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# Theoretical and Methodological Principles of Investment Support for Innovation-Oriented Development of Agrarian Production

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**Abstract**:

The theoretical and methodological foundations of investment support for innovation-oriented development of the agrarian production were worked out and substantiated in the article. The systematization of theoretical approaches was conducted and the peculiarities of innovation development investment support of the agrarian production in modern conditions were determined. The factors affecting the process of investment support of the agrarian production innovation development were

determined. The substantiation of the factors that form the innovative activity of the agrarian production and the process of its investment provision were conducted. The principles of investment support of the agrarian production innovation-oriented development were supplemented, to which the principle of balanced development was added. The essence of this principle is the parallel implementation of investment and innovative activities. Considering this principle makes it possible to pursue investment policy in the agrarian sector in terms of activating investment advantages and continuous mastering of new knowledge and innovations, taking into account branch and regional peculiarities. The concept was developed as to creating the economic mechanism of regulating the investment support of the agrarian production innovation development which depends on the chosen purposes of the branch development and influence of external and internal environmental factors on investment, and the conditions of its innovative potential development, revealing the main factors, favoring or preventing from activating the investment activities in the agrarian sector and act on the object of management. Implementation of the economic regulation mechanism allows to provide the procedure of the organizing efficiency management and to form methodological tools, measuring it depending on the type of developing investment and innovative processes in the agrarian sphere.

**Keywords:** investments; innovations; agrarian production; sustainable development; efficiency; regulation; management.

**JEL Classification:** E22; Q14; Q16; Q55; Q57.

## Introduction

For the agrarian sector as an economic system that has its own specifics, manifested in direct dependence on natural and climatic conditions, seasonality of production and special characteristics of the technological process, the issues of searching for sources of investment attraction, using of investment resources to activate innovative activities that will help to renew the extended reproduction process, are especially topical. The solution of the above-mentioned problems is possible under the condition of necessary conformity of investments to innovations, close interaction of investment and innovation processes in the agrarian sector of the economy. Such approach requires considering investments and innovations as a single system, from the successful developing and functioning of which the level of economic growth and stabilization of agricultural and agro-food sector development depend as a whole.

The transition of the agrarian economy to an innovative way of development is one of the most important and complex problems, the solution of which requires the systemic analysis of the main factors that can favor or, on the contrary, restrain this process. Innovation-oriented development of the agrarian production envisages the involvement of new technologies, creation of fundamentally new products and the use of modern innovative methods and techniques of management. In today's globalized world, the level of innovation development of the economy and society as a whole is not only one of the most important factors of success, but also the main resource of economic growth and geopolitical stability of states, which determines their place in the world politics and economy.

## 1. Research Background

The topicality of the problem of the agrarian production innovation development is confirmed by a significant amount of scientific research. At the same time, in the economic science and practice of functioning of the economy's agrarian sphere, a number of questions connected with investment support of innovative activity remain unsolved. The transition to the innovative type of development not only opens up great prospects, but also creates considerable risks to the stability and balance of development itself. Therefore, it is important to ensure the reliability of all social mechanisms of investment support for innovation development, the safety of the entire social and economic system's functioning (Illiashenko 2013).

The effective development of the agrarian production is possible only through the balanced realization of private interests of the participants in investment and innovative activities and state and public interests (Lupenko 2012) The need to take into account public interests necessitates the state's interference in investment support process of the agrarian production innovation-oriented development (Fedorenko 2017).

In the economic science, the concept of "investment" is interpreted either as a refusal to use incomes for current consumption in favor of increasing capital and the expected expansion of consumption in the future (Aranchiy 2021), or as an investment in fixed and working capital to get income (Tomilin 2020). However, both the first and the second opinions do not reflect the current problems of the agrarian economy and its transition to innovation-based way of development.

The main characteristics of the innovation process in the agrarian sector are the following: relatively high level of innovative activity, interdependence of the degree of innovative activity of enterprises and their profitability, diversification of innovative activity directions, the prevalence of imported samples in the structure of the newest technology, the absolute prevalence of enterprises' own funds among the sources of innovations' financing, a low

level of using institutional sources of information on innovative developments, insufficient positive effects on the environment from introducing agricultural innovations (Yasnolob 2018, 2019).

The state, regulating innovation-based development and investment processes in the agrarian sector, must first of all create the environment and conditions to stimulate investments' attraction in innovative activities owing to the implementation of a complex of Government's guarantees and the totality of other management measures (Datsiy 2011). The main directions of the state policy in the agrarian sector under these conditions are the activation of scientific and technical activities and formation on this basis of efficient production; material and technical support of the industry; eco-balance of agriculture; improvement of economic and land relations, rationalization of production and management structure, as well as the implementation of the social policy that contributes to the creation of decent working conditions for the population in rural areas (Gorb 2020).

The main directions of investment support for innovation-oriented development of the agrarian production include the division of innovations (commodity, technological, resource, organizational and economic, social and economic) into radical and improving. According to the author, radical innovations that require a significant amount of investments and are characterized by the highest levels of innovation and investment risks, deserve special attention in terms of the Government's support (Aranchii 2019, 2021).

The analysis of the considered theoretical viewpoints on investments enables to draw the conclusion that the basic content of investments is investment of the capital in objects of business activity with its further increase. The capital gain, resulting from investing, must be sufficient to compensate the investor for the abandonment of available funds for consumption in the current period, to reward him (her) for the risk and compensate losses from inflation in the future. In this case, investments express many types of property and intellectual values, the using of which ensures profit or certain levels of some other useful effect are achieved. Of particular importance for improving the efficiency of the agrarian economy at the present stage of development is the ratio of the innovative component to the total volume of investment activity. The impact of investments on economic development of the agrarian sector is obvious, but it can be manifested differently, depending on the general economic situation in the country, specific investment conditions, and the use of capital funds.

## 2. Methodology

The purpose of the study is to develop and substantiate the theoretical and methodological foundations of investment support for innovation-oriented development of the agrarian production. Based on this, the objectives of the study are the following:

- the systematization of theoretical approaches and determination of features of investment support for innovation development of the agrarian production;
- the identification of factors influencing the process of investment support of the agrarian production innovation development;
- the substantiation of the factors that form the innovative activity of the agrarian production and the process of its investment support;
- the development of conceptual bases of forming the economic regulation mechanism of investment provision of the agrarian production innovation-oriented development.

The systemic and dialectical-cognitive method was used in the study of scientific papers on the processes of investment support of the agrarian production. The following methods were used during the work on the article: abstract and logical (for making theoretical generalizations and specifying conclusions), monographic (for conducting retrospective analysis and identifying investment peculiarities in the innovation development of the agrarian production), system and structural (for making the concept of the economic mechanism formation to regulate the investment support of the agrarian production innovation-oriented development), etc.

## 3. Results and Discussion

Investments play an important role in economic development and, first of all, they ensure sustainable development and increase the well-being of the population. The investment process in any economic system is a key factor of economic development, and its functional role in the structure of social reproduction is to transform free financial resources into innovative renewal and improvement of basic production factors and, based on this, ensure the growth of gross domestic product.

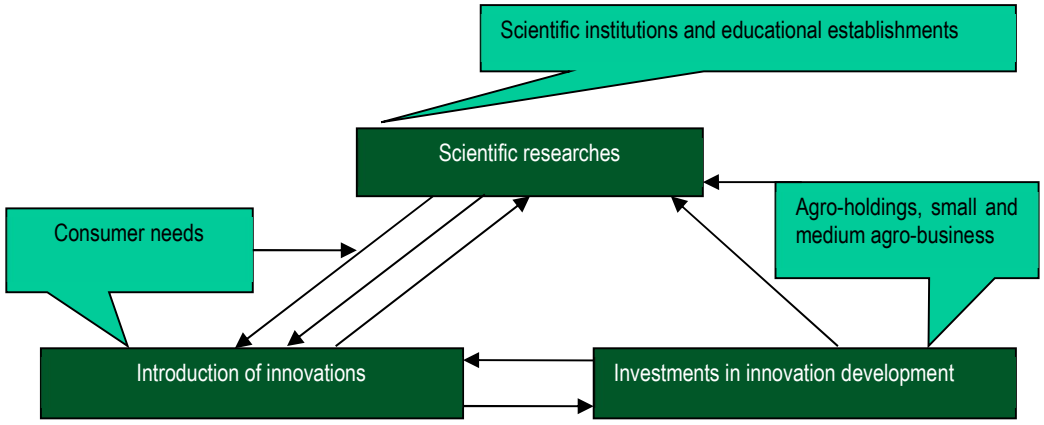
The development of any system, including investment and innovative, is cyclical. Accordingly, each system has its own cycle of formation and development, covering the period of time from the origin of the system to its complete destruction. It is this cyclical existence of systems and the degree of their resistance to the influence of various factors, are stipulated by the fact that each of them can be self-reproduced. On the other hand, if the newly

formed system is not different from the previous one, the cycle of all development is called symmetrical or conformal, and accordingly, the development itself is extensive. In its turn, if new properties appear in the system, then such cycle will be called asymmetric. It acquires the so-called imbalance of properties: the cycle contains elements with "old" properties and elements with new ones. Consequently, the system becomes more perfect, and its development – intensive.

To understand better the whole process of innovative activity and the significance of innovations' role in the development of the agrarian economy, it is important to define the concept of "investments in innovation-oriented development". In our opinion, this term involves not only the main process of mastering innovations, but also the formation of a system of factors and conditions necessary for their successful implementation, *i.e.* the availability of investment potential and ensuring its sustainable development. Accordingly, one of the main factors in the formation of innovation potential is the social and economic adaptation of economic systems to the necessity of developing and using well-grounded investment decisions in the innovation and technological process.

The whole process of innovation development is principally nonlinear and non-uniform, and that is why it can be represented in the form of a wave, when, having appeared at some point, both the innovation itself and the consequences of its use spread. First, the impact of innovation grows, after that it stabilizes and finally fades. In a nonlinear model of innovation development, the emergence and development of innovations can have any sequence, when applied developments or research can lead to scientific searches, or new products require investigations or laboratory testing, which needs the whole network of relationships and interactions of subjects and objects of the innovative process, as well as the corresponding institutions of innovation-oriented development (Figure 1).

Figure 1. Nonlinear model of the process of investing in the innovation development of the agrarian production




*Source*: composed by the authors

As the Ukrainian experience shows, the institutional structure of the society inadequate to the requirements of economic development, turned out to be a serious obstacle to positive structural changes in the economy. Many progressive ideas and attempts of transformations failed precisely because of the incompliance of the entire system of social institutions (not just its individual components) to the requirements and tasks of the society's key areas of functioning. This is what impedes most of all the innovation development of all spheres and prevents from the success of technological and structural modernization of Ukraine's economy.

Accordingly, in the formation of a new technical and economic paradigm of economic development, the problem of institutional intensification of innovation development comes to the fore. The task is to create institutional conditions for the formation of innovative and economically active market entities whose activities are aimed at constant and radical renewal of the real economic sector.

The world experience also shows that only those countries that make timely decisions on the investments reorientation to new promising technologies of the emerging system will benefit from highly technological development. The solution of this problem is impossible without the formation of a whole institutional innovation-based system, which, regardless of the circumstances, would automatically ensure the presence and implementation of new knowledge and technologies in the real sector of the economy.

Thus, institutional intensification is a prerequisite for the legal securing of economic entities with the freedom of economic choice, and at the same time determines the level of their responsibility for the results of economic activity. Institutional intensification also means constant updating of the necessary regulatory-legal framework for

the rational behavior of economic entities, the creation of stimuli for highly productive activities. But the main thing is that the institutional system must create an effective mechanism for investing large-scale technologies and other innovative changes, intensifying production processes and acquiring new knowledge, new technologies and their practical application. Thus, institutional intensification must be aimed at creating institutional mechanisms for interaction between the society, the state and business in order to rapidly increase the country's economic potential by introducing innovations, and ensuring the automatic adaptation of the economic and political system to the new conditions of competition. Institutional intensification of innovation development involves the formation and active interaction of the whole complex of actively interacting institutes.

In the processes of institutional intensification of innovation development, the functioning of such financial and coordinating institutes of innovation development as techno-parks, research centers, and technology centers is becoming increasingly important. The institute of science is the most important factor in the institutional intensification of innovation-oriented development. The importance of this institute consists in the fact that it enables to go over to fundamentally new breakthrough projects that would be adequate to modern high-technological challenges, and thus would allow "leave behind without overtaking". Accordingly, in the modern conditions of institutional transformations, the process of investment support of the agrarian production innovation development, the purpose of which is ensuring the sustainable development of economic entities in the branch and achieving food security of the country acquires special urgency. Modern economic development is closely connected with investing in the agrarian production innovations that is a systemic and consistent process in implementing investment and innovative projects, stimulating the investment activity of economic entities aimed at providing competitive advantages for a long-term period.

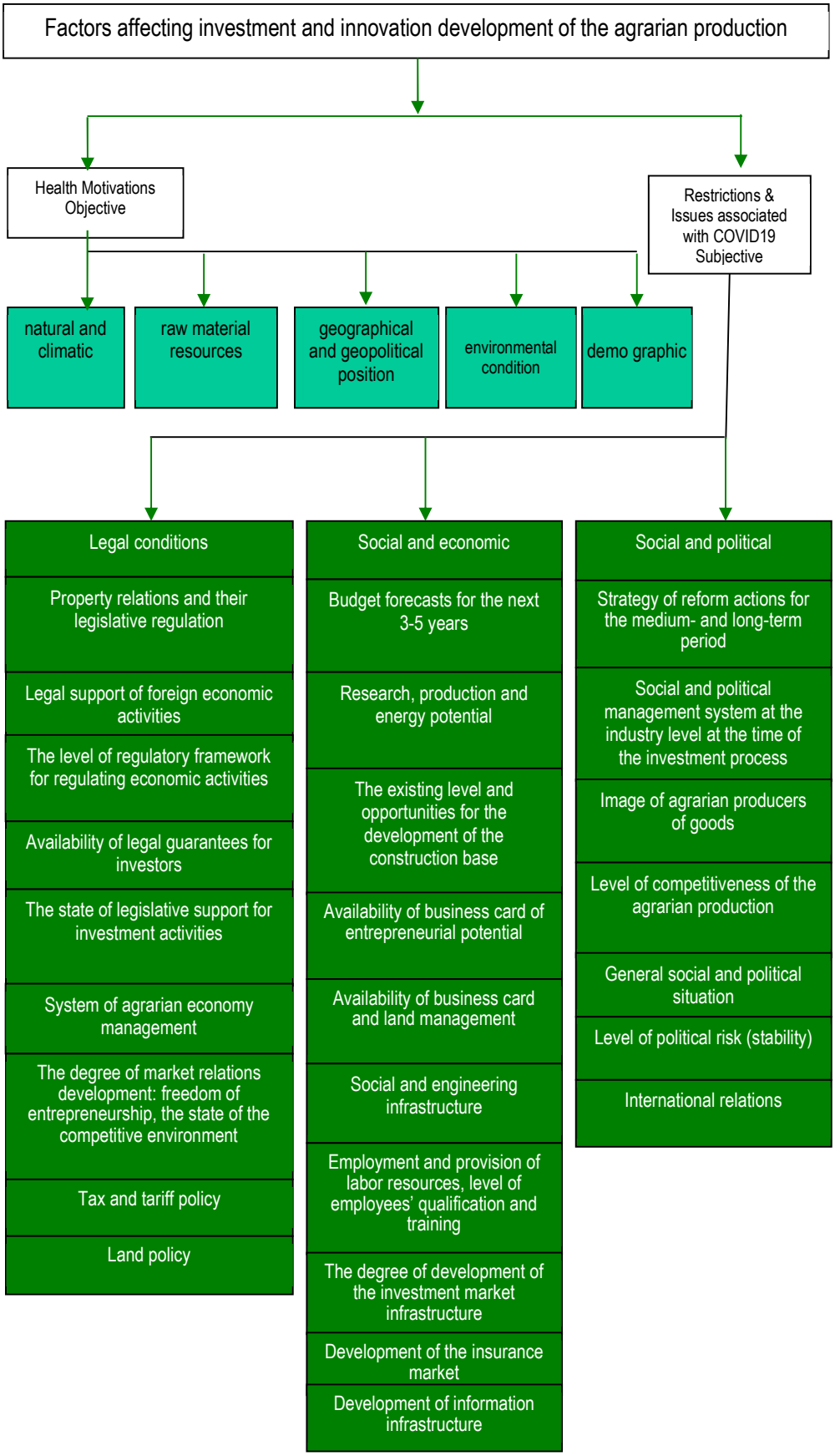
Sharing the opinion of the majority of well-known scientists in this field, we believe that solving complex strategic tasks in the agrarian sector of the economy is possible only through the use of innovations to ensure the complex interaction of science, education, and agrarian business. Further highly technological development of the agrarian production requires a comprehensive regulatory and legal, scientific and methodological regulation of innovative relations. Nowadays, there is a lack of full coordination between the real requirements of the studied industry and the actions of state and commercial research institutions, which to some extent is a modern reflection of the imbalance of the entire investment and innovation system. Consequently, the low level of innovative activities of the agrarian production entities is also the result of the imperfect financial system, as any innovations require, first of all, significant capital investments. Accordingly, the active role of the state bodies is extremely necessary, primarily, by creating the concept, strategy, and mechanisms of investment support of the agrarian production innovation development, as a leading link of the whole economy.

The process of investment support for innovation development of the agrarian production is influenced by many factors that have different effects on investment and innovative processes. Some factors favor the investment activity, and they can be characterized as positive, while others hinder the development of the investment process and are negative in this regard. Given the diversity and heterogeneity of these factors, the high degree of their uncertainty, the study of these factors is a complex scientific and practical problem. In this connection, in economic science, all factors influencing social and economic systems are somehow united (classified) into homogeneous groups: external factors; internal factors, etc.

As we have established, the problem of investments in the agrarian sector of the economy is not limited to attracting capital from other sectors. This is a problem of both inter-sector and intra-sector capital flows within the agrarian sector branches, each of which uses its own specific production processes. One of the important aspects that have a significant impact on the direction of using investments is the biological nature of the agrarian production. Therefore, an important condition for determining the direction of investments must be taking into account the peculiarities of the agrarian production. These forms the specifics of the pricing mechanism, including investment resources, which must take into account investment risks. Accordingly, the agrarian production is unattractive to investors without the using of Government instruments to regulate investment processes.

In our opinion, the factors that affect the process of investment support for innovation development of the agrarian production are divided into objective and subjective, first of all, according to the possibility of influence on them by the society (Figure 2).

Figure 2. Factors affecting the process of investment support of the agrarian production innovation-based development

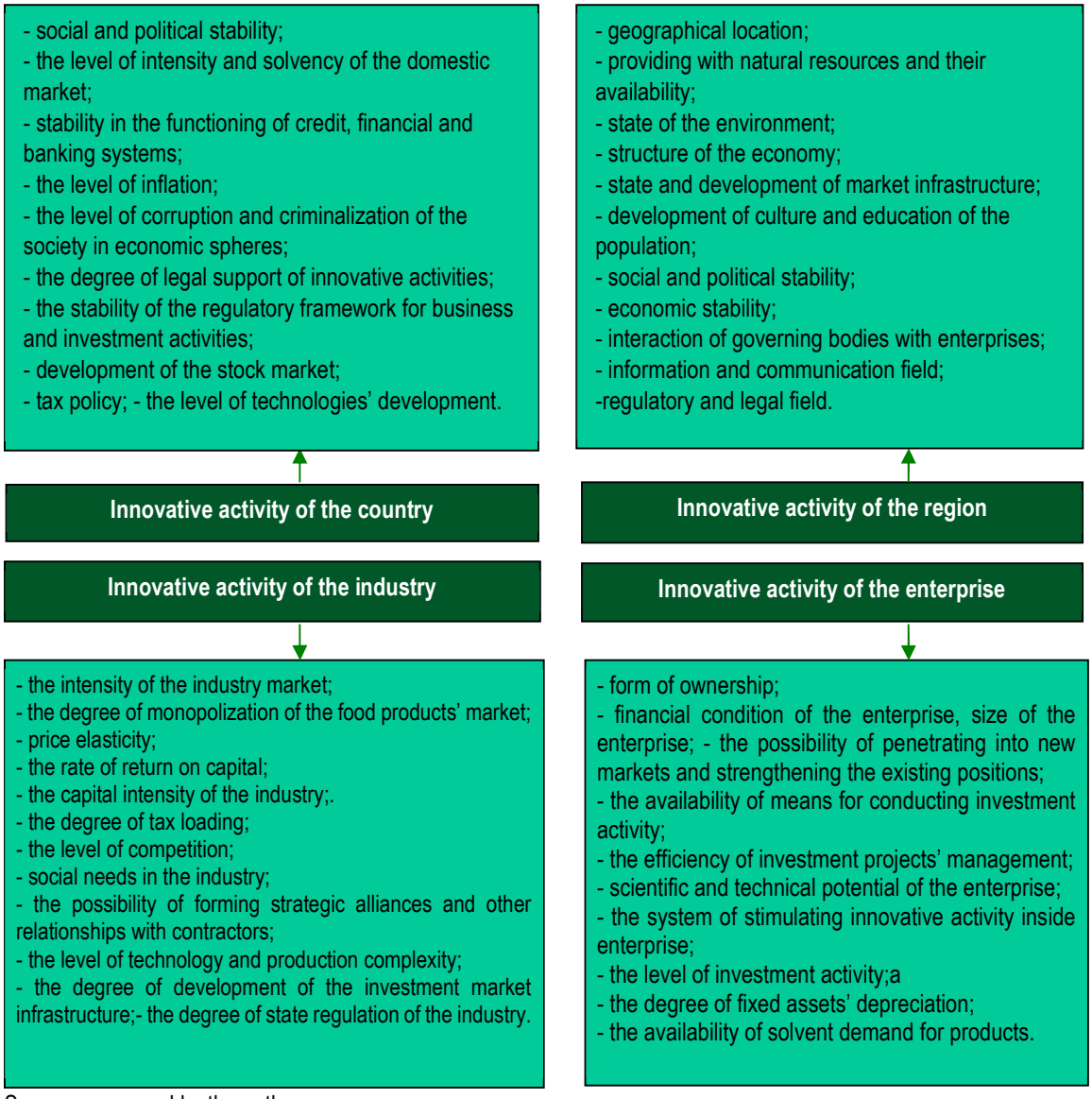



*Source*: composed by the authors

Objective factors are the availability of raw materials and climatic conditions. Objective factors that hold back investments in innovation development inherent in the agrarian production are the following: pronounced seasonality; long production cycle; slow investment cycle; high capital intensity of products; natural and climatic, demographic factors, and others. Subjective factors, in their turn, are connected with management activities. External factors are practically uncontrollable and unmanageable from the standpoint of enterprises that must adapt to them. Among the external factors influencing investment in innovation-based development, economic, political and legal, market, technological, social, and environmental should be mentioned.

Dynamic processes are constantly taking place in the external environment. Some of these processes open new opportunities for the system development and create favorable conditions for it. The other part, on the contrary, creates additional difficulties and limitations. Under the internal factors, the complex of elements inherent in the economic system is understood, which determine the processes of its functioning. The internal factors may have the potential that enable the economic system to function, survive and develop over a definite period of time. However, the internal factors can also be a source of problems if they do not ensure the optimal functioning of the system. The main internal factors that determine the process of investment support for innovation development in the agrarian production include: the financial and economic condition of enterprises and the industry as a whole; the level of organization and management at enterprises; the condition of material and technical base; the system of production relations between economic entities; staffing, etc.

Figure 3. Factors that determine innovative activity at different levels




*Source*: composed by the authors

In the current conditions, the revival of investing process in the innovation development of the agrarian production is a key problem, as such a capital-intensive sector of the economy as agrarian, cannot function properly and develop intensively in the absence of the necessary conditions. In this connection, the creation of favorable innovative climate in the country means the use of innovations as a tool for further outstripping economic development.

To the present time, the economic literature has not developed a single approach to defining the concept of "innovative activity". We propose to understand the degree of participation of goods' manufacturers in implementing innovative activities as a whole or its individual types for a certain period of time through using investments. Innovative activity at different levels is determined by the following factors (Figure 3). First of all, in our opinion, innovative activity should be considered in the narrow and broad sense. In the narrow sense, innovative activity should be understood as a complex result of reflecting the dynamics and current state of the business entity and the degree of implementing innovative technologies. In the broad sense, innovative activity is the system of financial, economic, political, social and managerial relations arising from the expediency of developing and introducing innovations by a particular business entity. Innovative activity in the agrarian sector is understood as a generalized characteristic from the viewpoint of novelty, prospects, profitability, efficiency and minimization of the risk of investing funds in the agrarian production.

There are quantitative and qualitative factors affecting innovative activity. When analyzing quantitative factors, statistical methods should be used to assess the influence of factors on the target parameter. In this case, two conditions must be met: the estimated parameter must be quantified and have data that enable to create a homogeneous and representative selection. By the nature of the impact on the innovative activity indicators, it is more convenient to unite the factors into two groups – favorable and unfavorable. With increasing values that characterize the favorable factors, crop yields or animal productivity increase, labor productivity grows, labor intensity, material consumption, manufacturing cost of products decrease, the level of profitability increases. With increasing the values of negative factors, crop yields or animal productivity may decrease; other indicators that characterize economic results also deteriorate (Table 1).

Table 1. The system of factors that form the innovative activity of the agrarian production

| Positive | Negative |
|---|---|
| At the level of economic entities | |
| Natural conditions. Biological opportunities. Agro-technical prerequisites: zoned varieties, crop rotations, fertilizers, herbicides, toxic pesticides, tillage techniques and methods, soil preparation for sowing, crop care, and crop harvesting conditions. Economic: capital-labor ratio, specialization, material and monetary expenses, insurance stocks, associations of owner and employee (farmer, shareholder of the enterprise), rational combination of industries. | Factors of microclimate, relief, soil deterioration, which increase negative economic fluctuations. Organizational: errors in agricultural technology, economics, management, violation of environmental conditions, lack of agro-zoo-technical and other knowledge, careless work. |
| At the industry level | |
| Rational placement of production, price and credit regulation. Agro-technical regulation. Monitoring of dynamics' fluctuations and trends. Rational insurance reserves. | Climatic risk factors: droughts, floods, hot dry winds, dust storms, freezing. Errors in price, credit and tax policies. |
| At the state level | |
| Foreign trade. Creation of the state insurance stock of products. Price regulation. Credit and subsidy regulation. Tax policy. Distribution of the state order. | Political crises. Economic crises. Mistakes in price and financial policy. Location of the country in the region of risky farming connected with climate changes. |

*Source*: composed by the authors

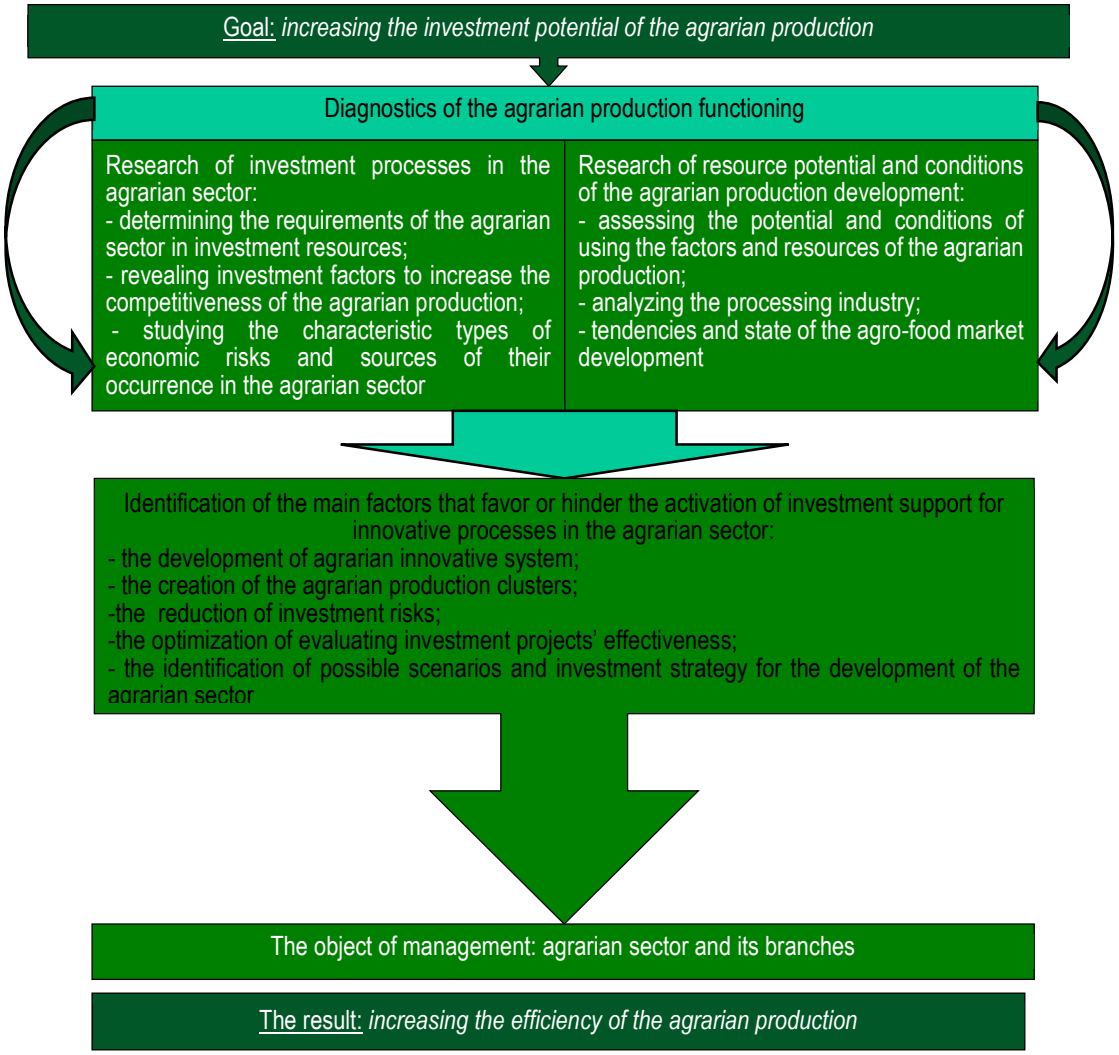
The study of the whole complex of factors that determine innovative activity is rather complex. In order to limit their number, it is expedient to use the expert method, in particular, Delphi method. To assess the factors that determine innovative activity, it is possible to form a group of experts from leading specialists who have large experience in the field of innovations' development and innovations' investment. As a result of the work of this group, the marked factors at various levels are determined.

The development of all activities in the agrarian sector is influenced by a complex of different factors of micro- and macro-environment, and their optimal combination provides an opportunity for economic entities and separate industries to work effectively. Accordingly, in our opinion, it is necessary to strengthen the state regulation, improve land relations, and solve the problems of social development in villages and rural areas.

At present, in the conditions of institutional transformations, globalization of the economy and intensification of production, considerable attention is paid to the problems of the agrarian economy development, its ability to react effectively to changes taking place in the environment. The development strategy can be considered as a totality of actions, necessary to ensure the development of the agrarian production based on the choice of criteria for increasing its innovative potential.

Currently, a specific type of reproduction is formed in the agrarian sector, which is characterized by the predominance of simplified technologies and low level of enterprises' creditworthiness. In this situation, direct producers are practically unable to change independently the situation in the investment sphere, as the main reserves of financial production recovery are beyond their competence and responsibility. The study of different theoretical approaches to the development of investment processes in the agrarian sector made it possible to substantiate the conceptual bases for the formation of the economic mechanism of their regulation (Figure 4).

Figure 4. The concept of creating the economic mechanism for regulating investment support of the agrarian production innovation development




*Source*: composed by the authors

The main purpose of the proposed concept is to restore and develop the investment potential of the agrarian sector to ensure its sustainable competitiveness. According to the proposed concept, the economic mechanism for regulating the investment process in the agrarian sector includes: the diagnostics of agriculture, agro-food and investment markets' functioning; the identification of factors that favor or hinder the activation of investment activities in the agrarian sector; the development of agrarian innovation system; the reduction of investment risks by the formation of production clusters and the development of measures aimed at stimulating their development; the optimization of the procedure for assessing the effectiveness of investment projects in the agrarian sector; the

substantiation and lobbying of the investment strategy for the development of the agrarian sector in modern market conditions. So, the economic mechanism for regulating investment processes in the agrarian sector is a system of interaction between the state bodies, industries and enterprises, which ensures attracting investors in the interests of expanding and modernizing the existing or creating a fundamentally new production using innovative technologies and manufacturing new types of products. The mechanism of attracting real investments in the agrarian sector is understood as a totality of consecutive actions to evaluate the financial and investment stability of economic entities in the branch, the choice of strategy for the formation of investment resources, the calculation of financial and economic efficiency of the investment project as well as investment monitoring. The effectiveness of such a mechanism will depend on high-quality work at each stage.

Thus, ensuring the sustainable development of the entire economic system is achieved through effective management of its major industries. The objective prerequisite for the availability of reserves in the development of the agrarian production is the law of declining efficiency of evolutionary systems' improvement, when technological and evolutionary changes penetrate everywhere and further on the movement becomes evolutionary. The structural sources of the agrarian sector economic development are the following: the development based on all factors of production; based on the use of investments; based on the improvement of innovative activities. Modern strategic management of the agrarian production envisages the development of the strategy that determines the most expedient directions, methods and ways of using investment resources in the process of surplus value production, aimed at constant introducing scientific, technical and other developments in order to master production and sell competitive innovative products, increasing their quality, constant improving production technologies, and occupying the optimal niche by economic entities of the leading sectors of the national economy both on the internal and foreign markets.

## Conclusion

Solving the important scientific task as to the development and substantiation of theoretical and methodological bases of investment support for innovation-oriented development of the agrarian production were considered in the study. The research results allowed us to draw the following main conclusions:

1. The main purpose of investment support for innovative activities in the the agrarian production is to create optimal conditions for the development and activation of using innovative potential based on investments. Investment and innovation development in the agrarian production involves the interaction between entities as to generating or transforming investment objects (investment and innovative products).

2. The main principles of investment support for innovation development of the agrarian production should be the following: purposefulness, unity, mutual influence, movement, adaptability, recognition, efficiency, diversity, systemic character, manageability of actions, complexity, social, environmental and economic security. In addition, we propose to take into account the principle of balanced development in the agrarian production, which will enable to implement investment policy in the agrarian sector in terms of activating investment advantages and continuous mastering new knowledge and innovations, taking into account industry and regional peculiarities.

3. The peculiarity of investment support for innovation development in the agrarian sector is the nature and form of organizational and economic mechanism of investing in the agrarian production. The organizational and economic mechanism of investing in the agrarian production has to be understood as a system of economic forms and methods of organizing investment, forecasting and planning, controlling, and movement of capital. These processes are managed at constant changing of the internal and external conditions of the investment market. In modern conditions, ensuring sustainable development of the agrarian production and competitiveness of products in the industry is becoming especially important along with the profit, as a criterion for investing in the agrarian sector,

4. As a result of the conducted research, the concept of the economic mechanism of investment support for innovation development of the agrarian production was developed, the main purpose of which is to restore and develop investment and innovative potential for increasing the efficiency of the agrarian production. According to the proposed concept, the economic mechanism for regulating investment and innovative processes in the agrarian sector includes: the diagnostics of the agrarian sector and agro-food market functioning; the identification of factors that contribute to the systemic activation of investment processes; the development of agrarian innovative system; the reduction of investment risks; the optimization of management decision-making system in assessing the efficiency of investment and innovative projects; the substantiation of strategic elements of investment support for the agrarian production innovation-oriented development.

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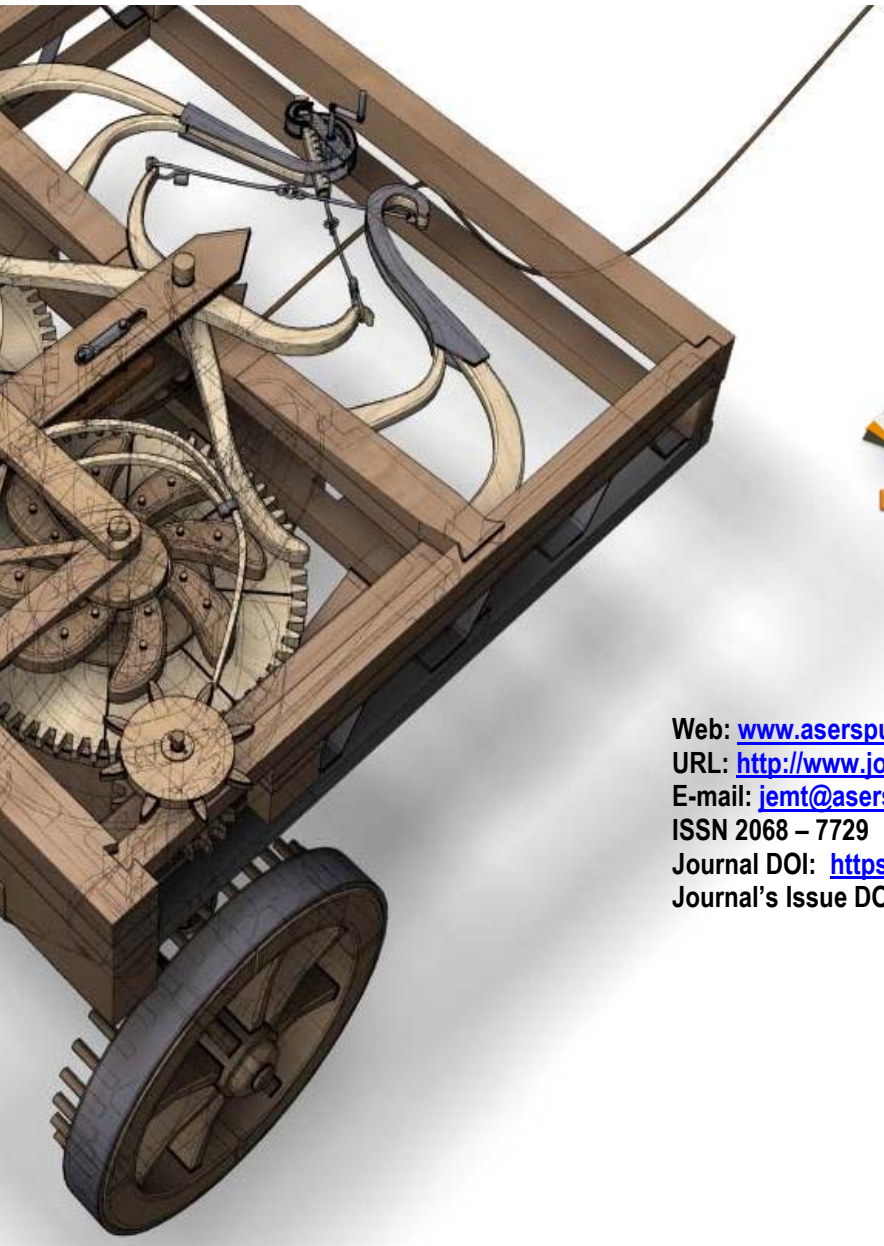

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