows:

- 1) the absence of a differentiated approach to the definition of the level of losses for different crops, as the level of cropping risk varies;
- 2) the absence of a zonal approach to the determination of the level of losses, which is unacceptable for Russia with its significant differentiation of climatic zones;
- 3) an overvalued level of crop losses to determine the insured event for Krasnodar Krai, which, under current climatic conditions, virtually makes it impossible to obtain insurance compensation, i.e., the probability of occurrence of an insured event, in accordance with current standards and long-term statistical surveys – once per 15 years.

All the above points have become the basis for improving existing approaches and developing appropriate recommendations to optimize the process of agricultural insurance with state support in crop production.

In accordance with identified gaps, the following recommendations were made:

- 1) The adopted law “On state support in the area of agricultural insurance and on amendments to the Federal Act” On the development of agriculture” (2014) offers a criterion of the insured event common to all cultures and regions of Russia. We have made calculations on the justification of the level of the insured event occurrence (incomplete harvest) not for the crop industry as a whole, but by major plant varieties: cereals, sugar beet, and sunflower.
- 2) We have not only justified the level of losses to justify an insured event in the cultural section, but made differentiation on the main agricultural regions of Russia – from the Kuban to the Far East, and the results were visualized in the form of a risk level distribution maps for crops in Russia’s regions and regions of Krasnodar Krai.
- 3) In order to justify the level of losses, we used estimates of crop yield variation coefficient calculated based on the yield periodicity, determined by its dynamics since 1958 (Figure 1). In determining the loss of the crop we shall

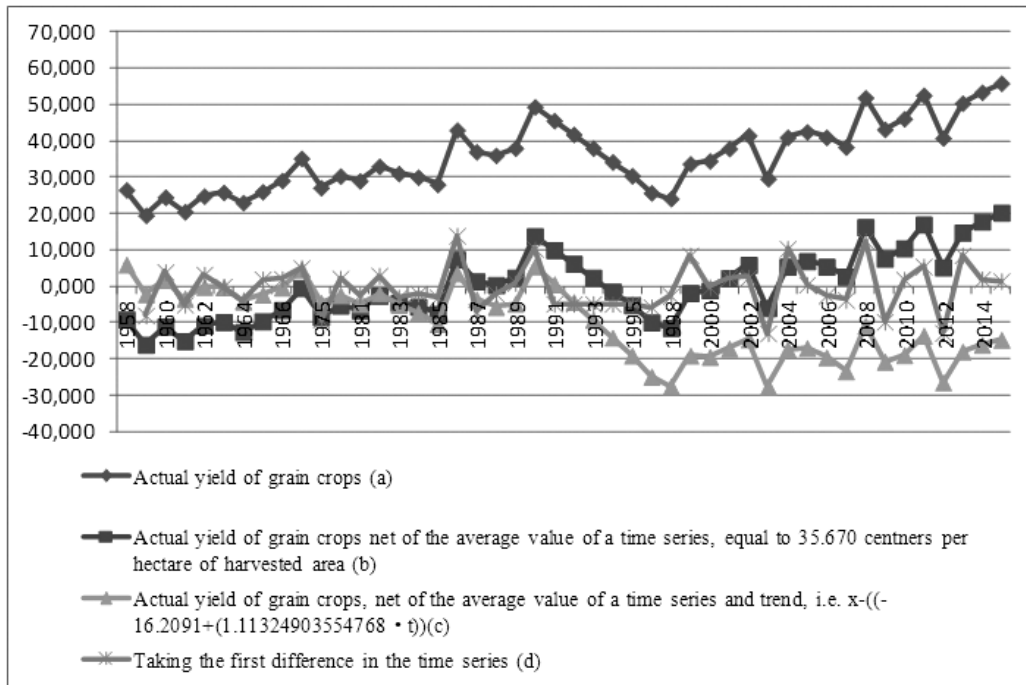


Figure 1: Yields of cereals in Krasnodar Krai in all categories of farms (by weight after finalization), centner/ha of harvested area

not use the criterion of reducing the actual crop yield compared with the average yields prevailing in the five years preceding the year of the conclusion of agricultural insurance contract, by at least 20 per cent, but the percentage ratio of the sample mean square crop yield deviation to the sample average – the coefficient of yield variation, which is important not in itself, but as an average index by the aggregate of areas belonging to a particular agro-climatic zone. The coefficient of variation should be determined on the basis of data on crop yields for the time period divisible by its period of cyclical growth and development.

In accordance with the methodological approaches, based on the example of cereals, calculations for Krasnodar Krai were carried out, which allowed to substantiate the value of the crop loss within 16-20% for the insured event and the use of the instruments of state support of insurance (Table 3), although according to the applicable law such a case should occur in the case of at least 20 percent of losses. Similar calculations were made for sunflower and sugar beet in the context of Krasnodar Krai areas.

In our studies, the above range was differentiated on the basis of long-term observations, taking into account the yields periodicity for individual administrative districts grouped into the agro-climatic areas. It is possible to create a map of the

Table 3
A minimum reduction of the crop yield level to justify an insured event in the agro-climatic areas of Krasnodar Krai

Areas group	Minimum reduction of crop yield level to justify an insured event (Arithmetic mean coefficient of variation, %)			
	1999-2010	2001-2012	2002-2013	2003-2014
Beloglinskiy, Yeisky, Krylovsky, Kushchevsky, Novopokrovskiy, Pavlovsky, Starominsky, Shcherbinovskiy areas – arid agroclimatic area		from 20		
Bryukhovetsky, Belorechensky, Vyselkovsky, Gulkevichsky, Kavkazsky, Kanevsky, Korenovsky, Leningradsky, Novokubansky, Tbilisskiy, Temryuk, Tikhoretsky, Uspensky, Ust-Labinsky area – unstable humid agroclimatic area	15	15.1	14.9	16.5
Abinsky, Dinsky, Kalininsky, Krasnoarmeisky, Kurganinsky, Primorsko-Akhtarsky, Slavyansky, Timashovskiy areas – moderately humid agroclimatic area	13	16.6	16.5	17.3
Krimsky, Abinsky, Otradnensky areas – humid agroclimatic area	18	16.7	18.9	18.9
Absheronsky, Seversky, Tuapse, Mostovskiy areas – excessively humid agroclimatic area		from 20		

insurance events occurrence in the administrative districts of Krasnodar Krai. In our opinion, the proposed approach to a greater extent is relevant to the interests of agricultural producers as it provides an effective coverage of their activities.

The system of measures ensuring stable conditions for agricultural business in the context of crisis the purchase and collateral interventions in the agricultural market are important. The Federal Act of the Russian Federation “On state regulation of agro-industrial production” has first introduced in the Russian practice of regulation of food markets the institute of state purchasing and commodity interventions made in order to stabilize the prices in the agricultural products market, as well as collateral operations with grain. Such a system of state regulation of agricultural markets is widely used in the European Union, the United States and other developed countries. In Russia, procurement, trade and collateral interventions are used in the regulation of the grain market, and since 2010 they are also used on the dairy market to smooth seasonal price fluctuations and maintain the necessary profitability of dairy producers. The list of agricultural products, in respect of which the trade and purchasing interventions are applied, was supplemented by milk powder, butter, drinking UHT milk, semi-solid, hard and extrahard cheeses.

The meat and meat products market is characterized by dynamism of development and instability of functioning, which is caused by the physiological characteristics of the reproductive processes in animal production and low level of epizootic welfare of the sector. The demand for raw meat is more stable than its supply. The irregularity of

commercial flows leads to price instability and, as a consequence, the financial instability of the activities of meat and meat products manufacturers. To address emerging imbalances and ensuring the conditions for effective development of production and stable operation of the meat market, we are proposing to implement the mechanism of trade, purchase and mortgage interventions. To this end, the following problems shall be resolved: ensuring price stability; budget support to domestic manufacturers; customs protection of the domestic market from low-quality meat imports at dumping prices; increasing demand of the population and creating favorable motivational conditions for domestic manufacturers.

It is expedient to perform the state purchasing interventions if market prices for meat fall below the level set by the Russian Government on the proposal of the Ministry of Agriculture to carry out procurement interventions (Figure 2).

As the representative legal entity for the implementation of measures of state regulation of the market of meat through the mechanism of purchasing interventions we propose Rosrezerv, whose responsibilities, in our opinion, shall include: organization and conduct of the competition between agricultural producers and processing enterprises, preparation of tender documentation, preparation of auction documentation, interaction with industry associations on the protection and representation of the interests of its members, monitoring data on the state of the state

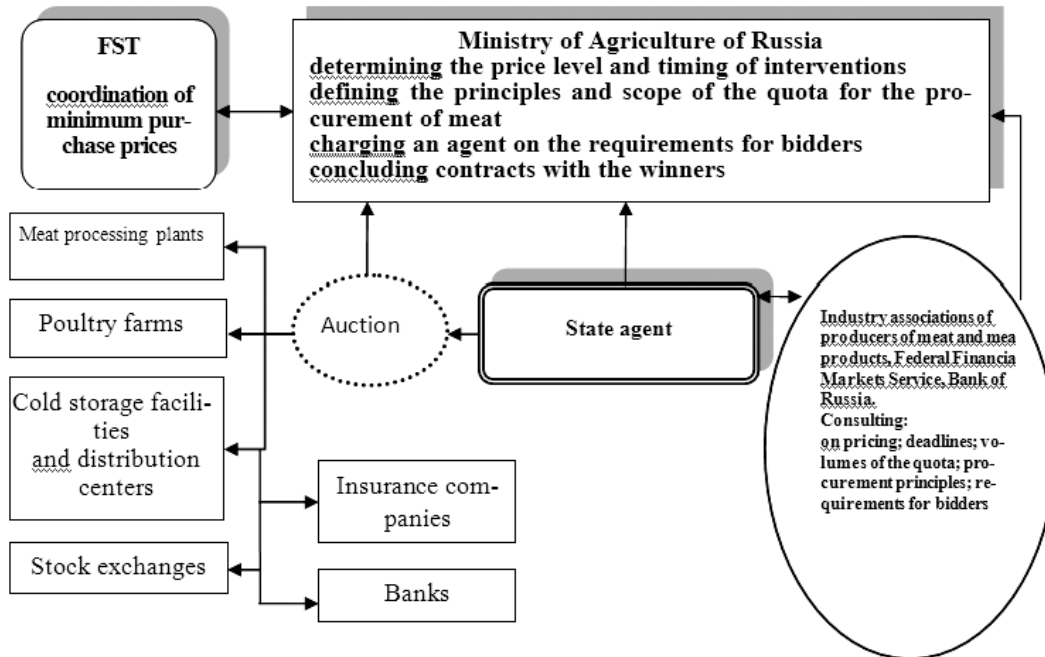


Figure 2: The scheme of the public purchasing interventions in the meat products market

intervention fund and their submission to the Government of Russia, the organization of funding of the purchase operations, including the procedure for their subsidization. It is advisable to base the procurement on the exchange auction mechanisms. The licensed stock exchanges shall be the auction organizers, selected on a competitive basis by the Ministry of Agriculture according to the criteria agreed upon with the Federal Service for Financial Markets, on the basis of contracts concluded with the agent. Trading in the stock exchanges should be carried out according to the rules established by it, agreed with the agent and the Ministry of Agriculture of Russia. To reduce the risk of loss, deterioration of product quality, purchased to the intervention fund, it is proposed to insure it with the insurance companies selected by the Ministry of Agriculture of Russia on a competitive basis.

It is proposed to finance the costs on the formation of the intervention fund through bank loans, selected on a competitive basis in accordance with established criteria of the Ministry of Agriculture of Russia. Return of loans should be performed by foreclosure of mortgaged goods by the parties to the intervention transactions, as well as from the budget upon the agent's transfer of production in the state reserve.

An important element of the intervention mechanism is the identification of the optimal timing of its implementation, including the timing of procurement conditions announcements, quotas and intervention purchase prices. We consider it appropriate to publish the conditions of intervention measures not later than the first decade of January, which will allow agricultural producers and processing enterprises to effectively plan their activities in the medium term. Calculation of the quota volumes should be based on the data on the regional balance of production, import, export and consumption of meat. The following formula shall be used when calculating the intervention purchase prices:

$$IP_T = (P_{\min} + C_{\text{trans}} + VAT) \times (1 + I)_{\text{inf}} \quad (3)$$

where:

- IP_T – the intervention purchase price, rubles;
- P_{\min} – minimum average producer price in the previous agricultural year, rubles;
- C_{trans} – cargo handling and transportation costs of the producer;
- I_{inf} – inflation index.

It is advisable to set the minimum price value by the averaged data from several regions with the volume of meat production not less than 50 thousand tons. The level of the purchase price should provide for normative profitability. To ensure the timely decision making on the purchasing and commodity interventions it is necessary to create a permanent price monitoring and forecasting system for meat prices in the context of the Russian Federation constituent territories. It is advisable to use supply future's contracts for live cattle and meat as a forecasting tool. World practice indicates

the presence of the positive experience in this regard: futures for livestock products – livestock, pork and beef were listed on the Chicago exchange CME since 1960s. Monitoring and forecasting of the price situation, the volume of production, consumption, export, import of meat will allow to timely perform the calculation of the volume of the meat market resources, price parameters and the price range within which purchasing and commodity interventions will be made.

The Ministry of Agriculture of the Russian Federation serves as the state customer implementing the mortgage operation for the meat market regulation, and it shall take all necessary operational decisions on purchases and sales of meat, using mechanisms of state regulation.

The mechanism of collateral operations in the meat and poultry market is a measure of the state support for agricultural producers and meat processing plants, consisting in granting them preferential loans secured by meat and meat products produced in the current year (see Figure 3).

Secured lending technology involves compensation of the interest on loans, part of the costs of storage and insurance of meat and meat products at the expense of the federal budget. In the proposed scheme, the State must guarantee the purchase of a certain amount of meat and meat products for the established minimum price. The

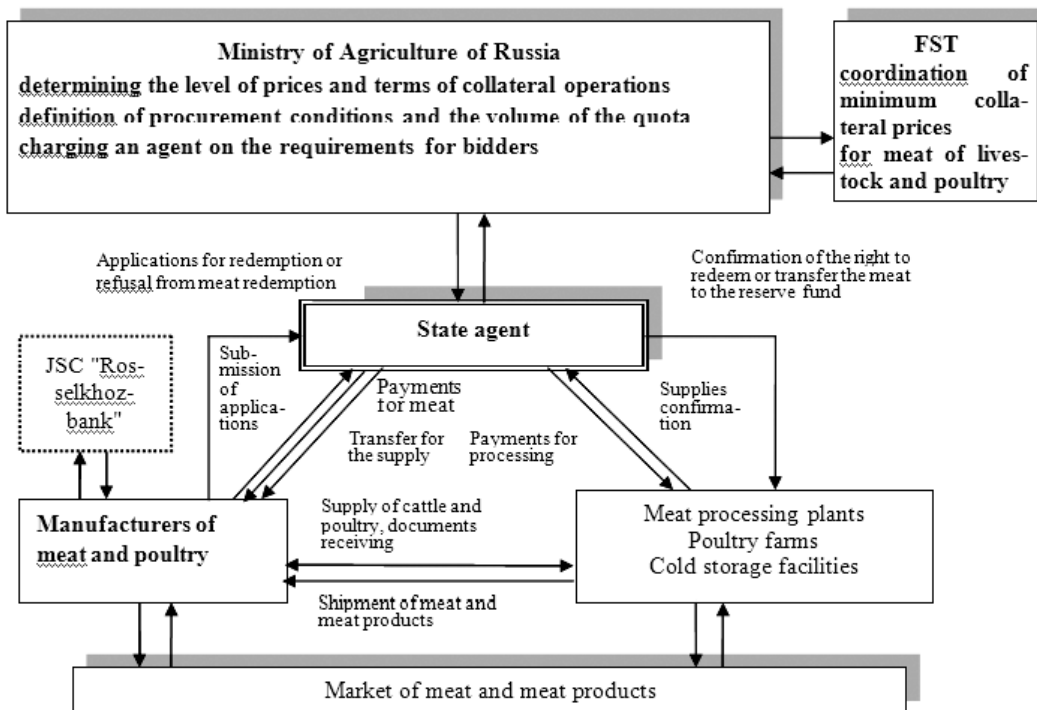


Figure 3: The scheme of mortgage transactions in the meat market

mechanism of security intervention allows producers to attract credit resources of the financial market to replenish the working capital through the mechanism of bank lending on the security of meat resources placed with the facility certified by the Russian Ministry of Agriculture; it retains the ability to buy back meat and meat products, its sale on the market at a higher price upon the formation of a favorable conditions. The price of meat and meat products buy back must include the costs of storage, insurance and imposed taxes. One of the tools to ensure the effective functioning of the proposed mechanism is a system of simple and double warehouse receipts, which are the securities in accordance with the Civil Code of the Russian Federation. In the proposed scheme, the certified meat processing plants, cold storage facilities and logistics centers are engaged in the issuing warehouse receipts. In the issuance of the loan, credit institutions should recognize the warehouse receipts submitted as a sufficient collateral base.

Implementation of the mechanism of collateral interventions needs rapid development of the necessary legislative framework used in economic practice of simple and double warehouse receipts.

The average price of producers, which was the lowest in the previous agricultural year, shall be the basis for calculating the minimum collateral prices for a specific kind of livestock and poultry. To determine the minimum value of collateral prices, it is offered to use the pricing methodology for purchasing interventions. The financial risks associated with additional costs of the budget for redemption of meat and meat products upon non-repayment of loans as well as credit risks of banks may occur in the implementation of collateral operations. As a result, collateral prices should be set at a level not higher than the limit values of the minimum price of purchasing interventions.

In order to improve the proposed mechanism of state intervention in the meat and meat products market it is advisable to implement purchasing and commodity interventions in order to reduce budget expenditures, taking into account conditions of regional markets; to improve their work on forecasting and monitoring, expand the practice of collateral interventions with the possibility of the products redemption.

4. DISCUSSION

In the study, the authors used the theoretical and methodological basis for the issues of assessment of investment potential problems and climate of certain regions, management of insurance processes in the agricultural sector, the regulations of agricultural market development described in the writings of the above mentioned authors. Modernization of existing approaches allowed the authors to create their own methodology for assessing the investment climate, which includes four basic elements: investment potential, investment activity, investment risk, and investment attractiveness; to quantify the diverse indicators of the investment climate, it was recommended to use a standardized rate within these elements. On the issue of the

existing methods of the state support for the reproductive processes in the field of agricultural insurance, the authors suggest trends for its improvement: in case of the crop insurance to justify the fact of the insured event on the basis of the specified crop loss borders in accordance with the coefficients of the yields variation. At the same time it is recommended to define a time lag for the study of the yield dynamics in accordance with the crop yields periodicity, but not be limited to a five-year period according to the approved recommendations. It was proposed to differentiate the appropriate calculations on regions and agro-climatic areas in the context of agricultural crops and not to equate all regions and cultures by the level of catastrophic loss; it was recommended to extend the meat products market regulation tool through the trade system, purchase and mortgage interventions; the use of HACCP system, integrated in the quality management and food safety (SMKBPP) model, was offered, and is adapted to the characteristics of integration processes in the meat and grocery subcomplex of Russia.

5. CONCLUSION

The authors propose a set of measures and recommendations for improving the anti-crisis strategy of reproductive process state regulation in agriculture. The implementation of the proposed measures will provide stable conditions for agricultural production and create conditions for the implementation of a vector for sustainable growth in the post-crisis development of the Russian economy.

The practical significance of the study is the possibility of using its research results in the process: impact on increasing the investment attractiveness of the agricultural sector; providing quality and safety of agricultural products and foodstuffs; creating conditions of reproductive process stability due to agricultural insurance and the use of the intervention mechanism.

The main provisions of the study may have been further developed in the study of theoretical and methodological problems of state regulation of different forms of management in the agricultural sector; justifying the degree of state influence on the agricultural sector to ensure its competitiveness, import substitution, and social attractiveness of rural areas, and food security.

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