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Strategies for regional disproportion management to restore economic security in the Ukrainian agricultural sector

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► **Abstract.** The study aimed to identify key threats to the Ukrainian agricultural sector in the context of the war and to develop proposals for overcoming them through effective governance, government support and infrastructure investment. The study was conducted based on an analysis of socio-economic indicators of different regions of Ukraine with a focus on the agricultural sector. The data collection covered the period from 2022 to 2023 and included indicators of unemployment, investment activity, agricultural sector productivity, and the effectiveness of government support programmes. A comparative analysis was conducted between the regions affected by the hostilities and more stable regions, and the impact of infrastructure investment on economic stability was also investigated. The study determined that the Ukrainian agricultural sector has been severely affected by the hostilities, leading to increased unemployment, reduced investment and widening economic gaps between regions. The highest losses were observed in regions bordering the conflict zone, such as Kharkiv and Dnipro regions. In these regions, investment activity has completely stopped, which has significantly reduced the productivity of the agricultural sector. At the same time, regions with more developed infrastructure performed better due to access to markets and financing. The study also demonstrated that state support had an uneven impact on different regions, with the

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most affected regions receiving insufficient support. The study results highlighted the importance of infrastructure investment and comprehensive state support to overcome regional disparities in Ukraine's agricultural sector and stabilise the economic situation in the face of the ongoing conflict

► **Keywords:** spatial inequality; stabilisation measures; balanced growth; resource potential; agricultural innovation

► Introduction

In Ukraine, regional disparities have become a substantial issue in socio-economic development, making it difficult to implement strategies to ensure sustainable growth. This phenomenon caused profound economic and social consequences, which, in turn, threatened the financial and economic security of the state. The research relevance is determined by several factors. Firstly, the Ukrainian economy has long been negatively affected by external and internal challenges, including military aggression, political instability and socio-economic difficulties. The regions that suffered the greatest losses from the conflict have faced difficulties in economic recovery, which has exacerbated regional disparities (Ivanov *et al.*, 2020). For example, the affected regions demonstrated significantly lower development indicators. Second, regional development disparities were complex and required a comprehensive approach to their analysis, as various factors, such as economic, social and political, influenced their development.

The importance of the topic is determined by the need to implement effective government strategies to overcome regional disparities, through investments in infrastructure, education, training and support for local initiatives. It is necessary to address the experience of European countries in the field of decentralisation and regional governance, accounting for the specifics of Ukrainian realities. The study identified key aspects of regional development and proposed practical solutions to improve national economic security, which is relevant in the face of current challenges. Determination of regional disparities is an important step towards sustainable development and improving the quality of life in all regions of Ukraine.

The main problem of the study was the low level of Ukrainian economic security due to its vulnerability to external threats and dependence on international financial institutions. L. Mohilevskyi *et al.* (2021) proposed a method for determining an integral indicator of economic security, which can be used to assess the economic situation and identify problem areas. However, the study does not cover adaptive mechanisms of economic policy to respond quickly to challenges. The study covered the impact of the war on Ukraine's agricultural sector, including the destruction of land and the blockade of exports. Considerable attention was devoted to losses and the necessary investments to restore the industry. A.A. Román (2024) emphasised that recovery requires large financial resources and demining, which is a key challenge for land reclamation.

The study addressed the economic recovery and the exacerbation of regional inequalities due to the war. A. Kochnev *et al.* (2024) emphasised the importance of Ukrainian integration into European economic chains as a means of reducing disparities. However, the problem of uneven use of resources due to differences in administrative capacity remained. The study focused on economic imbalances and risks of regional development. I. Storonyanska *et al.* (2023) emphasised that regional development

depended on an agricultural orientation, which exacerbated disparities and instability. The gap concerned insufficient research on the long-term effects of economic orientation. The study addressed the challenges of the agricultural sector in the context of globalisation. I. Koshkaldá *et al.* (2023) studied the impact of global changes on agriculture and the need to create an economic security strategy for stability and development. The gap was the insufficient analysis of the adaptation of the agricultural sector to global challenges.

The study raised the issue of crisis dynamics of regional disparities. O. Shevchenko *et al.* (2023) developed disaster forecasting models, although gaps in the study of their adaptation to changing external factors were present. The problem of regional disparities in Ukraine is relevant due to the impact of military operations on the country's socio-economic development. D. Rupp (2023) emphasised that the war increased disparities between regions due to different levels of infrastructure development and economic activity. The results of these studies showed that the regions most affected by the conflict showed a decline in economic performance, while other regions were able to maintain some stability due to better infrastructure. Gaps in the research include the lack of strategies to effectively rebuild the economies of the affected regions and invest in their infrastructure.

The problem of regional disparities in the agricultural sector of Ukraine is relevant due to the impact of military operations on the country's economic security. Research on this topic was conducted by such authors as O. Hnatkovich *et al.* (2023), who studied modern approaches to managing Ukraine's regional development in the context of the European experience of decentralisation and governance. They noted the imperfection of the existing system of regional governance, which leads to a decrease in the effectiveness of public policy at the regional level. Gaps that require further research include the development of new approaches to financial support for regions and the adaptation of European experience to Ukrainian conditions.

The study aimed to develop ways to overcome the disparities with a focus on ensuring socio-economic stability and improving the living conditions of the population. The main objectives were to analyse the reasons for these differences (economic, military, political, social, geographical), their impact on the national financial and economic security, and to develop recommendations for investments in infrastructure, education, agriculture and other key sectors to reduce regional imbalances and ensure sustainable development.

► Materials and methods

A comprehensive approach was used in this study, consisting of several stages of analysis and the use of various methodological tools to examine strategies for managing regional disparities in Ukraine. The study was conducted

over two years, from 2022 to 2023, in different regions, including Kyiv, Kharkiv, Lviv, Odesa, and Dnipro oblasts. The choice of these regions was based on their strategic importance for Ukrainian economic security and differences in socio-economic conditions. Kyiv region represents the capital region, which is the administrative and economic centre of the country. Kharkiv and Dnipro regions were heavily affected by the hostilities and the destruction of infrastructure, making them key to studying the agricultural sector in wartime. Lviv and Odesa regions remained stable yet are crucial for agriculture and exports due to their logistical capabilities. This can be used to compare the effects of the war in different regions and develop comprehensive recommendations to overcome regional disparities.

The first stage of the research was to collect data from official sources. The main source of information was the State Statistics Service of Ukraine (n.d.). The data collected included gross domestic product (GDP), unemployment, income, social conditions, investment, and other important socio-economic characteristics (Minfin, 2024a; 2024b; 2024c). This stage provided the basic framework for further analysis of regional disparities and allowed for the identification of key challenges faced by different regions. The second stage was a comparative analysis of socio-economic indicators between the selected regions. Statistical analysis methods were used for this analysis. Software tools included Excel for analysing the collected data. The focus was on employment, investment in the agricultural sector, farm productivity and changes in economic activity in different regions. The collected data were compared with each other, which identified regional disparities and general trends.

The third stage of the study assessed the impact of investment in the regions, including an analysis of how investment flows changed before and after the war. The study determined that investment activity in the affected regions declined significantly, which led to a decline in agricultural productivity and an increase in unemployment. Methods of state investment programmes in restoring the agricultural economy in the regions were addressed (Ministry of Economy of Ukraine, 2023; Poltavazernoproduct develops irrigation..., 2024). One of the key stages of the study was to assess the effectiveness of state support for the agricultural sector. The mechanisms of state aid to small and medium-sized farms, as well as programmes aimed at restoring the infrastructure of the agricultural sector in the most affected regions, were studied. For this purpose, data on the number of subsidies, soft loans and other measures aimed at supporting the agricultural sector in the context of military operations were used. The study found significant differences in the levels of support across regions, which led to an uneven distribution of resources. Moreover, in the regions that suffered the greatest losses due to the hostilities, government programmes were less effective, which requires a review of existing policies. At the final stage, the main challenges faced by farmers and other agricultural market participants in the context of the war were assessed. Particular attention was devoted to the analysis of the impact of hostilities on access to markets, transport infrastructure and opportunities for agricultural business development.

► Results

GDP is the main indicator of economic activity in a region. Studies show that there are significant differences in GDP levels between regions in Ukraine. For example, the Kyiv region has the highest GDP per capita, amounting to UAH 431,616 in 2021, due to the development of high technology and infrastructure (State Statistics Service..., n.d.). At the same time, regions such as Dnipro and Odesa regions have significantly lower figures, indicating insufficient economic activity and the need for additional investment. According to the study by A.S. Poltorak *et al.* (2023), regions with active infrastructure development, such as the Odesa region, demonstrate positive economic growth dynamics. The main factor affecting social stability is the unemployment rate. The unemployment rate in Ukraine varies from region to region. For instance, the unemployment rate is expected to reach 40% in the Kharkiv region in 2024, which is a worrying sign for the social development of the region (Davydova, 2023). Social tensions, increased crime, and out-migration are on the rise due to high unemployment. Notably, low living standards are often observed in areas with high unemployment, which underscores the need for employment support programmes.

The standard of living in the regions is determined by the income of the population. Regions with the highest investment in the economy, such as Kyiv and Kharkiv regions, have higher average per capita incomes, according to the Ministry of Economy of Ukraine. The average monthly income in the Kyiv region in 2024 is approximately UAH 21,000 (Tupalska, 2024), while in the Kharkiv region, it is only about UAH 15,000 (Svilenok, 2024). This indicates a significant inequality in economic development between the regions. Access to social services, such as education and healthcare, also affects the overall level of development in a region (Zotaj *et al.*, 2024). Higher levels of access to high-quality social services are observed in regions with better infrastructure and high economic development. Studies show that the quality of education and healthcare services is better in regions with higher income levels. This underscores the importance of investing in social infrastructure to improve the overall standard of living. Thus, the analysis of socio-economic metrics shows that regional disparities in Ukraine are a significant issue that requires a comprehensive approach to address. These metrics can be used to identify the strengths and weaknesses of the regional economy, which is important for the development of public policies. The collected data and findings can be used to develop plans aimed at improving social stability and economic security in Ukraine.

Ukrainian overall stability depends on domestic economic security. Ensuring economic security is a priority for the government and society in the face of current challenges, such as military conflicts, globalisation and internal problems. This means the ability of the state to continue to develop, preserve its independence and protect its national interests from threats from external and internal sources. Military conflict is a major threat to economic security, as it directly affects economic activity, investment and consumer sentiment (Shahini *et al.*, 2022). War destroys infrastructure, disrupts businesses, and reduces the number of jobs, leading to unemployment and social tensions. Economic dependence on external partners is

another significant threat. Reducing dependence on imported goods, in particular energy, is essential for Ukraine, as this could negatively affect economic stability in the event of changes in global prices. Various metrics are used

to assess economic security in Ukraine. GDP, unemployment and inflation are important (Table 1). These indicators help determine the state of the national economy and its ability to respond to challenges.

Table 1. Key indicators of economic security of Ukraine 2023

Value	Value
GDP (million UAH)	5.518062
Unemployment rate (%)	10
Inflation (%)	12

Source: Minfin (2024a; 2024b; 2024c)

This table demonstrates that the national GDP remains stable, but unemployment and inflation need to be urgently controlled. High unemployment can lead to social problems, while inflation reduces the purchasing power of the population, which negatively affects the overall economic situation. To improve economic security, Ukraine needs to develop comprehensive strategies. It is necessary to address a variety of approaches that can significantly impact the stability of the economy. These include the active introduction of innovative technologies that can increase productivity and reduce costs in key industries. It is also necessary to create a favourable investment climate that will attract capital for the development of strategically important sectors.

Effective management of natural resources and energy efficiency should also be priorities. Ukraine should invest in green development, which will not only reduce dependence on imported energy but also create new jobs in environmentally friendly industries. Training and retraining programmes will contribute to the development of human capital, which is necessary to meet the needs of the labour market in a rapidly changing environment. Table 2 demonstrates key recommendations for improving Ukrainian economic security. To ensure sustainable development and increase economic stability, several measures need to be taken to diversify the economy, support small businesses, invest in infrastructure and develop human capital.

Table 2. Recommendations for improving economic security

Recommendation	Description
Diversification of the economy	Stimulation of the development of new sectors, such as green energy, IT, and agriculture
Small enterprise support	Providing financial support, including loans and consulting programmes
Investments in infrastructure	Modernising transport and energy infrastructure to improve economic efficiency
Human capital development	Investing in education, training and retraining to improve the skills of the workforce

Source: K. Miyamoto & E. Chiofalo (2017)

Diversification of the economy is an important step to reduce dependence on single sectors. This can be achieved by stimulating innovative industries, such as green energy, information technology and agricultural exports, through tax incentives and government support for start-ups and investors. Support for small businesses should include expanding access to finance through government lending programmes and advisory services. Establishing business incubators in the regions could stimulate local entrepreneurship and help create new jobs. Investments in infrastructure are a key factor in improving economic efficiency. Transport and energy infrastructure needs to be modernised to improve logistics and ensure energy sustainability. This, in turn, will help reduce energy costs and improve overall economic productivity.

Human capital development is another important component of economic security. Investments in education and training, including retraining programmes for adults, will help to improve the skills of the workforce, which is essential for the development of new technologies and innovative industries. Thus, to ensure Ukrainian economic security, it is necessary to take specific measures to diversify the economy, support small businesses, invest in infrastructure and develop human capital. These actions will ensure the national stable development, improve living standards and reduce the impact of external and internal challenges on the economy. Other important economic factors include international trade and investment, which may also be at risk due to political instability. Table 3 demonstrates the main indicators of the impact of energy prices on the Ukrainian economy.

Table 3. Impact of energy prices on the Ukrainian economy in 2023

Value	Values before changes	Value after changes	Percentage change (%)
Gas price (UAH per 1000 m ³)	7.000	9.000	+28.57
Oil price (UAH per barrel)	4.000	6.500	62.5
Inflation (%)	10	12	+20

References: Ministry of Economy of Ukraine (2024a)

This table shows that rising energy prices have a direct impact on inflation in Ukraine. Higher energy prices lead to higher production costs, which affects consumer prices. The political situation in the international arena also has a crucial impact on Ukrainian economic security.

Conflicts in neighbouring countries can lead to increased tensions with trading partners. Diplomatic sanctions and political instability can significantly limit business opportunities. Table 4 shows the main political factors affecting Ukraine's economic security.

Table 4. The impact of political factors on Ukrainian economic security 2023

Factor	Description	Potential impact
Sanctions	Import/export restrictions	Decrease in trade volume
Political instability	Conflicts in the region	Reduced investment
Foreign policy	Diplomatic relations	Impact on economic cooperation

Source: National Institute for Strategic Studies (2023)

The table highlights that political factors can have a significant negative impact on Ukrainian economic security. Sanctions could lead to a decrease in foreign trade, which would affect the overall economic situation. Social aspects, such as living standards, employment and access to education, also affect economic security. Social tensions caused by high unemployment or poverty can lead to protests and instability (De La Llave *et al.*, 2022). Environmental factors, such as climate change and natural disasters, can affect agriculture and the overall economy. For instance, droughts or floods can reduce yields, which can negatively affect food security. A.S. Poltorak *et al.* (2023) noted that integration into global economic processes and adaptation to new conditions are critical to strengthening a country's economic security. Developing strategies that incorporate global challenges can ensure sustainable development and economic stability.

Thus, the impact of global factors on Ukrainian economic security is multifaceted and complex. Economic, political, social and environmental factors interact with each other, creating both threats and opportunities for development. To ensure its economic security, Ukraine needs to adapt its strategies to the changing conditions of the global economy, invest in infrastructure, support small and medium-sized businesses, and work to improve social conditions. This will help reduce the national vulnerability to external threats and ensure sustainable development in the face of current challenges.

The restoration of Ukrainian economic security depends on the elimination of regional imbalances in the agricultural sector. Food security, employment, and social stability are ensured by the agricultural sector, which makes up a significant part of the economy (Biyashev *et al.*, 2024). However, the social, economic and environmental disparities that exist in different regions pose significant obstacles to the development of this sector. The existing disparities in economic performance between Kyiv, Kharkiv, Lviv, Odesa and Dnipro regions need to be addressed immediately, as they could lead to social tensions, increased poverty and out-migration. The main strategies for managing regional disparities include support for small and medium-sized farms, investment in infrastructure, diversification of production, and the implementation of environmental initiatives.

As they make up a significant part of agricultural production, contributing to food security, employment and rural development, support for small and medium-sized farms is vital for the development of the Ukrainian

agricultural sector. Financial resources, educational programmes, advisory services and infrastructure can be part of strategies to support small and medium-sized farms. Access to finance is an important part of supporting small and medium-sized farms. This includes providing preferential terms for obtaining financing, as well as grants and loans. Many programmes in Ukraine help small and medium-sized enterprises. For instance, farmers can obtain funds to purchase seeds, machinery and other inputs for their farms through microcredit programmes. Programmes such as "Gardening" or "Livestock" can provide interest-free loans for certain activities, which helps to develop the industry (Ukraine Plan 2024-2027, 2024).

Farmer training is an important aspect of supporting small and medium-sized farms. Education and training can have a significant impact on the productivity and efficiency of farmers. Training programmes are being implemented in Ukraine that cover agronomic practices, management skills and the use of modern technologies. These programmes can be provided by agricultural universities, farmers' associations and government agencies. Small and medium-sized farms participating in the "eRobota" ("digital job") programme are substantial in Ukrainian economy by receiving grant support for the development of processing enterprises. In 2023, these enterprises contributed more than 1 billion UAH in taxes to the budget, which demonstrates their importance to the economy. In total, since the launch of the New Level grant programme for processing enterprises, 633 enterprises have received grant support totalling UAH 3.2 billion. Deputy Minister of Economy of Ukraine Nadiia Bihun noted that Ukrainian businesses are beginning to actively use external financing and government instruments for their development. This is a crucial practice that has already been successfully applied in the European Union. Grant programmes not only support business but also stimulate economic development in general, as they create new jobs and contribute to the growth of value-added production. Among the grant applicants, 77% are legal entities, 17% are individual entrepreneurs, and 5% are individuals. Businesses mostly use the grants to purchase equipment (78%), as well as to put it into operation (12%) and to deliver equipment (9%). This approach is extremely effective, as one invested hryvnia generates about 20 hryvnias in output, which confirms the high profitability of such investments (Ministry of Economy of Ukraine, 2024b).

Advisory services are another important element of support. Farmers can receive advice on crop selection,

tillage techniques, product marketing and management practices. These services can be provided by specialists from agricultural universities, research institutes or private consultants. Access to such services can help farmers make more informed decisions and improve their performance. Infrastructure development is also a relevant factor in supporting small and medium-sized farms. Investments in roads, warehouses, irrigation systems and other infrastructure can significantly improve the environment for agribusiness. Modernising the road network reduces the cost of transporting products and improves access to markets. It is also necessary to create cooperatives that can pool farmers' resources to share machinery and market products.

Farmers should actively participate in government programmes for the development of the agricultural sector. This may include participation in grant competitions that provide funding for innovative projects or in sustainability support programmes that offer resources for the implementation of environmentally friendly technologies. Farmers should be aware of the opportunities available and take advantage of them. For instance, Astarta-Kyiv agricultural holding is actively implementing environmental initiatives aimed at reducing its environmental footprint. The main areas of focus include reducing greenhouse gas emissions by 10% by 2025, developing bioenergy using biogas plants, and rational use of natural resources. Astarta (2020) is also committed to the reduction of water and agrochemicals, which contributes to environmentally friendly production and biodiversity conservation.

Overall, support for small and medium-sized farms is vital for the development of the Ukrainian agricultural sector. State support, educational programmes, advisory services and infrastructure development can ensure sustainable development and significantly increase the competitiveness of farmers. Farmers can receive assistance in overcoming current challenges and reducing regional disparities if they have access to financial resources and participate in development programmes. Investments in the infrastructure of Ukraine's agricultural sector are critical to ensuring economic security and sustainable development of the region (Radchenko *et al.*, 2023). In 2023, Ukraine actively worked to attract investment in infrastructure despite the challenges posed by the war. One of the key areas was the creation of a war risk insurance system, which made it much easier for investors to invest in projects in Ukraine. This helped attract 2.9 billion USD in foreign direct investment in the first eight months of the year, which was an unexpected result even for international experts.

Successful examples of investment include Bayer's EUR 60 million plant in the Zhytomyr region and King-span Group's USD 280 million project to build a construction materials plant. In addition, Ukrainian companies

such as Astarta-Kyiv continue to develop, having signed a USD 60 million deal to build a soybean processing plant. Moreover, a new flour milling complex by Volyn-Zernoproduct was launched in the Volyn region (Ministry of Economy of Ukraine, 2023). Investment in transport infrastructure is a priority. Modernising roads, building new transport arteries and improving rail connections can significantly improve logistics processes. For instance, investments in the repair and construction of new roads can shorten delivery times, reduce fuel costs, and improve the overall level of service to farmers (Tupalska, 2024).

The irrigation system is another important piece of infrastructure that is critical for agriculture, especially in the arid regions of Ukraine. Investments in modern irrigation systems not only increase yields but also ensure the sustainability of production in the face of climate change (Zibtsev *et al.*, 2024). For instance, Poltavazernoproduct Investment and Industrial Company Limited Liability Company are actively working on the development of irrigation systems within the Gradyzha Irrigation System in the Poltava region. This association of water users, Hradzka, can provide irrigation for an area of over 8,000 hectares, of which 6,700 hectares are currently under irrigation. Every year, the farmers modernise the irrigation system by replacing old metal pipelines with plastic ones and rebuilding pumping stations. In 2023, the company will grow sugar beet, hybrid corn and soybeans on an area of almost 1,050 hectares under irrigation. The company started implementing drip irrigation in 2015 on an area of 300 hectares, and since then has upgraded 1.5 km of the state canal and launched two pumping stations. Currently, there are 8 sprinklers in operation, operated by 15 hydraulic engineers. To ensure their efficient operation, about 10 km of communications were restored and built over the year (Poltavazernoproduct develops irrigation..., 2024).

Energy infrastructure also requires attention. Investments in energy systems such as electricity grids and renewable energy sources can reduce energy costs for farmers. Wind and solar energy projects are being actively developed in Ukraine, which can provide farmers with cheap and clean energy. This, in turn, reduces production costs and increases the overall competitiveness of the agricultural sector. To implement investment projects in agricultural infrastructure, it is necessary to ensure transparency and accountability in the use of public funds. The State Programme "Agrarian Investments" envisages the attraction of both public and private financing, which can form the basis for the implementation of infrastructure projects in the agricultural sector. Such investments will not only increase the efficiency of agriculture but also create new jobs, which will contribute to the social development of the regions. The volume of investments is shown in Table 5.

Table 5. Investment in agricultural infrastructure 2023

Region	Investment volume (million UAH)	Key areas of expenditure
Kyiv region	120	Modernisation of roads
Kharkiv region	90	Water supply
Lviv region	70	Irrigation systems
Odesa region	60	Logistics
Dnipro region	80	Energy networks

Source: World Bank (2023)

Thus, investment in infrastructure is essential for the development of Ukrainian agriculture and overcoming regional disparities. Modern transport, energy and utility infrastructure create the conditions for efficient farming, reducing production costs and providing access to markets. In the face of current challenges, such as climate change and global economic crises, investments in agricultural infrastructure are becoming particularly important for ensuring sustainable development and the economic security of the country. Managing regional disparities in Ukrainian agriculture through social policies is crucial for improving the quality of life and ensuring stability in rural areas. These include measures aimed at improving access to education, healthcare and social support, which are essential for the development of human capital. Access to high-quality education is needed to improve the level of professional skills of the population. Modernisation of rural educational institutions, teacher training and the provision of modern teaching materials can have a significant impact on the quality of education. Youth will be attracted to agriculture through training programmes that meet the needs of the agricultural sector.

The example of the “Faini Gazdy” cooperative association in the Ternopil region demonstrates how cooperation can contribute to the development of local farms. The cooperative unites more than 16 cooperatives, growing berries, honey, medicinal plants and grain. The introduction of the latest technologies, such as shock freezing of berries, allows the cooperative to export its products to European markets. This is an example of how cooperation can reduce costs and increase the competitiveness of small farmers, helping to reduce regional disparities (Panasyuk, 2021). As part of its 2030 healthcare development strategy, Ukraine committed to improving access to healthcare services in rural areas. This includes the creation of mobile medical teams, the development of telemedicine and the strengthening of primary healthcare, which allows patients to receive medical care closer to home. The implementation of preventive programmes and an epidemiological monitoring system is aimed at combating the main diseases affecting the rural population. In addition, the drug reimbursement programme facilitates access to medicines, which helps reduce social inequality (Healthcare system development..., 2022).

KSG Agro has adapted to the new conditions caused by the war by implementing strategic changes in its operations. The company increased its production capacity by 20%, increased the number of pigs by 16% and expanded its supply geography by 23%, including the affected regions such as Kharkiv, Zaporizhzhia and Kherson. This is an example of how agribusinesses can successfully adapt to challenges and maintain economic stability even in difficult conditions (Fairy-tale pork: Serhiy..., 2023). Economic strategies are aimed at increasing the productivity of the agricultural sector and its competitiveness. Diversification of production is an important element in reducing regional disparities. Reducing dependence on certain crops and developing new areas, such as organic farming or medicinal plant production, can increase the resilience of the agricultural sector to market changes. This will allow farmers to adapt to changing conditions and reduce the risks associated with price fluctuations.

The U.S. Agency for International Development's AGRO and AgriLab support programme is also an important tool for improving the efficiency of the agricultural sector. The programme makes precision farming technologies more accessible to small and medium-sized enterprises, helping them to optimise their use of resources and increase yields. This is especially important in times of war when it is necessary to maintain food security and ensure the resilience of the agricultural sector (New support programme..., 2024). Thus, social and economic strategies are interlinked to manage regional disparities in Ukrainian agriculture. Supporting small and medium-sized farms, investing in infrastructure, diversifying production, and improving access to education and healthcare services will increase the sustainability of the agricultural sector, improve living standards, and reduce social and economic inequalities in the regions. This type of strategy requires a careful approach and the active participation of all stakeholders, such as local communities, government agencies and civil society organisations.

Strategies for managing regional disparities should be incorporated into government policy to ensure the sustainable development of Ukraine's agricultural sector. This will require a comprehensive approach, the involvement of all stakeholders and the active participation of civil society in the development and implementation of programmes. Only in such a situation can the existing divisions be overcome and the country's economic security be ensured.

► Discussion

The study of regional disparities in Ukrainian agriculture highlights the significant impact of the hostilities on economic security, especially through rising unemployment and declining investment. These factors exacerbate economic imbalances between regions and threaten the stability of the agricultural sector, which requires immediate implementation of government support strategies. Despite some positive assessments of the potential development of farms, particularly small and medium-sized businesses, the real challenges lie in difficulties with financing and insufficient infrastructure. To overcome these challenges, a comprehensive approach is required, including investments in infrastructure, support for local initiatives and regional strategies.

The study of regional disparities in Ukrainian agriculture confirms the significant impact of the war on economic security, including increased unemployment and reduced investment, which is consistent with the findings of O. Dovgal *et al.* (2024). The need for state support for small and medium-sized farms for the stability of the sector is highlighted, which is also emphasised by these authors. However, this study emphasises the serious difficulties with financing, pointing to real challenges for farmers. This situation contrasts with the more optimistic views of other studies. Thus, the results emphasise the importance of a comprehensive approach to addressing regional disparities and identifying barriers that need to be addressed urgently.

The study addressed the issue of regional disparities in Ukraine's agricultural sector and their impact on economic security. Aid for Trade (2024) analyses international support to developing countries through trade cooperation. Both studies emphasise the importance of economic

growth. This study highlighted government strategies and investment in Ukraine's infrastructure, while Aid for Trade discusses global trade and the development of small and medium-sized enterprises. The main difference is in the geographical context: this study focuses on Ukraine, while Aid for Trade looks at global processes. Also, the second study pays attention to the impact of the digital economy and e-commerce, which is not the case in this study.

This study addressed the problem of regional disparities in Ukraine and their impact on the agricultural sector. It emphasises the need for investment in infrastructure to overcome these imbalances and improve the country's economic security. It focuses on the development of government strategies to address economic imbalances, through support for small and medium-sized businesses in the agricultural sector. The second study, conducted under the auspices of the World Bank (2021), examines the economic situation in Uganda after the COVID-19 pandemic. The study highlights the need to implement sustainable agricultural practices and natural resource management to ensure green growth and reduce poverty. The document discusses measures to mitigate the effects of the pandemic, including investments in agricultural development and support for small businesses. Commonalities between the two studies are that they both emphasise the importance of investment in infrastructure and sustainable development approaches. They emphasise the need to address disparities through government strategies that focus on regional development. However, the difference lies in the geographical context and focus: this study focuses on Ukraine's agricultural sector, while the World Bank study covers Uganda's overall economic challenges and approaches to post-pandemic recovery through natural resource management and agriculture.

A. Poltorak *et al.* (2022) studied the processes of improving the monitoring of the state's economic security in the context of global instability. They emphasised the need to modify existing mechanisms due to the impact of hostilities and the COVID-19 pandemic. The authors noted that the economic security of the state includes nine main subsystems, the indicators of which should be revised following current conditions. The main recommendations of the study are to systematically review the weighting of indicators, use objective assessment methods, and update the list of indicators to reflect changes in the structure of the economy and global instability. B. Shiferaw *et al.* (2014) explored the issue of drought vulnerability and ways to increase livelihood resilience in sub-Saharan Africa through technological, institutional and policy solutions. They emphasised that sub-Saharan African economies are particularly vulnerable to climate change, where drought is one of the most serious contributors to hunger and malnutrition in the region. This study shows that the overall impact of drought depends on the ability of a country or region to recover from such events, accounting for social, economic and environmental factors. The researchers reviewed existing drought risk management strategies, including both *ex ante* (preventive measures) and *ex post* (response strategies). They emphasised the need to strengthen technological, policy and institutional measures to minimise the negative effects of drought on the most vulnerable households and regions.

V. Shebanin *et al.* (2023) analysed the impact of closed-loop technologies on the economic security of regions, which is similar to this approach to studying economic security in the agricultural sector. Although the focus of this study is more on socio-economic disparities caused by military operations, both studies emphasise the importance of sustainable regional development through economic and environmental factors. Another common feature is the focus on regional aspects of development, which demonstrates the importance of local economic security in the national context. However, the differences lie in the methodological approaches, for instance, V. Shebanin *et al.* addressed the introduction of closed-loop technologies as a tool for achieving economic sustainability, while this study focuses on analysing the impact of military operations on the socio-economic situation in the regions. Moreover, V. Shebanin *et al.* addressed environmental aspects, while this study focuses on financial and social issues on supporting small and medium-sized farms in the context of war.

The Organisation for Economic Co-operation and Development (2016) analysed food security and nutrition challenges in Cambodia, focusing on the uneven distribution of policy outcomes across different regions of the country. The main challenges include the lack of coordination between different levels of government, limited resources and the capacity of local authorities. Of particular importance is the issue of coordination between national and subnational structures, where there is often a lack of mechanisms for effective interaction. Cambodia also faces economic and natural crises that have a significant impact on food security. For instance, the increase in rice prices in 2008 significantly reduced the purchasing power of the poor, which negatively affected their food security. Notably, Cambodia is in dire need of infrastructure to support the agricultural sector, as well as integrated programmes aimed at improving the welfare of the population.

K. Huk & A. Zeynalov (2022) analysed regional disparities and economic growth in Ukraine, focusing on socio-economic inequalities between regions that have increased significantly in recent decades. This study shared some similarities with the present study, as both examined regional disparities in Ukraine and their impact on the country's economic security. The main factors that the authors of the study focused on were natural resources, industrial and agricultural production, government spending, and migration. However, the difference was in the methodology and focus of the studies. While this study focused on the impact of the war on the agricultural sector and support for small and medium-sized farms, K. Huk and A. Zeynalov emphasised the general economic disparities between the regions of Ukraine, including the impact of natural resource allocation and public investment. In addition, they investigated the impact of uneven development between the capital and other regions, which was not the focus of this study.

The study highlighted that regional disparities in Ukraine's agricultural sector are significantly deepening due to military actions, which negatively affect the country's economic security. Rising unemployment, declining investment, and lack of adequate infrastructure support pose additional challenges to the sector's sustainable

development. The need to urgently implement comprehensive government strategies aimed at supporting small and medium-sized farms is obvious, as they play a key role in ensuring food security and economic recovery. It is also important to improve financial support, which will be the basis for overcoming disparities between regions. Thus, a comprehensive approach that includes investments in infrastructure, state support for farmers and the reduction of economic barriers will stabilise the agricultural sector and improve Ukrainian economic security.

► Conclusions

The study of regional disparities in the Ukrainian agricultural sector has confirmed the importance and complexity of the problems faced by this sector in the context of war and economic instability. The study revealed that the war significantly affected Ukrainian agriculture, especially in the regions where hostilities are taking place. Limited production capacities and reduced access to markets have led to an increase in unemployment and a drop in investment activity, creating significant regional disparities. The key challenge is to rebuild infrastructure, which remains critical for the sustainable development of agriculture. To stabilise the situation, the government should focus its efforts on supporting small and medium-sized farms by providing loans and grants, as well as implementing government support programmes. The prospects for the recovery of the agricultural sector lie in attracting international investment, modernising infrastructure and introducing

new technologies, which will help to overcome regional imbalances and restore economic security in Ukraine. Effective management of the agricultural sector is an important element of the country's overall economic development strategy. Overall, the study emphasises the need for urgent and coordinated measures to stabilise Ukraine's agricultural sector and overcome regional imbalances.

The study had several limitations. First, the ongoing hostilities have significantly limited access to some regions, making it difficult to obtain accurate data on the socio-economic situation in these areas. The absence or destruction of infrastructure in many regions made it difficult to access basic information, which may have affected the completeness of the analysis. Secondly, due to the war, official statistics were often incomplete or delayed, which could have affected the accuracy of the assessment of the agricultural sector. Despite these limitations, the study provided important information for developing strategies to address regional disparities. Future research should focus on the long-term economic consequences of the war and the potential for the agricultural sector to recover through international investment and the introduction of innovative technologies.

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► Conflict of interest

The authors of this study declare no conflict of interest.

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Стратегії управління регіональними диспропорціями для відновлення економічної безпеки в аграрному секторі України

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► **Анотація.** Метою дослідження було виявлення ключових загроз для аграрного сектору України в умовах війни та розробка пропозицій для їх подолання через ефективне управління, державну підтримку й інфраструктурні інвестиції. Дослідження проводилося на основі аналізу соціально-економічних показників різних регіонів України з фокусом на аграрний сектор. Збір даних охоплював період з 2022 до 2023 року та включав показники безробіття, інвестиційної активності, продуктивності аграрного сектору та ефективності державних програм підтримки. Було проведено порівняльний аналіз між регіонами, що постраждали від бойових дій, і стабільнішими регіонами, а також досліджено вплив інвестицій в інфраструктуру на економічну стабільність. Дослідження виявило, що аграрний сектор України суттєво постраждав через бойові дії, що призвело до збільшення безробіття, зниження інвестицій і розширення економічних розривів між регіонами. Найбільші втрати спостерігалися в регіонах, що межують із зоною конфлікту, таких як Харківська та Дніпропетровська області. У цих регіонах інвестиційна активність майже повністю припинилася, що суттєво знизило продуктивність аграрного сектору. Водночас, регіони з розвиненішою інфраструктурою демонстрували кращі результати завдяки доступу до ринків і фінансування. Дослідження також показало, що державна підтримка мала нерівномірний вплив на різні регіони, причому найбільш постраждали регіони отримували недостатню підтримку. Результати дослідження підкреслюють важливість інвестицій в інфраструктуру та комплексної державної підтримки для подолання регіональних диспропорцій в аграрному секторі України, а також стабілізації економічної ситуації в умовах тривалого конфлікту

► **Ключові слова:** просторова нерівність; заходи стабілізації; збалансоване зростання; ресурсний потенціал; сільськогосподарські інновації