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INNOVATION DIRECTIONS FOR MITIGATING NEGATIVE STRUCTURAL DISPROPORTIONS IN UKRAINE'S AGRIBUSINESS SECTOR

Introduction. *In the context of the transformation of Ukraine's economic system, the agricultural sector faces numerous challenges related to negative structural disproportions.*

Problem Statement. *Disproportions limit the efficiency of agricultural production, reduce the competitiveness of agricultural enterprises in domestic and international markets, and hinder innovation. Exploring ways to overcome these disproportions is essential for ensuring sustainable economic growth in Ukraine's agricultural sector.*

Purpose. *Identification and analysis of innovative directions of the level of negative structural imbalances in the agribusiness sector of Ukraine.*

Materials and Methods. *The study has employed a systematic approach, economic and statistical analysis, methods of comparison, grouping and modeling of structural changes. To identify structural imbalances, the approach of relative deviations of regional and industry indicators from average values has been used, which makes it possible to assess the scale and depth of imbalances in the agribusiness region of Ukraine.*

Results. *Four strategic directions for addressing the major structural imbalances in Ukraine's agribusiness sector have been identified: (1) developing an R&D- and innovation-driven strategy for agribusiness development; (2) promoting cooperation and cluster development; (3) restructuring financial support mechanisms for agribusiness; and (4) developing a scientifically grounded framework for the effective utilization of European Commission funding. In addition, a comprehensive set of innovative measures for each strategic direction has been developed, together with the identification of the responsible implementing stakeholders.*

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Conclusions. *The reduction of structural imbalances in Ukraine's agricultural sector requires a comprehensive approach that integrates innovative solutions, the modernisation of production processes, and institutional support. The implementation of the proposed measures will enhance the efficiency, resilience, and long-term competitiveness of the agricultural sector in the international market.*

Keywords: agrarian sector of the economy, structural disproportions, innovative directions, entrepreneurial sector.

Innovation is a key driver of economic growth in any sector of the economy. Recently, new models of agri-food production development have been emerging in the world, based on the widespread use of various innovative technologies that have raised this sector to the level of smart agriculture. Modern agri-innovative start-ups are introducing robotics, artificial intelligence, biotechnology, drones, regenerative farming, and many other technologies into the agricultural sector that are changing management practices to increase yields, product quality, save resources and time, reduce crop losses, and improve overall business efficiency, thereby contributing to sustainability and the preservation of the natural environment. Ukrainian agribusiness, despite global development trends, is largely uninspired by innovation. Thus, according to the European Innovation Scoreboard, Ukraine has an innovation index of 0.1889, while the maximum possible index is 1 [1]. As noted in [2], Ukraine is an agrarian state, a high share of whose exports are made up of products of the agro-industrial complex, therefore, for the further stable development of the country, high R&D and innovative activity of this sector of the economy is necessary. It is clear that without the implementation of innovative modernisation of the agricultural sector, Ukraine's position as a player in the global food market will be lost. In the presence of a legislative framework, science and education, neglect of innovation processes is unacceptable. This is a task for the post-war period, in which the state should introduce additional motivating and stimulating economic mechanisms for agribusiness and provide organisational conditions for the creation of an innovative infrastructure.

The issue of innovation-driven development in the agricultural sector has been under considera-

tion since the 1970s. The research of V. Ruttan and Y. Hayami [3] laid the foundation for the theory of induced innovations, which were actively implemented in agriculture to enhance productivity by adapting new technologies to local conditions. Their approach emphasizes the importance of R&D and technological progress in agriculture in the context of global resource scarcity. S. Biggs and E. Clay [4], as well as R. Chambers, A. Pacey, and L. Thrupp [5], highlighted the role of farmers as active participants in technology adoption. Their studies demonstrate that farmer-led innovations, along with collaboration with R&D institutions, are essential for developing effective and locally suitable technologies. The works of G. Feder, R. Just, and D. Zilberman [6], as well as G. Feder and D. Umali [7], underscore the impact of socio-economic factors on the adoption of innovations. These studies show that factors such as access to credit, farmers' education levels, and technical support influence the implementation of new methods and technologies. N. Clark [8] analyzes the development of innovation systems in the context of new knowledge and its impact on the agricultural sector in developing countries. The research examines the organizational and institutional changes necessary for the effective implementation of innovations under conditions of limited resource availability. G. Thomas and R. Slater [9] focus on how agricultural innovations contribute to productivity growth and poverty reduction. They highlight that innovative technologies and approaches can have a significant impact on the socio-economic aspects of farmers' lives in low-income regions. J. Sayer and K. Cassman [10] investigate the impact of innovations on environmental sustainability in agriculture. Their research focuses on technologies that reduce the negative impact on the environment,

particularly through the optimization of fertilizer and pesticide use. Many contemporary studies (J. Mohd et al. [11]; O. Hazyi [12]; O. Demchuk and R. Rusyn-Hrynyk [13]) analyze the role of digital innovations, such as Agriculture 4.0 and automation, in the development of agriculture. The research of D. Loukatos et al. [14] and A. Botta et al. [15] highlights the potential of robotic systems, which can reduce costs and improve the precision of agricultural operations.

Ukrainian researchers, including N. Kotvytska [16], O. Oliinyk, and I. Sydelnikova [17], as well as F. Trishyn, O. Nikoliuk [18], and B. Khakhula [19, 20], analyze the specific features and challenges of implementing innovations in Ukraine's agricultural sector. Their works emphasize the need to develop infrastructure, financial support mechanisms for innovations, and overcome organizational barriers to their adoption in agriculture. The study by S. Zaika, O. Gridin, and O. Zaika [21] focuses on trends and challenges in the sustainable development of agricultural production in Ukraine. The authors highlight the importance of implementing environmentally oriented technologies to ensure long-term productivity and environmental protection.

Despite a significant number of scholarly research papers on innovations in the agricultural sector, there is still a lack of research that examines the relationship between the introduction of innovations and the elimination of structural disproportions in this area.

INNOVATIVE DIRECTIONS IN THE AGRIBUSINESS SECTOR

Innovation can be defined as a comprehensive process or strategy aimed at introducing new ideas, technologies, methods or approaches in a particular area to improve efficiency, optimise or create new solutions. This area covers both the development of new products and services and the introduction of progressive business models and production processes that differ significantly from traditional approaches and are able to meet new market and social needs.

The elimination of negative structural disproportions in Ukraine's agribusiness sector is a critical task for ensuring sustainable development and effective adaptation to modern challenges. This goal can be achieved through the introduction of innovative approaches that ensure the development of the technological and managerial base of the agricultural industry.

One of the priority areas is the digitalisation of agricultural enterprises. The introduction of digital technologies allows us to automate and improve management processes in agriculture, increase production efficiency, optimise resource use and reduce costs. The use of precision farming systems, drones for field monitoring, and the Internet of Things (IoT) significantly improves the productivity and competitiveness of enterprises, adapting them to the requirements of the modern market.

The development of infrastructure for storage and processing of products is another important area of innovation. Modern technologies in this area help to minimise crop losses, improve the quality of end products and better meet market requirements. Investing in new storage facilities, cold storage and logistics centres allows agribusinesses to achieve greater economic efficiency, improve service quality and ensure a more stable supply chain.

Cooperation and the creation of agro-clusters contribute to a more efficient organisation of the agricultural sector. These approaches are aimed at increasing productivity, strengthening the economic resilience of small and medium-sized enterprises, and improving conditions for rural development. Cooperatives and clusters provide farmers with access to new markets, technologies and infrastructure, enabling them to adapt to global challenges and gain competitive advantage.

Green technologies and sustainable development are an innovative approach that offers new ways of conducting economic activities with minimal environmental impact, which meets the criteria and goals of Sustainable Development [22]. The use of renewable energy sources, biological crop protection methods and organic farming optimises

resource use, reduces pollution and increases the environmental sustainability of the industry. This approach creates new solutions to overcome today's environmental and economic challenges, striking a balance between economic gain and environmental protection.

Innovative financial instruments also help to offset disproportions by providing new opportunities for raising capital and managing risks. The creation of special loan programmes, crowdfunding platforms, and financial technologies (agri-fintech) facilitates access to finance for small and medium-sized agricultural enterprises, helps minimise financial risks, and increases business resilience to economic fluctuations.

Agricultural education and human resources development is an important component of the innovation-driven development of the agricultural sector. Training qualified specialists capable of implementing modern technologies and methods ensures the growth of productivity and competitiveness of enterprises. Cooperation with educational institutions and the creation of market-oriented

programmes improve the level of training and contribute to the stability of the industry.

Integration into global value chains opens up new opportunities for Ukrainian agricultural enterprises to enter international markets, which will boost competitiveness, improve product quality and increase production efficiency. Participation in global chains allows businesses to adapt to the requirements of the global economy, where production, supply and sales of products are the result of close cooperation between countries.

Thus, in order to reduce structural disproportions in the agricultural sector, it is necessary to follow certain directions. Table 1 lists the innovation areas described above, as well as examples of measures that correspond to them.

The list of measures presented in the table is not exhaustive and reflects only the key aspects of innovative ways to mitigate negative structural disproportions in the agricultural sector of Ukraine. Given the multifaceted nature of structural disproportions and the rapid development of innovative technologies, the list of possible measures

Table 1. Examples of Measures Corresponding to Innovative Ways of Levelling Structural Disproportions in the Agricultural Sector

Innovative Direction	Examples of Activities
Digitization of Agricultural Enterprises	Use of digital technologies, such as precision farming systems; Use of drones for field monitoring and data collection
Development of Infrastructure for Storage and Processing of Products	Investments in the construction of new storage facilities, refrigeration units, and logistics centers; Development of small and medium-sized processing enterprises
Cooperation and Creation of Agro-Clusters	Uniting small farms into cooperatives; Establishment of agro-clusters
Green Technologies and Sustainable Development	Implementation of biological plant protection methods and organic farming; Use of renewable energy sources (solar panels, biogas) in the agricultural sector
Innovative Financial Instruments	Development of special loan programmes and insurance products for farmers; Use of crowdfunding and agri-fintech platforms
Agricultural Education and Workforce Development	Upskilling agricultural workers through courses and training programmes; Collaboration with universities to develop market-relevant programmes
Integration into Global Value Chains	Implementation of quality standards and product certification; Introduction of traceability systems

Source: developed by the authors.

is constantly expanding and adapting to the changing conditions of the agricultural sector and specific regional needs. Successfully addressing the disproportions requires a comprehensive approach that includes not only technological innovations, but also organisational, managerial and financial solutions aimed at ensuring equal access to resources, increasing productivity and strengthening the competitiveness of small and medium-sized agricultural producers. Therefore, this list is a tool for a general overview of the possibilities, but the full range of measures needs to be further researched and refined in line with the latest developments in the field of agro-innovation.

**IDENTIFICATION OF NEGATIVE
STRUCTURAL DISPROPORTIONS
IN THE AGRICULTURAL
SECTOR OF UKRAINE**

The agricultural sector is one of the industries where structural disproportions of various sizes are formed. Such disproportions manifest themselves through uneven development, limited access to resources and infrastructure, and low efficiency

in certain sub-sectors [23]. In order to overcome these disproportions, it is advisable to identify the most problematic areas of agricultural production, in particular, by highlighting negative disproportions by different levels of intensity (Table 2) and geographical distribution. To achieve this goal, a relative deviation approach is used to assess structural imbalances by key economic dimensions. The level of disproportionality for each indicator was computed as the relative deviation of a region's value from the national average. A classification procedure was then used to categorise the scale of disproportionality into high, moderate, and minimal levels, based on threshold distribution. This approach provides a formalised assessment algorithm complementary to the conceptual analysis presented in the main text. A detailed methodological framework is presented in [23], where the full specification of indicators and statistical treatment is discussed. Relevant data sources, temporal coverage, and handling of missing values were also aligned with the procedures outlined in that work.

The results of a comprehensive analysis of structural disproportions in the agricultural sector of

Table 2. Description of the Levels of Structural Economic Disproportions in the Agricultural Sector

Level of Disproportion	Description of the Level of Disproportion
High Positive Disproportion	Indicates a significant uneven distribution within the sample. In this case, an economic sector, an agricultural sector component, or a region may exhibit much higher development and success levels compared to others
Moderate Positive Disproportion	Indicates moderate inequality, where the sample size may suggest slightly higher levels of production, income, or development compared to others
Minimal Positive Disproportion	At this level, inequality is relatively small but still shows a slight gap
Absence of Disproportion	Indicates alignment of the sample size with the conditional average indicator value
Minimal Negative Disproportion	At this level, slight inequality arises; the sample size may indicate a slightly lower level of development, income, or success compared to others, but the gap is minor
Moderate Negative Disproportion	Indicates moderate inequality, where some sample sizes may point to noticeably lower levels of production, income, or development
High Negative Disproportion	At this level, there is significant inequality within the sample, where certain economic sectors, agricultural sectors, or regions show much lower development or success levels compared to others

Source: developed by the authors.

Table 3. Negative Structural Imbalances in Ukraine's Agricultural Sector by Depth of Manifestation

Signs of structural disproportions	Level of structural disproportions		
	Structural disproportions between different sectors of economic activity	Structural disproportions between different sectors of the agro-industrial complex	Structural disproportions in the regional context
	Indicators		
1. Disproportions in production volumes	GDP of a particular sector of the economy (according to the production method — the difference between gross output and intermediate consumption) Average positive disparity	GDP of the agricultural sub-sector (no statistical data available *)	GRP of the agricultural production sector of the region (Output at basic prices) Eleven oblasts fall into the category of negative disparities
2. Disproportions in innovation activity	Expenditure on innovation in a particular sector of the economy R&D expenditure in a particular field of science High negative disparity	Expenditures on innovations in a particular sector of the agro-industrial complex (no statistical data available)	Expenditures on R&D in agricultural sciences in the region Negative disproportionality
3. Disproportions in foreign trade	—	External trade balance (the ratio of imports of goods and services of a particular agricultural sector to its exports in annual terms) High negative imbalance for most items (except for vegetable products, fats and oils of animal and vegetable origin)	—
4. Disproportions in investment	Capital investment in a particular sector of the economy Minimum positive disparity	Capital investment in a particular element of the agricultural sector Minimum negative disparity	Capital investments in agricultural production in the region Negative disproportionality
5. Disproportions in the distribution of land resources	—	Land area under major crops Compliance with the recommended standards, but proportionality is Violated in the distribution of land areas between crops in the respective groups	Use of land resources (used land area to available land area) High variation of values that take into account regional Peculiarities Ratio of organic land area to total land use area There is a specialisation of certain regions and a large potential for increasing organic land
6. Disproportions in employment and training	Employment of active population in economic sectors Average positive disparity Training of specialists in HEIs in a particular field of knowledge Minimum negative disparity	Employment in agricultural subsectors	Employment in agricultural production in the region Negative disparity

* This note reflects the factual absence of corresponding indicators in official statistics.

Source: compiled on the basis of the authors' calculation using official statistical data (where available) and [23].

Ukraine by depth of their manifestation are presented in Table 3.

To ensure sustainable development of Ukraine's agricultural sector and overcome existing disproportions, it is necessary to implement a set of measures that combines reforming state support, introducing innovations, developing educational programmes and cooperation between enterprises. International experience in these areas can serve as a guide for the development of new strategies adapted to the specifics of the Ukrainian agricultural sector.

Firstly, reforming the system of state support for the agricultural sector is one of the key steps toward ensuring equal access to financial resources for all categories of entrepreneurs. The state should introduce targeted lending and grant support programmes, particularly for small and medium-sized farmers, to facilitate their development. As the experience of the Brazilian Development Bank (BNDES), one of the largest financial institutions in the world, shows, government support for the agricultural sector through large-scale infrastructure, technological modernisation and export expansion projects can significantly increase the sector's competitiveness. BNDES also actively supports social and environmental initiatives aimed at improving working conditions and reducing environmental impacts. In contrast to BNDES, the Ukrainian Farm Support Fund (UFSPF) is focused on supporting small farmers, which necessitates the improvement of financial mechanisms towards comprehensive support for all categories of agricultural producers.

Second, an important area of development is the introduction of innovative technologies into production processes. The use of advanced agricultural technologies, such as precision farming, drones for agricultural monitoring, automated irrigation and yield management systems, allows us to significantly optimise resource use and increase productivity. In this context, the experience of the Netherlands is particularly interesting, as it has been able to achieve a significant increase in agricultural productivity thanks to innovation and technological progress. In response to population growth and the need to use

resources efficiently, the Netherlands has set a goal of doubling its output over the past two decades while halving its resource use. This has allowed them to become the world's second largest exporter of agricultural products by value, second only to the United States [24].

Third, the development of the agricultural education and training system is critical for improving the skills of workers and increasing the competitiveness of the Ukrainian agricultural sector. In this regard, it is worth paying attention to the experience of the United States, where the 4-H programme promotes the development of leadership skills and professional training of young people to work in the agricultural sector. USDA programmes are aimed at addressing employment and efficiency issues in the agricultural sector, in particular through educational and research programmes that meet market needs.

Fourth, the development of cooperation and partnerships between agricultural enterprises of different sizes has significant potential to increase the sustainability and competitiveness of small and medium-sized farms. The creation of cooperatives and clusters allows for the pooling of resources to share technology, facilitates access to markets and increases the efficiency of production processes. The Brazilian experience of developing the cooperative movement is particularly illustrative: the country, which has become the second largest exporter of agricultural products, relies on a developed system of cooperatives. The Brazilian government actively supports the creation and development of cooperatives, defining their role in national agricultural policy and reinforcing them through special legislation (Law No. 5.764 of 16 December 1971, known as the Brazilian Cooperative Law [25]), which provides a favourable legal regime for such associations.

MAIN DIRECTIONS FOR ELIMINATING DISPROPORTIONS IN THE AGRIBUSINESS SECTOR

Based on a detailed analysis of the existing structural problems, and taking into account the experience of other countries that have successfully

overcome similar challenges, four main areas of addressing disproportions in the agricultural sector have been identified. This choice of areas is based on scientifically grounded framework for optimising and developing the agricultural sector, given the specific characteristics of the Ukrainian agricultural sector and key international practices.

The first area is the development of a strategy for the R&D and innovation-driven development of the agricultural sector: this area was identified due to the need for technological upgrades and the introduction of innovations in production processes to improve the efficiency and competitiveness of agricultural enterprises. As the experience of the Netherlands shows, innovations in the form of precision farming, the use of agricultural drones, automated irrigation and yield management systems can significantly optimise resource costs and increase productivity. The introduction of the latest technologies also meets the market's need to reduce resource costs while increasing the volume and quality of products.

The second area is to encourage cooperation between agricultural enterprises, the creation of cooperatives and other forms of agricultural development associations: this area is based on the successful international experience of cooperation as a tool that can effectively overcome market access barriers, reduce costs and improve the competitive position of small and medium-sized agricultural enterprises. Brazil's experience shows that a developed system of cooperatives contributes to efficient production, processing and marketing of products, which increases the resilience of the agricultural sector in the face of global competition. In Ukraine, this can strengthen the economic capacity of agricultural enterprises and contribute to the stability of rural areas.

The third area is the reorganisation of financial mechanisms to support agricultural enterprises: the definition of this area is based on the importance of access to finance as a basis for sustainable development of the agricultural sector. Existing disproportions in financial support limit the opportunities for small and medium-sized enter-

prises, so reforming the state support system and creating special loan programmes are necessary. As the example of BNDES in Brazil shows, financial support for agricultural infrastructure and technology upgrades can significantly improve the competitiveness of the industry. The reorganisation of financial mechanisms should ensure equal access to capital and support the sustainable development of agricultural business.

The last area is the development of a science-based plan for the use of European Commission funds: this area has been identified with the aim of effectively attracting international resources that can serve as a catalyst for the implementation of innovative solutions in the agricultural sector. A science-based approach to funding allocation will allow us to direct investments to address the most critical issues, such as the construction of infrastructure for storage and processing of products, development of educational programmes for farmers, environmental and innovative projects. The proper use of financial resources can minimise structural disproportions and create conditions for the long-term growth of the Ukrainian agricultural sector.

Figure 1 shows four main areas of implementation of the experience of the world's leading countries and their connection with the existing negative disproportions in Ukraine's agricultural sector.

It should be noted that the development of a strategy for the R&D and innovation-driven development of the agricultural sector can simultaneously affect several economic disproportions due to the interdependence of the components of the agricultural sector. In particular, the introduction of science-based innovations increases the productivity of agricultural production, which is reflected in the growth of the gross regional product (GRP). Increased productivity has a direct impact on capital investment, as successful innovations stimulate capital inflows that contribute to the further development of the agricultural sector.

Along with the increase in innovation activity in the agricultural sector, there is an increase in research and development (R&D) expenditures, which also has a significant impact on the deve-

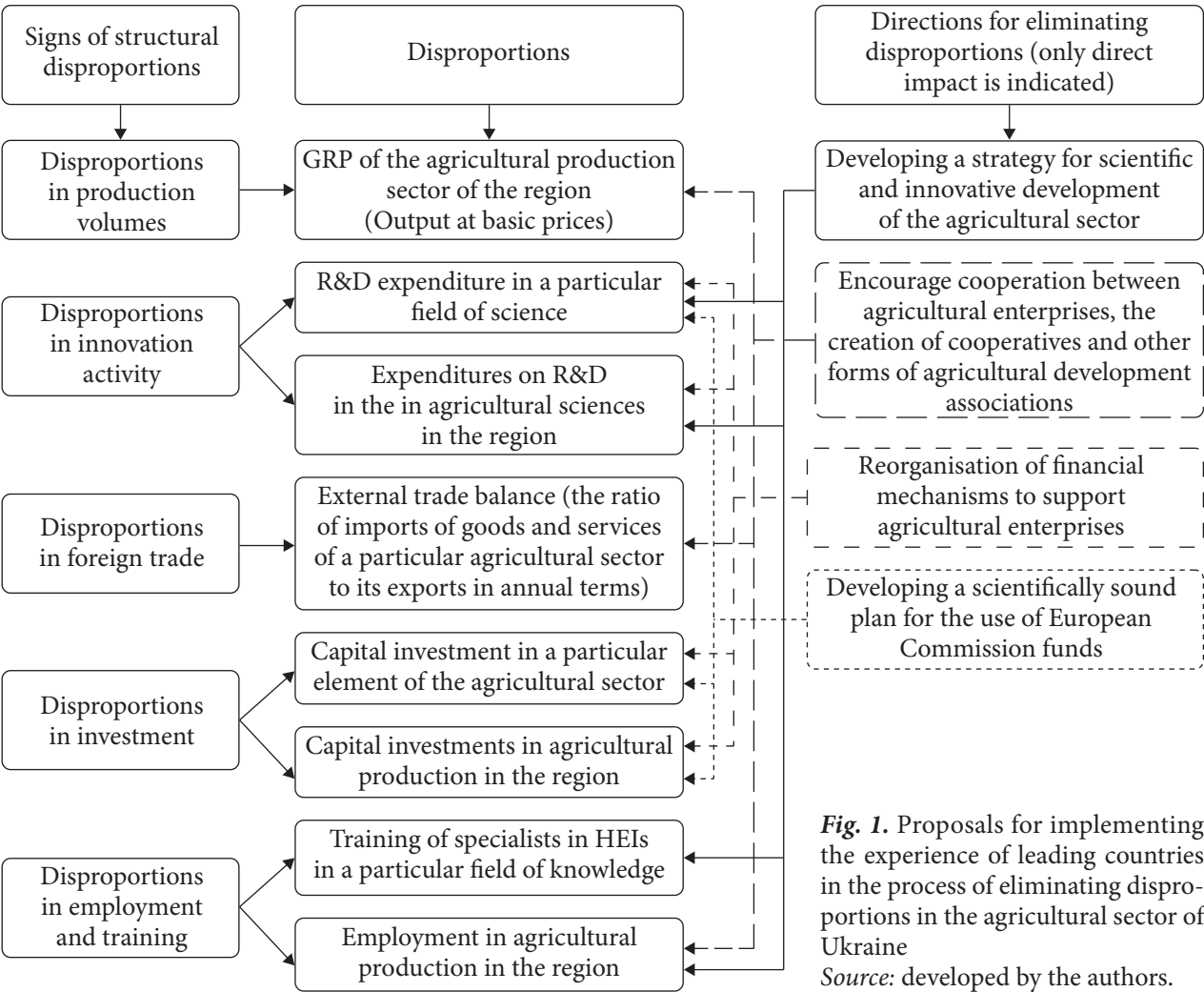


Fig. 1. Proposals for implementing the experience of leading countries in the process of eliminating disproportions in the agricultural sector of Ukraine
Source: developed by the authors.

lopment of the agricultural sector. Increased R&D expenditures contribute to the emergence of new technologies and methods of farming, which in turn increases production efficiency. This, in turn, reduces the cost of production and increases its competitiveness in foreign markets, which has a positive impact on Ukraine's foreign trade balance.

In addition, the development of a research and innovation strategy requires the training of highly qualified personnel in higher education institutions (HEIs). This encourages the education system to place greater emphasis on agricultural sciences, which raises the level of training in this area. Highly skilled personnel contribute to more

efficient innovation, which in turn affects employment in agricultural production, creating new jobs and increasing the overall employment level in the region.

Thus, addressing one imbalance, such as increasing investment in research and development, triggers a chain reaction that positively impacts other important aspects of the agricultural sector, including GRP, capital investment, foreign trade balance and employment. This systemic approach provides a comprehensive solution to problems and contributes to the sustainable development of Ukraine's agro-industrial complex, strengthening its global competitiveness.

Table 4. Measures to Mitigate Negative Structural Disproportions in the Agribusiness Sector of Ukraine

Directions for eliminating disproportions	Measures in line with innovation areas	Performers
Developing a strategy for R&D and innovation-driven development of the agricultural sector	Use of digital technologies, such as precision farming systems	The Ministry of Agrarian Policy and Food of Ukraine, agricultural research institutions, IT companies, agricultural enterprises
	Use of drones to monitor field conditions and collect data	Agricultural enterprises, agro-technology suppliers, private companies providing drone services, agro-technology start-ups
	Introduction of biological methods of plant protection and organic farming	The Ministry of Agrarian Policy and Food of Ukraine, environmental control organisations, agricultural enterprises, environmental funds and NGOs
	Use of renewable energy sources (solar panels, biogas) in the agricultural sector	Agricultural enterprises, the Ministry of Energy of Ukraine, environmental funds, renewable energy companies
	Improving the skills of agricultural workers through courses and trainings	Ministry of Agrarian Policy and Food of Ukraine, educational institutions, agricultural universities, training centres
	Implementation of quality standards and product certification	The Ministry of Agrarian Policy and Food of Ukraine, certification organisations, quality laboratories, agricultural enterprises
	Implementation of traceability systems	Ministry of Agrarian Policy and Food of Ukraine, agricultural enterprises, IT companies, traceability solution providers
Encourage cooperation between agricultural enterprises, the creation of co-operatives and other forms of agricultural development associations	Uniting small farms into cooperatives	Ministry of Agrarian Policy and Food of Ukraine, local administrations, farmers' associations, cooperative organisations
	Agroclusters	The Ministry of Agrarian Policy, regional and local administrations, agricultural associations, investors, and agribusiness representatives
	Development of small and medium-sized processing enterprises	The Ministry of Agrarian Policy and Food of Ukraine, regional and local administrations, private investors, and farmers' associations
	Collaboration with higher education institutions to develop programmes that meet market needs	Higher education institutions, the Ministry of Education and Science of Ukraine, the Ministry of Agrarian Policy and Food of Ukraine, and agricultural enterprises
Reorganisation of financial mechanisms to support agricultural enterprises	Creating special loan programmes and insurance products for farmers	The Ministry of Finance of Ukraine, commercial banks, insurance companies, international financial institutions (e.g. EBRD)
	Crowdfunding and agri-fintech platforms	Agri-fintech companies, the Ministry of Digital Transformation, investment funds, start-ups, private investors
Developing a scientifically grounded framework for the use of European Commission funds	Investments in the construction of new storage facilities, refrigerators and logistics centres	The Ministry of Agrarian Policy and Food of Ukraine, local administrations, private investors, European Commission grant programmes, and agricultural enterprises
	Development of small and medium-sized processing enterprises (may also include promotion of cooperation)	Ministry of Agrarian Policy and Food of Ukraine, European Commission grant programmes, farmers' associations, private investors
	Upgrading the skills of agricultural workers through courses and trainings (may be supported by European Commission programmes)	The Ministry of Agrarian Policy and Food of Ukraine, agricultural universities, educational institutions, international organisations that fund training programmes

Source: developed by the authors.

Taking into account the existing innovative areas presented in Table 1, for each above area of imbalance elimination, it is possible to propose separate measures to level out negative structural disproportions, as presented in Table 4.

As a result, innovative measures aimed at offsetting negative structural disproportions in the agricultural sector can significantly enhance the effectiveness of the four main areas of imbalance elimination.

The development of a strategy for the R&D and innovation-driven development of the agricultural sector will receive a new impetus from the introduction of innovative technologies such as precision farming, automated control systems and the use of renewable energy sources. This will not only increase productivity, but also ensure resilience to external economic fluctuations, improving the industry's adaptability to modern challenges and enhancing its ability to take advantage of global technological trends.

The process of encouraging cooperation between agricultural enterprises and the creation of cooperatives and clusters will benefit from innovative measures to access new organisational models and digital platforms that will help optimise shared resources and logistics. Co-operative associations will be able to use modern tools for supply chain management and distribution, which will increase their competitiveness, allow SMEs to integrate effectively into production chains and facilitate their entry into new markets.

The reorganisation of financial mechanisms to support agricultural enterprises will benefit from the introduction of innovative financial instruments, such as agri-fintech platforms, targeted loan programmes and crowdfunding. This will facilitate equal access to finance for agricultural producers of different sizes, minimising the financial barriers that exist for small farmers. Innovative approaches to financing will help to adapt the agricultural sector to the conditions of the modern economy, increase its resilience to risks and improve its investment attractiveness.

The development of an evidence-based plan for the use of European Commission funds will be

more targeted and effective if innovation is integrated into the planning and allocation of funding. This will allow us to direct resources to the most promising areas of development, such as environmentally friendly production, infrastructure projects and educational initiatives that meet international standards of sustainable development. This approach will increase the effectiveness of international financial support and create opportunities for Ukraine's integration into European agricultural development programmes.

Innovative ways to offset negative structural disproportions in Ukraine's agribusiness sector are key to steady growth in agricultural exports, diversification of the geographical and commodity structure of exports, and increased regional trade. Foreign economic activity in this area has prospects for expansion due to the focus on strengthening Ukraine's role in ensuring global food security, entering new food markets, and moving to higher value-added products. To achieve these strategic goals, a number of complex tasks need to be addressed domestically, including the post-war restoration of agribusiness assets, updating management and government regulation approaches to meet global challenges, and diversifying the product range. Attention should also be paid to ensuring high quality, producing niche food products and introducing innovative technologies. The implementation of these measures will contribute to strengthening food security at both the national and international levels, creating a sustainable agri-food system in Ukraine while fostering the development of the domestic market.

It should also be noted that the practical implementation of the innovative interventions proposed in this study may face certain barriers and risks that deserve further scholarly attention. These may include regulatory and institutional constraints, financial and infrastructural constraints, human capital and skills shortages, and contextual challenges associated with post-conflict recovery. While a comprehensive analysis of such barriers is beyond the scope of this manuscript, acknowledging their potential presence enhances

the realism and applicability of the study findings. These aspects will be expanded and explored in future studies as part of the ongoing scholarly research on innovation implementation in the agri-food sector.

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REFERENCES

1. The Global Competitiveness Index 4.0 Methodology and Technical Notes. The Global Competitiveness Report 2020. URL: <http://www3.weforum.org/docs/GCR2018/04Backmatter/3.%20Appendix%20C.pdf> (Last accessed: 14.12.2024).
2. Burkynskyi, B., Kupinets, L., Andriyeyeva, N., Shershun, O. (2022). Ukrainian Agro-Food Sector in the Context of Global Patterns of Environmental Innovation Development. *Comparative Economic Research. Central and Eastern Europe*, 25(4), 45—63. <https://doi.org/10.18778/1508-2008.25.29>
3. Hayami, Y., Ruttan, V. W. (1985). *Agricultural Development: An International Perspective* (Rev. ed.). Baltimore, Md.
4. Biggs, S. D., Clay, E. J. (1981). Sources of innovation in agricultural technology. *World Development*, 9(4), 321—336. [https://doi.org/10.1016/0305-750x\(81\)90080-2](https://doi.org/10.1016/0305-750x(81)90080-2)
5. Chambers, R., Pacey, A., Thrupp, L. A. (1989). *Farmer First: Farmer Innovation and Agricultural Research*. Rugby, UK. <https://doi.org/10.3362/9781780440149>
6. Feder, G., Just, R. E., Zilberman, D. (1985). Adoption of Agricultural Innovations in Developing Countries: A Survey. *Economic Development and Cultural Change*, 33(2), 255—298. <https://doi.org/10.1086/451461>
7. Feder, G., Umali, D. L. (1993). The adoption of agricultural innovations. *Technological Forecasting and Social Change*, 43(3—4), 215—239. [https://doi.org/10.1016/0040-1625\(93\)90053-a](https://doi.org/10.1016/0040-1625(93)90053-a)
8. Clark, N. (2002). Innovation Systems, Institutional Change and the New Knowledge Market: Implications for Third World Agricultural Development. *Economics of Innovation and New Technology*, 11(4—5), 353—368. <https://doi.org/10.1080/10438590200000004>
9. Thomas, G., Slater, R. (2006). Innovation, agricultural growth and poverty reduction. *International Journal of Technology and Globalisation*, 2(3/4), 279. <https://doi.org/10.1504/ijtg.2006.011916>
10. Sayer, J., Cassman, K. G. (2013). Agricultural innovation to protect the environment. *Proceedings of the National Academy of Sciences*, 110(21), 8345—8348. <https://doi.org/10.1073/pnas.1208054110>
11. Javaid, M., Haleem, A., Singh, R. P., Suman, R. (2022). Enhancing smart farming through the applications of Agriculture 4.0 technologies. *International Journal of Intelligent Networks*, 3, 150—164. <https://doi.org/10.1016/j.ijin.2022.09.004>
12. Hazi, O. (2024). Features of digitalization of the agricultural sphere. *Scientific Bulletin of Uzhhorod University, Series Economics*, 1(63), 73—78. [https://doi.org/10.24144/2409-6857.2024.1\(63\).73-78](https://doi.org/10.24144/2409-6857.2024.1(63).73-78) [in Ukrainian].
13. Demchuk, O., Rusyn-Hrynyk, R. (2024). Current level of digitalization of business processes agricultural enterprises. *Economy and Society*, 61. <https://doi.org/10.32782/2524-0072/2024-61-143> [in Ukrainian].
14. Loukatos, D., Petrongonas, E., Manes, K., Kyrtopoulos, I. V., Dimou, V., Arvanitis, K. (2021). A synergy of innovative technologies towards implementing an autonomous DIY electric vehicle for harvester-assisting purposes. *Machines*, 9, 82. <https://doi.org/10.3390/machines9030082>
15. Botta, A., Cavallone, P., Baglieri, L., Colucci, G., Tagliavini, L., Quaglia, G. (2022). A Review of Robots, Perception, and Tasks in Precision Agriculture. *Applied Mechanics*, 3(3), 830—854. <https://doi.org/10.3390/applmech3030049>
16. Kotvytska, N. (2023). Theoretical principles of innovations in the agro-food sector. *Scientific Bulletin of Polissia*, 2(25), 59—76. [https://doi.org/10.25140/2410-9576-2022-2\(25\)-59-76](https://doi.org/10.25140/2410-9576-2022-2(25)-59-76) [in Ukrainian].
17. Oliynyk, O., Sidelnikova, I. (2017). Innovative activity: features of development and activation in agricultural production. *Collection of scientific works of the KhNPU named after G.S. Skovoroda “Economics”*, (17), 73—82 [in Ukrainian].

18. Nikoliuk, O., Trishyn, F. (2022). Organizational capacity of farms for digital innovations in the post-war period. *Food Industry Economics*, 14(3), 58—64. <https://doi.org/10.15673/fie.v14i3.2362> [in Ukrainian].
19. Khakhula, B. (2022). Economic problems of the development of innovative activity in agricultural enterprises of Ukraine. *Food resources*, 10(19), 265—273. <https://doi.org/10.31073/foodresources2022-19-29> [in Ukrainian].
20. Khakhula, B. (2022). Organizational features of innovative activity development in agricultural production. *Ekonomika ta derzhava*, 85—89. <https://doi.org/10.32702/2306-6806.2022.5.85> [in Ukrainian].
21. Zaika, S., Hridin, O., Zaika, O. (2023). Innovations in sustainable agricultural development: trends, issues, perspectives. *Economy and Society*, 52. <https://doi.org/10.32782/2524-0072/2023-52-69>
22. Burkynskiy, B., Andryeyeva, N., Khumarova, N., Kostetska, K. (2021). An Innovative Approach to the Implementation of Sustainable Business Ideology in Ukraine. *Environmental Research, Engineering and Management*, 77(4), 48—63. <https://doi.org/10.5755/j01.erm.77.4.29163>
23. Kupinets, L., Shershun, O. (2023). Methodological Approaches to the Determination of Structural Disproportions in the Context of Strategic Perspectives of the Development of the Agricultural Sector of the Economy. *Economic Innovations*, 25(3), 159—170. [https://doi.org/10.31520/ei.2023.25.3\(88\).159-170](https://doi.org/10.31520/ei.2023.25.3(88).159-170)
24. Reiley, L., van Lohuizen, K. (2022). Cutting-edge tech made this tiny country a major exporter of food. Washington Post. URL: <https://www.washingtonpost.com/business/interactive/2022/netherlands-agriculture-technology/> (Last accessed: 14.12.2024).
25. Law No. 6.981 modifying Law No. 5.764 of 16 December 1971 on Cooperatives. ECOLEX. The gateway to environmental law. URL: <https://www.ecolex.org/details/legislation/law-no-6981-modifying-law-no-5764-of-16-december-1971-on-cooperatives-lex-faoc043142/> (Last accessed: 14.12.2024).

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ІННОВАЦІЙНІ НАПРЯМКИ НІВЕЛЮВАННЯ НЕГАТИВНИХ СТРУКТУРНИХ ДИСПРОПОРЦІЙ В АГРОПІДПРИЄМНИЦЬКОМУ СЕКТОРІ УКРАЇНИ

Вступ. В умовах трансформації економічної системи України агропідприємницький сектор зіштовхується з низкою викликів, пов'язаних із негативними структурними диспропорціями.

Проблематика. Диспропорції обмежують ефективність сільськогосподарського виробництва, знижують рівень конкурентоспроможності агропідприємств на внутрішньому і міжнародному ринках, а також стримують інноваційний розвиток. Дослідження шляхів подолання цих диспропорцій є важливим завданням для забезпечення стабільного економічного зростання в аграрному секторі України.

Мета. Виявлення та аналіз інноваційних напрямків нівелювання негативних структурних диспропорцій в агропідприємницькому секторі України.

Матеріали й методи. Застосовано системний підхід, економіко-статистичний аналіз, методи порівняння, групування та моделювання структурних змін. Для виявлення структурних диспропорцій використано підхід відносних відхилень регіональних і галузевих показників від середніх значень, що дало змогу оцінити масштаби та глибину диспропорцій у агропідприємницькому секторі України.

Результати. Визначено чотири стратегічні напрями нівелювання основних негативних структурних диспропорцій агропідприємницького сектору України: розроблення стратегії науково-інноваційного розвитку агросектору, стимулювання кооперації та кластеризації, реорганізація фінансових механізмів підтримки агропідприємств і формування науково обґрунтованого плану використання коштів Європейської Комісії. Розроблено систему інноваційних заходів для кожного із зазначених напрямів з визначенням відповідальних виконавців.

Висновки. Нівелювання структурних диспропорцій в агропідприємницькому секторі України можливе через комплексний підхід, що включає інноваційні рішення, модернізацію виробничих процесів та інституційну підтримку. Впровадження запропонованих інструментів дозволить підвищити ефективність функціонування агросектору та його конкурентоспроможність на міжнародній арені.

Ключові слова: аграрний сектор економіки, структурні диспропорції, інноваційні напрями, підприємницький сектор.