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## **Evaluation of the effectiveness of crediting management system of agrarian enterprises**

**Abstract.** *The state of governmental support for crediting of agricultural enterprises is analyzed. A comprehensive analysis of the state of agricultural enterprises crediting is carried out in all possible areas that allows to solve the main problems of agricultural enterprises crediting in Ukraine and shortcomings in the management of financial and credit relations at different levels and to identify the main factors of influencing the development and priority directions of crediting development. The complex of tasks for assessing the effectiveness of crediting management system of agrarian enterprises is determined. The three-level management system for the agro-industrial complex is proposed: agrarian enterprises - the object of management, regional bodies - the subject of the first level management, the state - a higher level management subject.*

**Keywords:** *economics, innovation and investment activity, economic security, subjects of agribusiness.*

**Formulation of the problem.** In order to ensure a sustainable development of agriculture, as confirming the experience of different countries, state support is needed.

In Ukraine, the direct state financial support of agricultural enterprises is carried out through the programs of loans reduction and compensation of leasing payments. Loans reduction is carried out by subsidizing interests. Compensation of leasing payments is carried out by partial reimbursement of paid amounts on condition of financial leasing.

The main problems of credit provision of the agrarian sector of the economy are the complexity of obtaining state support, which is based mainly on targeted subsidies, the possibility of corruption, the imperfection of the agro insurance system, the incompleteness of land reform, the lack of a single register of land plots and their legal owners. Agricultural enterprises crediting is carried out, for the most part, as short-term in connection with the complexity of risk assessment, the complexity of determining the scope and component of loans.

In this regard, there is a need to build an instrument for crediting business entities of the agrarian sector, which should ensure the continuity of management process, the parallelism of the implementation of various tasks, association of the entire set of synthesis processes of the development strategy of the state agro-industrial complex into one integrated complex, as well as estimation of the level of creditworthiness of agricultural enterprises and credit efficiency.

**Analysis of recent research and publications.** The management of the agro-food system of Ukraine and its development directions is investigated in the work of Katan L.I. [1].

The state and prospects for the development of investment and innovation policy are investigated in the works of Blakstad S. [2], Bose S. [3].

Domestic experience and experience of other countries on modern trends in the development of socially responsible investments are described in works of Lazar Ju.V. [4].

Modeling the optimal level of financial support for the innovation activity of Ukrainian agrarian enterprises is investigated in the works of Davidenko N. et al. [5].

Problems of state support of Ukrainian agribusiness, namely: Formation of state support program are researched by Kiriieieva E.A. et al. [6], Pronko L. et al. [7].

The dependence of the productivity of agricultural sector on the influence of credit and investment resources is investigated in the works of Sakhno A. et al. [8].

The experience of Western European countries concerning innovation and investment policy in agriculture is considered by Hvolkova L. et al. [9], Sira E. et al. [10], Van Der Meulen H. et al. [11].

The essence of sustainable investments, business models for sustainable financing and assessment of a sustainable investment project is described in the works of Ari I. et al. [12], La Torre M. et al. [13], Tseng M.-L. et al. [14], Grzeszczyk T. A. et al. [15].

The role of innovation as a connection between the internal and external environment in agribusiness is considered by Alston J. M. et al. [16], ayodele O. J. et al. [17].

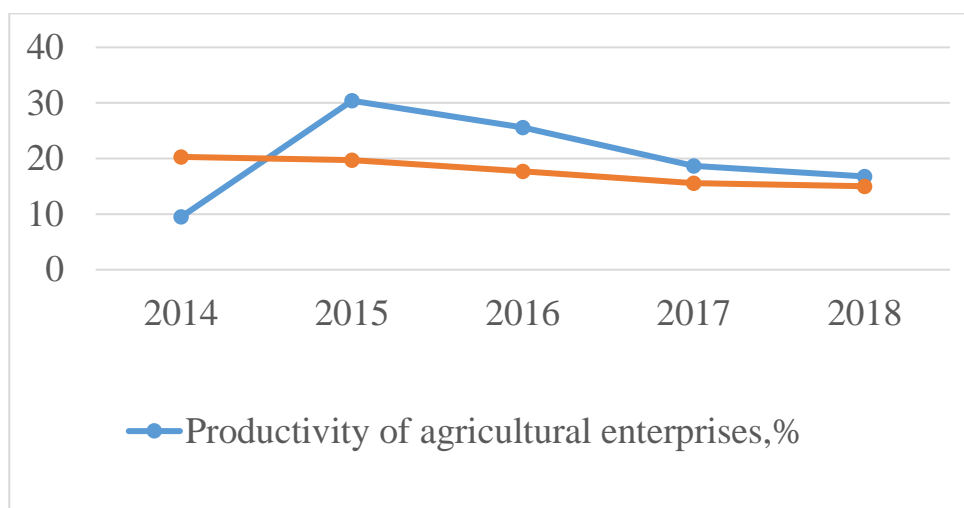
Innovative management approaches and their influence on agribusiness performance are considered in the works of Jankelova N. et al. [18].

Modern financial and credit instruments of influence on the investment climate of Ukraine are researched by Shvayko M. et Grebeniuk N. [19].

Improving the state influence on financial and credit provision of grain market development in Ukraine is investigated by Kovalenko M. et Marenych T. [20].

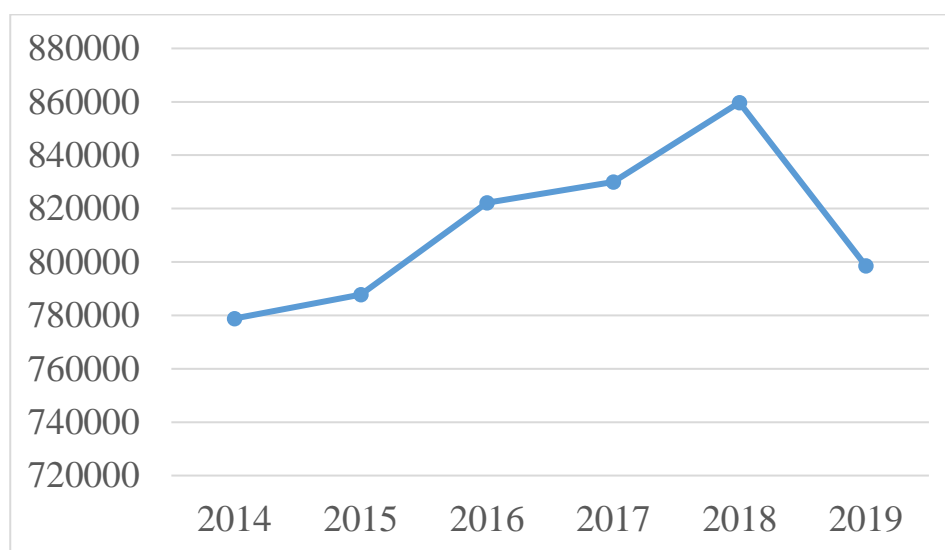
**The purpose of the article.** The purpose of the article is to assess the effectiveness of the crediting management system of agrarian enterprises to ensure economic security of agribusiness subjects based on an increased competitiveness.

**Presentation of the main research material.** To ensure a sustainable development of agriculture, as confirming the experience of different countries, state support is needed (see Fig. 1 and Fig. 2).



**Fig. 1. Dynamics of interdependence of the average weighted annual rate on loans to agriculture, % and profitability of agricultural enterprises, %**

*Source:* Built by the authors based on [21, 22]



**Fig. 2. Loans granted by non-financial corporations, mln. UAH**

*Source:* Built by the authors based on [22]

Financial support is provided on a competitive basis for a term of three to five years for the production, processing and marketing of produced products, production activities; for a period of up to five years - for the purchase of machinery, equipment, renewal of working capital, including buying mother livestock of agricultural animals and

assessment of compliance with organic products (raw materials), production and processing of agricultural products, construction and reconstruction of production and non-productive premises, for perennial plants, development of credit and service cooperation, in particular to pay mutual contributions to the social funds of agricultural cooperatives formed by farm enterprises independently or together with members of personal peasant farms, irrigation and land melioration.

The decision to provide financial support to farms is made by the Ukrainian State Fund for Farm Enterprises (Ukrderzhfond), a state budgetary institution that performs functions on implementing a state policy to support the formation and development of farms. It has regional departments in various fields of Ukraine.

Among the measures of state support of crediting of agro-industrial enterprises, it is worth noting the approval of the order of compensation in the event of purchase of agricultural machinery by such enterprises. In accordance with the approved procedure, agribusinesses are planned through banks of partial (20%) compensation for the cost of technology, if the level of localization of production of this technique in Ukraine is more than 35% [21]. For this purpose, an enterprise only needs to submit an application and supporting documents on the acquisition of technology. After receiving the relevant documents of the Ministry of Agrarian Policy, within a month, it transfers funds from the State Bank, which for a one-day term compensates for the agricultural producer 20% of the value of the purchased technique without VAT. The proposed support of 20% operated in 2017 for enterprises with a degree of localization of 35%, in 2018 - 45%, in 2019 - 55%, at 2020 - 60%. By taking such steps the government plans to give an incentive to develop to both manufacturers of technology and agrarians.

Analysis of state support for crediting of agricultural enterprises allowed to make the following conclusions:

- the system of state support for agriculture in Ukraine is a complex and in a greater extent based on subsidies for certain types of products, which leads to high operating expenses and also enables the emergence of corruption schemes;

- the general level of manufacturer` support is limited, but is aimed to reduce tax pressure on export-oriented enterprises and protection of domestic manufacturers;
- there is no legislative framework for agricultural enterprises crediting, there is insecurity at the legislative level of creditors and landowners;
- State policy in the field of agro-industrial complex is unstable, unpredictable and opaque, reforms are not effective.

The promising direction of agricultural enterprises crediting is lending at the expense of resources of foreign banks. By 2016, this type of lending in the agrarian sector AIC had rarely been used, indicating a lack of potential opportunities use and benefits of this source of credit funds.

Implementation of the project will allow to get such results as [21]: involvement in the agrarian sector of economy of medium and long-term financial resources; support for small and medium-sized enterprises; introduction of measures to modernize existing production and to create new production capacities; development of infrastructure and logistics; improvement of the balance of payments through an increase in the export potential of the country (grain and oilseeds) and a decrease in imports (fish farming and aquaculture); an increase in tax revenues to the country's budget; improvement of business climate and creation of prerequisites for investment activity intensification.

Loan users will be small and medium-sized enterprises of agricultural industry, whose projects are scheduled to allocate up to 70% of credit funds, the rest - for public sector projects implemented through research stations, laboratories, monitoring and fish enterprises management.

During the selection of projects, the advantages will be provided by the following areas: production of cereals and oilseeds; production and modernization of power for drying, purification, sorting and testing of cereals and oilseeds; reconstruction of production capacities of aquaculture and fish farming; equipment and infrastructure for fish processing and canning; research stations, test laboratories, equipment for research and professional training, agricultural knowledge and certification services, systems for

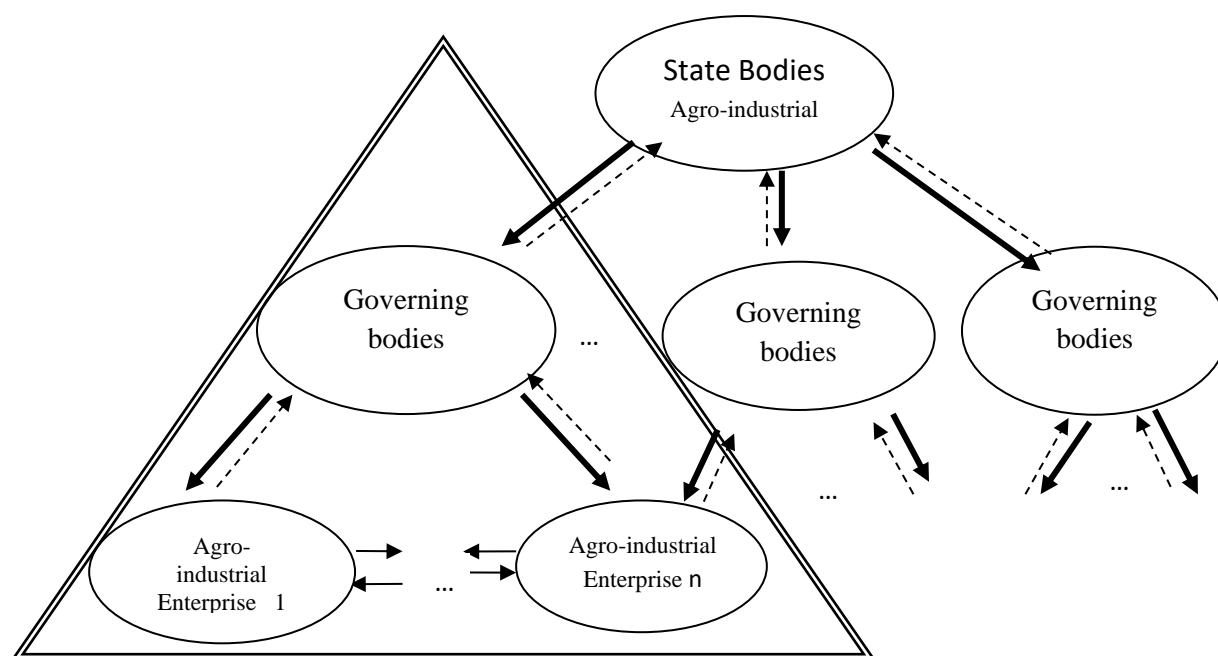
fisheries monitoring. Unfortunately, it is practically impossible for small and medium-sized enterprises in the field of agriculture to receive credit funds from foreign banks. In the market of foreign credit resources, they can not compete with large enterprises (including agro-holdings).

One of the tasks of studying the state of development of agricultural enterprises crediting in Ukraine is to identify the benefits and prospects for the development of non-bank crediting of agrarian enterprises. It is necessary to evaluate the state of use of non-bank crediting (credit unions, leasing, insurance, factoring companies) to determine the entire complex of problems in this area by levels and to develop of a set of preventive development measures.

In order to develop credit relations in the agrarian sector of economy, ensuring the creditworthiness of borrowers and transition to the new forms of solving financial and economic, environmental and social problems of a region, it is necessary to develop a responsible policy of problems solution regarding the management and development of financial and credit mechanisms by activating the interaction of state and regional bodies and business entities. Consequently, the crediting management system of the agrarian sector of economy is a set of financial and credit relations and must implement the main functions of management arising about the creation of certain conditions for the search, attracting and effective use of financial resources of business entities in the agrarian sector of the country's economy and its separate regions. Based on the conducted research, we can offer our vision of the crediting management system of the agrarian sector of economy by not only taking into account the fundamental and structural elements, but also distinguishing the applied elements that are the characteristics of the investigated system of relations.

The system of credit management of the agrarian sector of economy is considered as a set of state, regional governmental and agrarian enterprises that interact with each other, where each element of the system (state, region, enterprise) is guided by its own purposes during the formation and decision-making and voluntarily interacting with other

participants only in case of obvious benefit for themselves. Thus, the state, the region and agrarian enterprises can be considered as elements of a three-level management system: agrarian enterprise - an object of management, regional body - a subject of first-level management, a state - a higher-level management subject. One of the directions of the research, while analyzing and synthesizing models and mechanisms of management of the purposefulness of socio-economic system participants behavior is the theory of active systems. The theory of active systems (TAS) is a section of the theory of management of socio-economic systems, which studies the properties and mechanisms of their functioning, due to manifestations of the system participants` activity. Fig. 3 shows a three-level system of interaction of crediting subjects.



**Fig. 3. Three-level AIC Crediting Management System**

*Source:* Suggested by the authors

In connection with the above-mentioned, there is a need to build an instrument of crediting of agrarian sector business entities, which must ensure the continuity of management process, the parallelism of the implementation of various tasks, association



of the entire set of synthesis processes of the state agricultural sector development strategy, as well as evaluation of the creditworthiness level of agricultural enterprises and efficiency of credit activity.

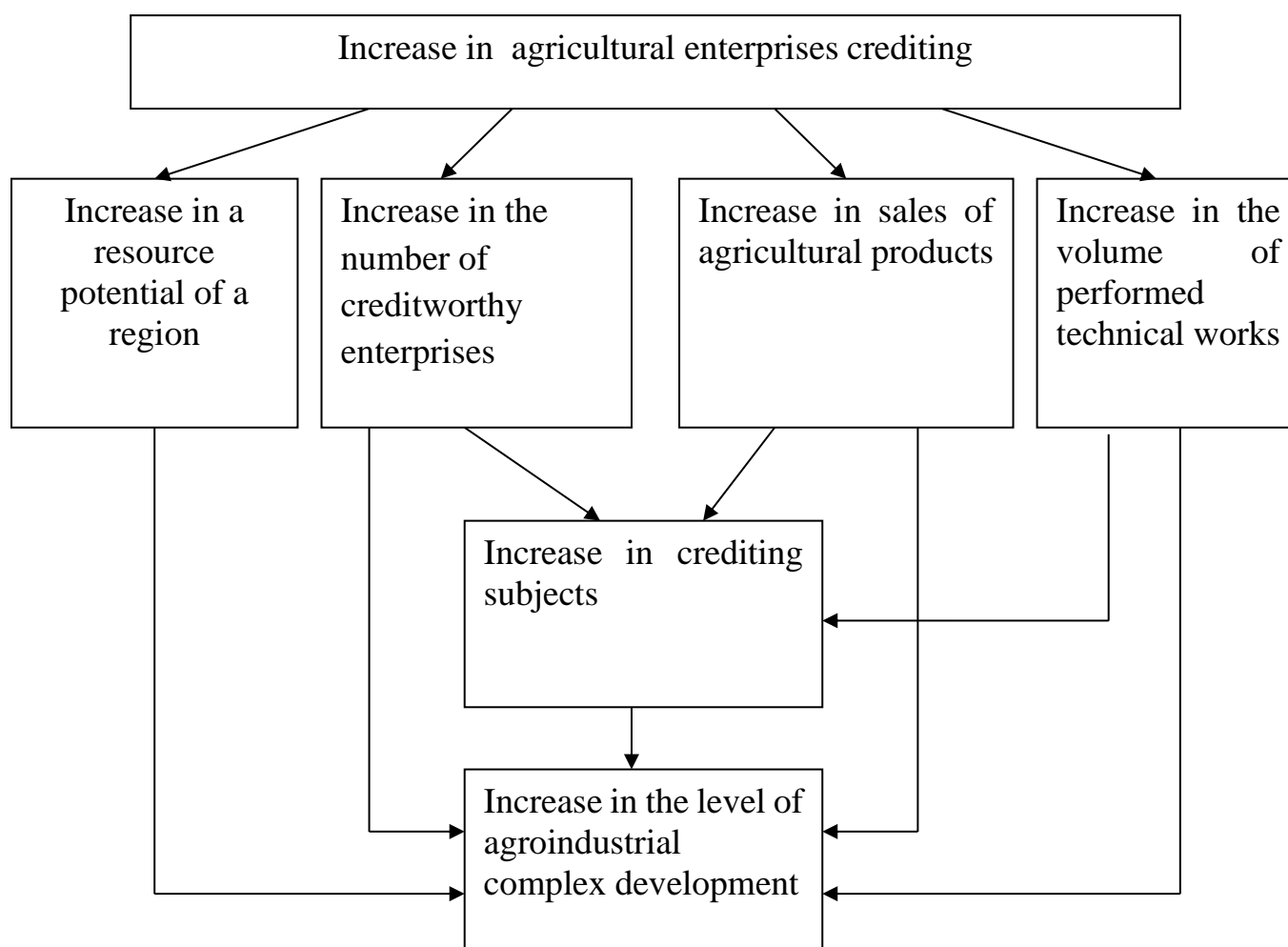
The construction of this toolkit is a central and main prerequisite for effective credit management at all levels. In the economic literature there is a large variety of approaches to the definition of the essence, forms, methodological and instrumental means of financial and credit and credit mechanism of the agrarian sector of economy. The study and generalization of the main approaches to the definition of the essence of the credit mechanism of the agrarian sector of economy is based on a comprehensive methodical toolkit to ensure the organization of mutually beneficial relations between the state, credit institutions and business entities of the agrarian sector of economy on the basis of modern economic and mathematical models. The proposed instrument for crediting the agrarian sector of the economy implementation involves solving a whole range of interconnected problems. Let us consider the scheme of influence of an increase in crediting volumes on the effectiveness of agro-industrial complex (Fig. 4). First of all, crediting volumes are part of the set of indicators that form the resource potential of a region, so an increase in this indicator will increase the potential of a region in this period and affect the growth of the level of performance of the period  $t+1$ .

Thirdly, the growth of agricultural crediting in a region will cause an increase in the results of its implementation, which are expressed by the volume of work on the update of basic production assets and agricultural production.

Thus, improving the instrument of crediting of the agrarian sector of economy in Ukraine provides for the following tasks:

- stimulating the development of diversity of management forms, increasing the role of internal (own) accumulation of enterprises for financing projects;
- improvement of the regulatory framework and forms of state support of priority projects and programs of development of the agrarian sector of economy;

- creation of a favorable investment climate for expanding extra budgetary sources of financing capital investments and attracting domestic and foreign private investments;
- expansion of the practice of joint state-commercial funding;
- control of credit risk management by establishing limits and diversification of loans, introduction of a reliable system of diagnostics of the financial state of a borrower;
- expansion of insurance practices and guarantee support of agrarian programs by the state.



**Fig. 4. Influence of crediting level on the effectiveness of agribusiness**

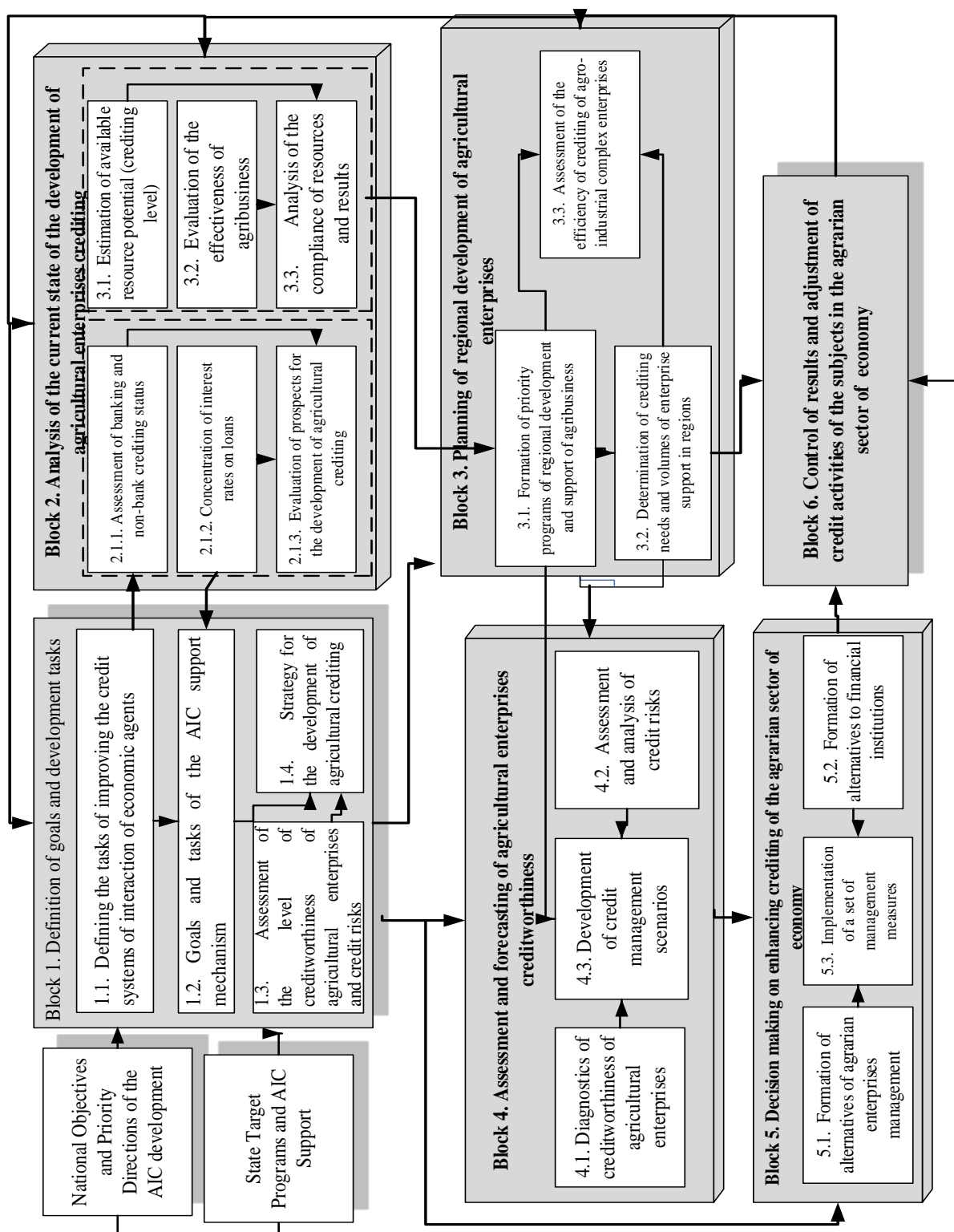
Source: Developed by the authors

Consequently, the economic effect of improving the crediting management system and supporting the agrarian sector is reflected in the growth of both resource potential and the results of the AIC. To take into account the entire number of factors that affect the effectiveness of agribusiness, the assessment of the effectiveness of support should be comprehensive and solve a set of tasks shown in Fig. 5.

Effective performance of functions, compliance with the principles and basic provisions of business entities management in the agrarian sector of economy will provide a wide range of tasks that have a significant socio-economic effect. A complex of tasks for assessing the efficiency of agrarian enterprises crediting management system shown in Fig. 6.

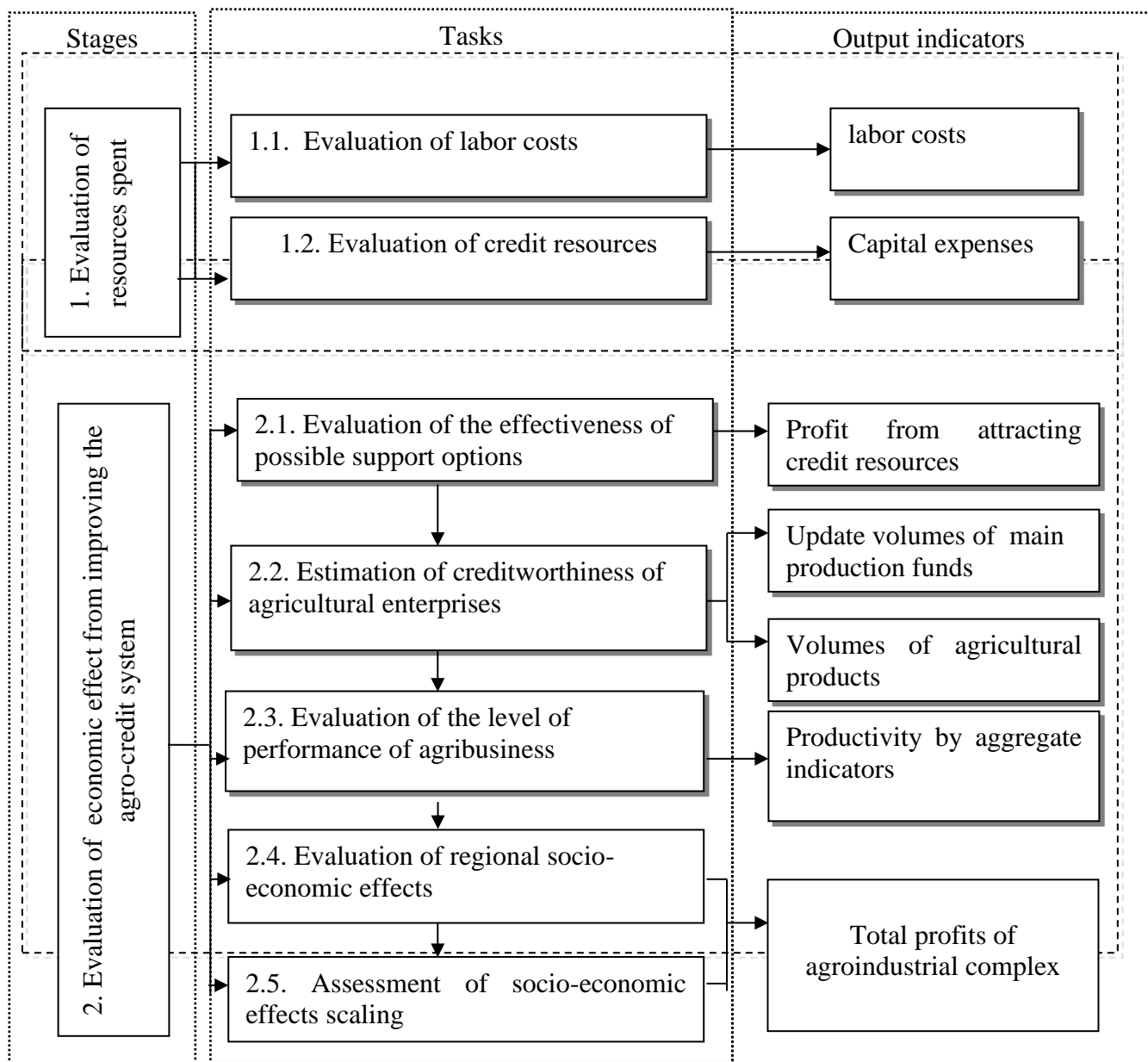
The development of ways to improve crediting of businesses in agricultural sector requires a comprehensive, systematic approach due to the complexity of life cycle of agricultural enterprises and the need to take into account the peculiarities of each of them, the impact of many risks and various conditions and criteria for management efficiency. The complexity of solving the issues requires the use of a wide range of economic and mathematical methods and models, so the paper proposes a comprehensive conceptual methodology for decision-making in management of external and internal credit factors that provide the consideration of previously identified shortcomings.

The paper proposes to improve the system and structure of credit management of agricultural enterprises at two levels of management hierarchy (creditors and enterprise) by improving the mechanism of credit risk management in combination with the real state of creditworthiness of a borrower. Fig. 7. shows the main blocks of algorithm for decision-making of agricultural enterprises credit management.



**Fig. 5. Methodical instrument for crediting entities of management in the agrarian sector of economy**

Source: Developed by the authors

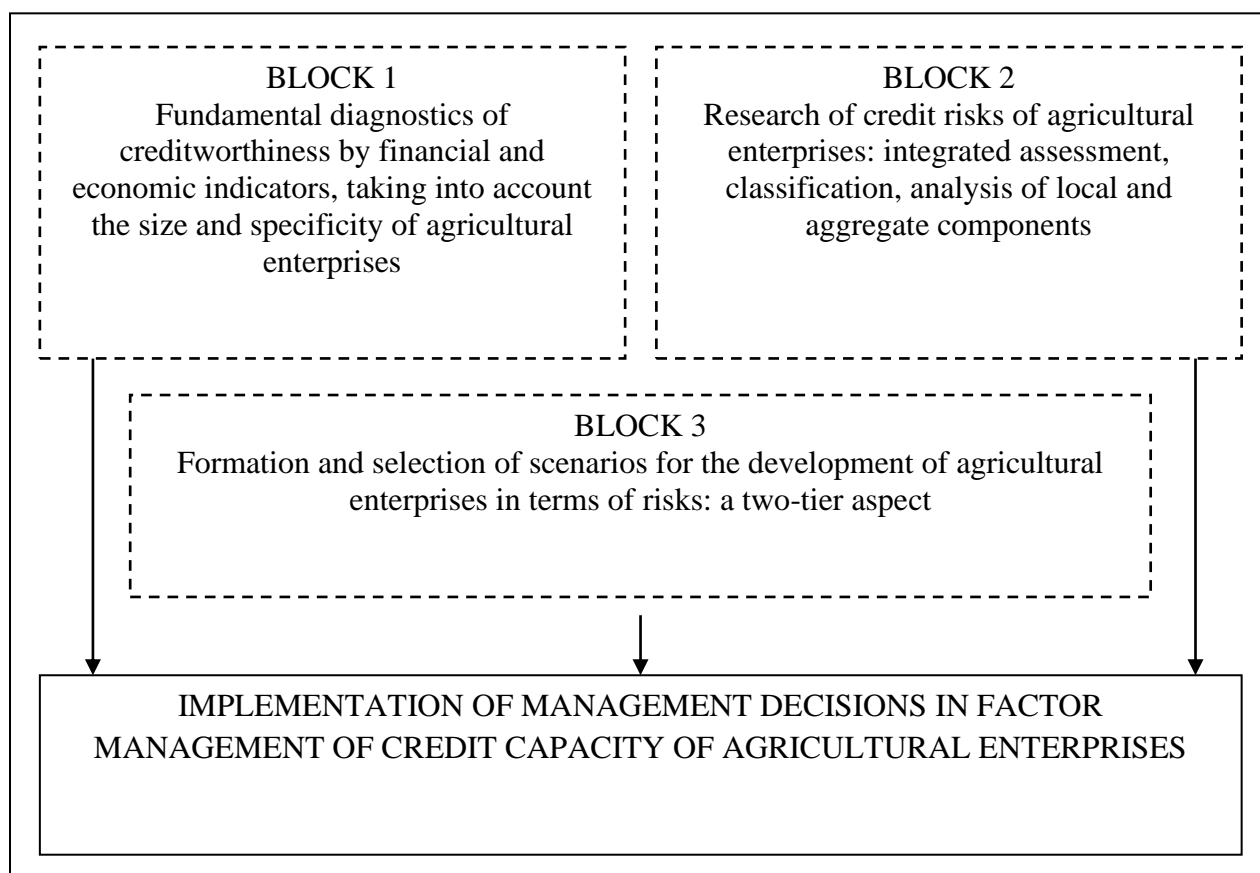


**Fig. 6. A complex of tasks for assessing the efficiency of agrarian enterprises crediting management system**

*Source:* Developed by the authors

The proposed algorithm for decision-making in management of external and internal factors of agricultural enterprises creditworthiness will allow managers to improve the quality and efficiency of managerial decisions, as it provides solutions to such basic tasks as fundamental diagnostics of creditworthiness, financial and economic

indicators. analysis, classification of credit risks of agricultural enterprises by local and aggregate components of external and internal environment, formation and selection of scenarios of business entities behavior in terms of risks based on two-level hierarchical assessment and implementation of managerial decisions on agricultural enterprises creditworthiness management.



**Fig. 7. Algorithm for decision-making of agricultural enterprises credit management**

*Source:* Developed by the authors

To achieve the goals of this research, the paper presents a comprehensive credit management mechanism for agricultural enterprises based on a process approach. The credit management mechanism for agricultural enterprises here is a set of functions for diagnosing creditworthiness, assessing and classifying credit risks, forecasting credit

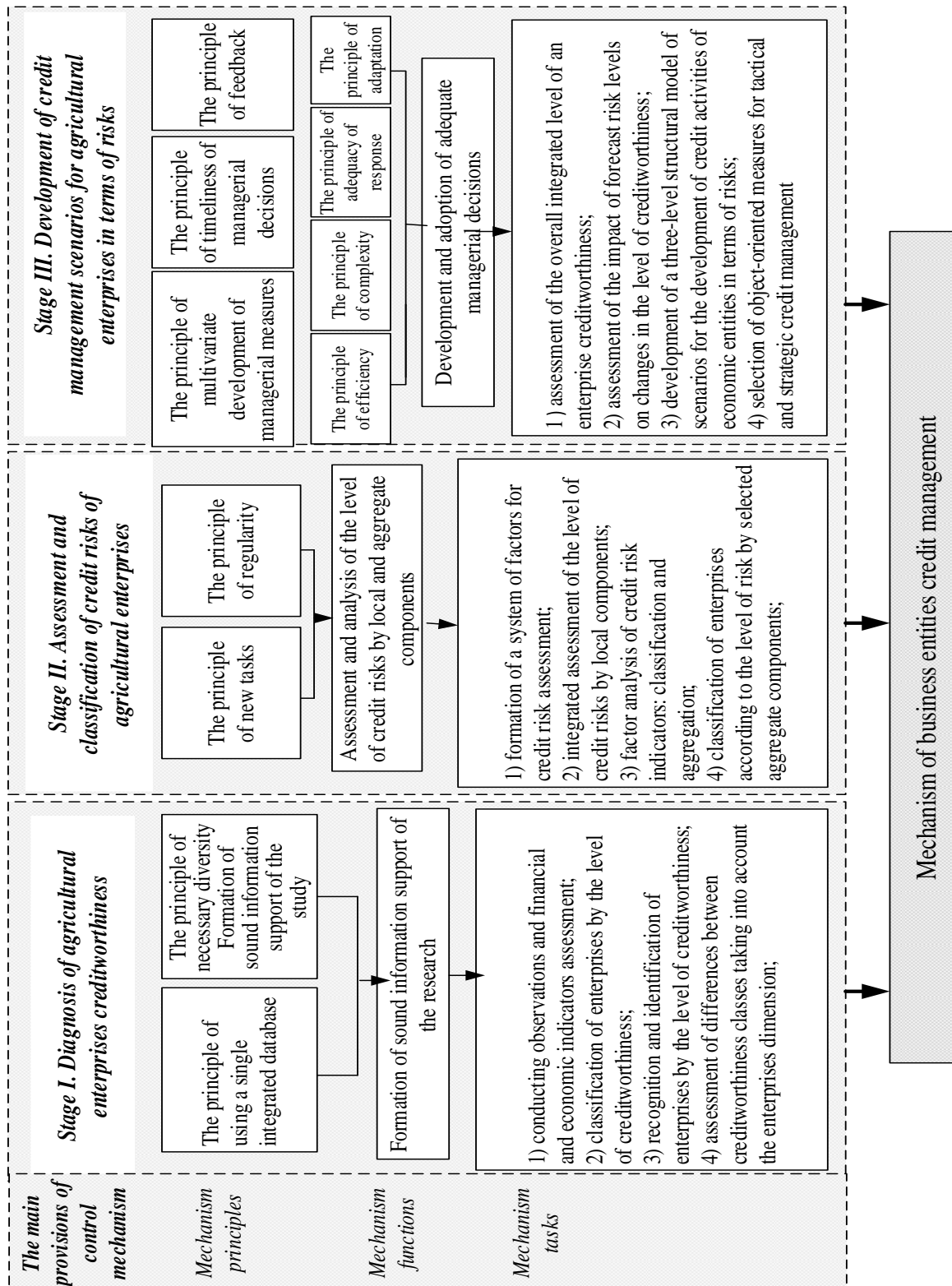
management scenarios and developing measures in terms of risks aimed at the development of credit activities and localization of crises. The basis for the development of this mechanism is a set of defined management principles that form its methodological basis and determine its functions and objectives.

The conceptual scheme of the proposed mechanism covers three complex stages according to a decision-making algorithm. The connection of principles, functions and tasks of the developed mechanism is shown in Fig. 8.

Let`s consider in more detail the essential content of each of the stages of the proposed mechanism for credit management.

Thus, the first stage of implementation of this mechanism is the diagnosis of the creditworthiness of agricultural enterprises. Creditworthiness diagnostics means assessment, analysis and identification of the state, trends and prospects of activity on the basis of a system of indicators in order to form a structured information base for sound managerial decisions aimed at eliminating problems and weaknesses and an adequate use of existing potential and strengths of an enterprise [27]. Thus, the study of the problem of diagnostics of agricultural enterprises creditworthiness allows us to identify the following tasks [28]: analysis and synthesis of indicators that reflect the level of creditworthiness of enterprises; formation of homogeneous classes of enterprises according to the level of their creditworthiness; identification of enterprises by level of their creditworthiness; assessment of differences between classes taking into account the factor of enterprises dimension; implementation of research results for the development of managerial decisions.

The efficiency of agricultural enterprises, as well as the level of their creditworthiness as a result of financial and economic efficiency depends largely on the level of risks, which are determined by a significant number of internal and external factors under their constant influence, which directly affect their goals, tactics and strategy, negative effects of which are a threat of creditworthiness loss [29; 30].



**Fig. 8. Principles, functions and tasks of the credit management mechanism of agricultural enterprises**

Source: developed by the authors



Therefore, in order to determine the leading directions of creditworthiness management policy of economic entities as an indicator of the level of development in the future, it is necessary to improve the tools for studying the risks of both external and internal environment, which include:

- continuous monitoring of financial condition, i.e. assessment of potential opportunities (both internal and external) for neutralization and general localization of threat of financial and economic crisis;
- identification of measures to minimize all types of risks to ensure the appropriate level of creditworthiness;
- evaluation of the effectiveness of the planned measures of localization and overcoming the negative impact of various factors, as well as evaluation of these measures, the timing of their implementation and the results that can be expected [31; 32].

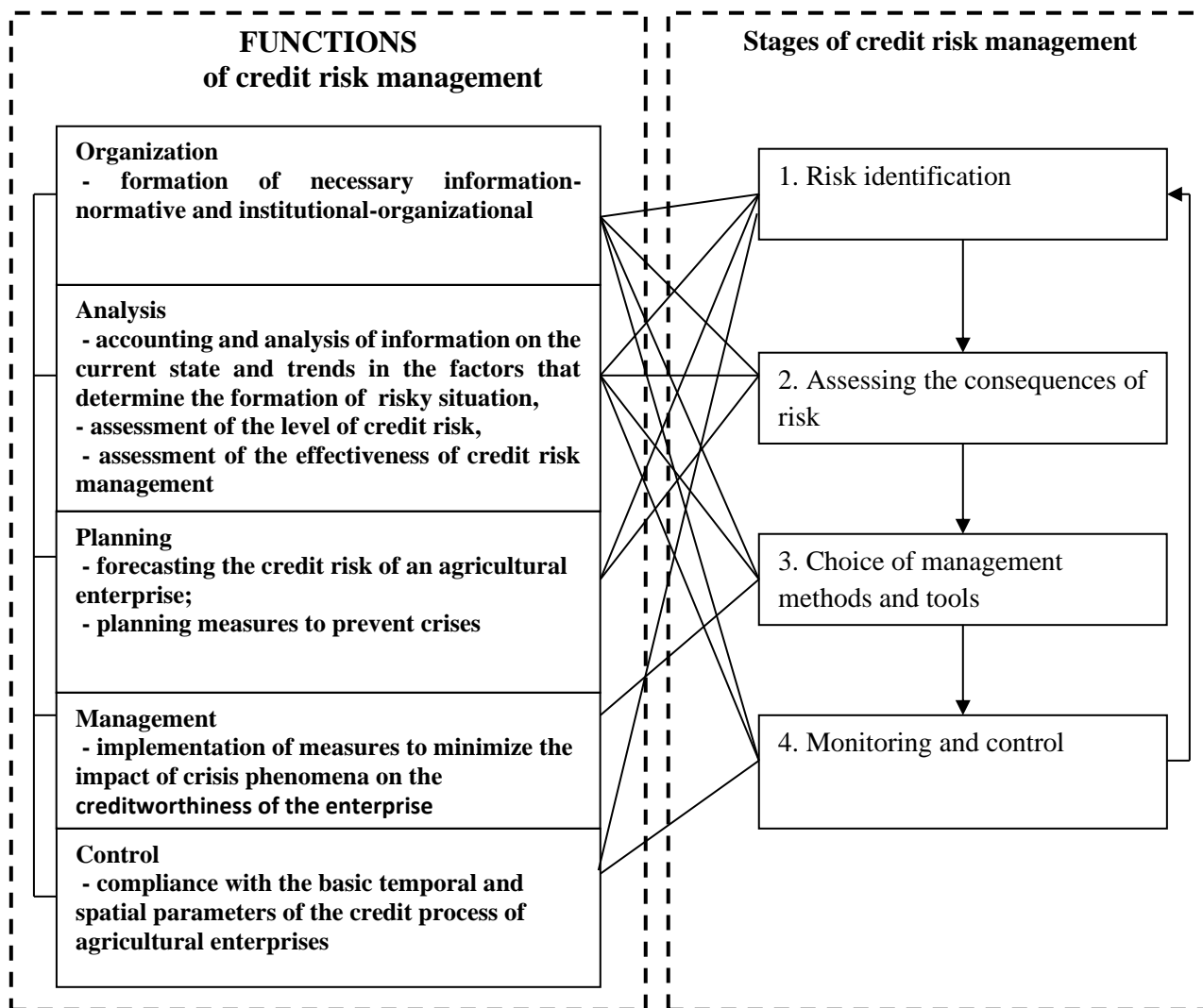
In accordance with the proposed mechanism for managing the creditworthiness of agricultural enterprises Stage II provides the solution of the following tasks of assessment and classification of their credit risks:

- 1) formation of a system of factors for assessing credit risks;
- 2) integrated assessment of the level of credit risks by local components;
- 3) factor analysis of credit risk indicators, their classification and aggregation;
- 4) classification of enterprises according to the level of risk and in accordance with the selected aggregate components.

To solve these tasks, a methodological approach using modern economic and mathematical tools for assessing and classifying credit risks of agricultural enterprises to develop adequate management measures for business entities is proposed.

To develop and implement scenarios for managing the creditworthiness of economic entities taking into account internal and external risks, it is necessary to apply a scenario-based system approach on the development and implementation of managerial decisions to obtain efficiency and effectiveness and to achieve synergies at all levels of management. Risk management on the basis of organizational and methodological

principles of agricultural enterprises management as an object of management means the need to use various approaches, processes and measures that allow to some extent (as far as possible) to determine the possibility of risky events and to reduce risk to the possible set limits [33]. For effective risk management in relation to the development of agricultural enterprises crediting, we can propose the following scheme of management actions (Fig. 9).



**Fig. 9. Relationship between functions and stages of credit risk management of agricultural enterprises**

Source: developed by the authors

**Conclusions.** A set of tasks for assessing the effectiveness of crediting management system of agrarian enterprises includes the following:

- accumulation and redistribution of capital creditors;
- cost savings and growth of credit turnover efficiency;
- provision of monetary offer and stimulation of expanded reproduction of economy;
- stimulation of credit and investment demand;
- increased interaction between different sectors of economy, stimulating financial and credit activities and their distribution;
- regulation of financial and credit processes at all levels and approaching to the international standards;
- entry into global international economic space on parity equal positions;
- stimulating the country's socio-economic development in general and ensuring global security.

Thus, the proposed methodological instrument of crediting entities in the agricultural sector of economy, which combines the interaction between three levels of management hierarchy - macro-, meso- and micro levels (state - region - agrarian enterprises) is aimed at improving the financial and credit system of support for agrarian sector and determination of management scenarios in accordance with the priority directions of development of the agrarian sector of economy, taking into account the targeting and compliance of the results of general efficiency.

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