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### **Formation of anti-crisis potential for economic development of agricultural enterprises**

**Abstract. Introduction.** This article examines the conditions for forming the anti-crisis potential of agricultural enterprises' economic development. It considers the theoretical provisions for restoring the anti-crisis potential of agricultural enterprises' economic development under martial law and macroeconomic instability. The economic essence of anti-crisis potential as an integrative category that characterizes agricultural enterprises' ability to ensure anti-crisis stability, production continuity, and investment activity in crisis conditions is substantiated.

**Purpose.** The study aims to establish a scientific approach to developing the anti-crisis potential of agricultural enterprises, ensuring adaptive stability in the face of macroeconomic instability, military risks, disrupted logistics chains, inflation, and changing agricultural markets.

**Results.** The formation and restoration of anti-crisis potential is determined to be a multi-component process. This process includes financial, resource-production, energy-technological, export-logistics, investment-innovation, and coordination components. The interaction of these components forms the systemic adaptation of agricultural business entities to macroeconomic instability in the country. The study analyzes the impact of destabilizing factors, such as inflation, production losses, logistical disruptions, military risks, price volatility, and rising energy costs, on the anti-crisis resilience level of Ukrainian agricultural enterprises. The study proves that the combined effect of macroeconomic and military factors decreases the liquidity, profitability, and investment capacity of enterprises while stimulating changes in their economic behavior and adaptation strategies.

**Conclusions.** The integration of a set of tools into a single anti-crisis coordination system for the economic development of agricultural enterprises ensures the restoration of production potential, stabilization of cash flows, and long-term investment orientation. The strategic directions of the enterprises' economic development are determined based on an adaptive anti-crisis potential model focused on increasing resource efficiency, technological modernization, activating investments, and reducing the risks of economic activity in the context of the agricultural sector crisis.

**Keywords:** anti-crisis potential; economic development; agricultural enterprises; adaptive resilience; liquidity; profitability; investment capacity; macroeconomic instability; military risks; logistics chains; price volatility; inflationary processes; transformation of agricultural markets.

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### **Формування антикризового потенціалу економічного розвитку сільськогосподарських підприємств**

**Анотація.** У статті досліджено умови формування антикризового потенціалу економічного розвитку сільськогосподарських підприємств. Розглянуто теоретичні положення щодо формування та відновлення антикризового потенціалу економічного розвитку сільськогосподарських підприємств в умовах воєнного стану та макроекономічної нестабільності. Обґрунтовано економічну сутність антикризового потенціалу як інтегративної категорії, що характеризує здатність сільськогосподарських підприємств забезпечувати антикризову стійкість, виробничу безперервність та інвестиційну активність у кризових умовах.

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*Визначено, що формування та відновлення антикризового потенціалу є багатокомпонентним процесом, який включає фінансову, ресурсно-виробничу, енергетично-технологічну, експортно-логістичну, інвестиційно-інноваційну та координаційну складові, взаємодія яких забезпечує системну адаптацію аграрних суб'єктів господарювання до макроекономічної нестабільності.*

*Проаналізовано вплив дестабілізаційних чинників, зокрема інфляції, втрат виробництва, логістичних порушень, воєнних ризиків, коливань цін (цінової волатильності) на сільськогосподарську продукцію та зростання витрат на енергоресурси, на рівень антикризової стійкості сільськогосподарських підприємств України.*

*Доведено, що синергетична дія макроекономічних і воєнних факторів зумовлює зниження ліквідності, рентабельності та інвестиційної спроможності підприємств, водночас стимулюючи зміни в їх економічній поведінці та адаптаційних стратегіях.*

*Обґрунтовано, що інтеграція сукупності інструментів у єдину систему антикризової координації економічного розвитку сільськогосподарських підприємств забезпечує відновлення виробничого потенціалу, стабілізацію грошових потоків та інвестиційну спрямованість у довгостроковому періоді.*

*Визначено стратегічні напрями економічного розвитку підприємств на засадах адаптивної моделі антикризового потенціалу, орієнтованої на підвищення ефективності використання ресурсів, технологічну модернізацію, інвестиційну активізацію та зниження ризиків господарської діяльності в умовах кризи аграрного сектору.*

**Ключові слова:** антикризовий потенціал; економічний розвиток; сільськогосподарські підприємства; адаптаційна стійкість; ліквідність; рентабельність; інвестиційна спроможність; макроекономічна нестабільність; воєнні ризики; логістичні ланцюги; цінова волатильність; інфляційні процеси; трансформація аграрних ринків.

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**Formulation of the problem.** The modern development of agricultural enterprises in Ukraine occurs amid deep macroeconomic changes, structural imbalances in the agricultural market, military-economic risks, and an unstable financial and credit environment. Traditionally, the agricultural sector acts as a stabilizing lever of the national economy. It forms a significant share of gross added value, export revenues, and employment, determining its strategic role in ensuring the state's economic security.

Increased turbulence in the external economic environment significantly affects the functioning of agricultural enterprises in Ukraine, leading to an exacerbation of crises in production and financial activities in the agricultural sector. Military risks, macroeconomic instability, inflation, disrupted logistical supply chains, fluctuating world agricultural prices, and limited access to financial resources significantly reduce the economic sustainability of agricultural enterprises and hinder their long-term development. Under these conditions, forming and restoring anti-crisis potential becomes key. This potential is an integral economic lever that can adapt business entities to destabilizing factors and ensure the continuity of reproductive processes.

In the modern economic paradigm, anti-crisis potential is considered not only a tool for overcoming crises but also a strategic basis for restoring the economic development of agricultural enterprises. This approach considers economic stability and resource security. In conditions of military challenges and restrictions, it transforms the cost structure to increase production volumes, improve export channels, and mitigate the uncertainty of economic activity. This necessitates rethinking approaches to coordinating the economic development of agricultural enterprises through the lens of anti-crisis restoration.

**Analysis of recent research and publications.** The problem of forming the anti-crisis potential of the economic development of agricultural enterprises is in

the center of attention of domestic scientists who conduct research within several scientific areas, in particular, the anti-crisis economy of enterprises, the financial stability of the agricultural sector, the adaptive development of agribusiness and economic resilience. D. Kozlovsky made a significant contribution to developing the theoretical foundations of anti-crisis enterprise management. He formed a systematic approach to anti-crisis management as an economic category, which includes financial stabilization, restoration of solvency, and ensuring the long-term economic stability of business entities. His work provides a methodology for diagnosing crisis situations based on financial and economic indicators and proposes a mechanism for adapting enterprises to destabilizing external factors, forming the basis for studying the anti-crisis potential of agricultural enterprises.

N. Trusova, N. Polishchuk, A. Sakun, O. Prystemsky, and I. Lunkina studied the conceptual principles of the anti-crisis development of enterprises and developed a model for forming an anti-crisis coordination system at Ukrainian enterprises. This model is based on integrating financial, production, and innovation instruments to stabilize activities. This allowed the scientists to substantiate the architecture of the enterprise's anti-crisis mechanism as a set of interconnected economic elements that respond to crisis phenomena.

In the context of the agricultural sector, I. Mykolenko made a significant contribution to the study of anti-crisis processes by substantiating the specifics of anti-crisis functioning of agricultural enterprises in a market economy. These enterprises are vulnerable to external shocks due to seasonality of production, dependence on natural and climatic conditions, and fluctuations in agricultural prices. This vulnerability can be mitigated by increasing the efficiency of resource potential and optimizing costs [4].

At the same time, R. Sharanov emphasizes that anti-crisis potential should not be considered as a set of

individual indicators, but rather as an integral characteristic reflecting an enterprise's ability to allocate resources, mechanisms, and processes that ensure stability and development amid crisis fluctuations [7]. The author justifies the need to form a system architecture of anti-crisis potential that includes a resource base (financial, production, and material resources); organizational mechanisms (monitoring and diagnostic systems); anti-crisis management modules (strategies, procedures, and management decisions); and adaptation tools (diversification programs, cost optimization, and innovative and digital solutions) [7]. This approach unifies the assessment of enterprises' anti-crisis capacity in the agricultural sector and creates a mechanism that ensures a systemic response to sudden economic changes. Sharanov believes the fundamental economic factors of anti-crisis resilience are production diversification, business process digitalization, financial flexibility, and innovative agricultural production modernization. These factors aim to form strategic directions for adapting agricultural enterprises to an unstable macroeconomic environment. At the same time, I. Nechaeva and L. Shytikova note that the innovative component of anti-crisis potential, realized through the use of economic instruments for the development of enterprises (particularly in the agricultural sector), is actualized through the integration of digital technologies and the modernization and transformation of production. This occurs under the influence of factors that ensure the economic stability of enterprises in crisis conditions [5]. A group of scientists proves that the innovative development of the agricultural sector is key to increasing enterprises' resilience to external and internal shocks. In the context of anti-crisis potential, enterprises that actively implement innovations, such as modernizing production processes, applying digital technologies and automation, and using modern agricultural technologies, can adapt more effectively to unstable market conditions, price changes, logistical constraints, and inflationary risks [14]. This is directly correlated with the energy-technological and investment-innovative components of anti-crisis potential.

In conditions of a war economy, V. Kirsanova substantiated a scientific and applied approach to anti-crisis enterprise functioning, determining systematic enterprise state diagnostics as the basis for forming an effective anti-crisis strategy to maintain economic stability and predict development trajectories [1]. However, despite the conceptual basis of the scientific paradigm of the anti-crisis potential of agricultural enterprise economic development, scientific discourse does not sufficiently address global shocks and crisis factors affecting resource efficiency and innovation in the agricultural sector.

**Formulation of research goals.** The purpose of the study is to substantiate a scientific approach to the formation of the anti-crisis potential of economic

development of agricultural enterprises, which ensures the adaptive stability of economic entities in conditions of macroeconomic instability, military risks, disruption of logistics chains, inflationary processes, and transformation of agricultural markets.

**Presentation of the main research material.** The restoration of anti-crisis potential for the economic development of agricultural enterprises under martial law is a complex, multifaceted process involving the mobilization of internal reserves, the diversification of financing sources, the optimization of production costs, the introduction of innovative technologies, and the improvement of resource efficiency. The economic purpose of this process is to restore agricultural enterprises' ability to generate stable income and liquidity, engage in investment activities, and maintain competitiveness amid crisis and changes in the agricultural market. Studying the impact of anti-crisis factors on the economic capacity of agricultural enterprises is especially important since their combined effect determines the trajectory of restoring production potential and financial balance. Anti-crisis factors—including macroeconomic stabilization, state support for the agricultural sector, digitalization of business processes, and development of business models on an innovative production platform adapted to military and logistical challenges—form the basis for a scientific and applied approach to restoring anti-crisis potential. This approach is key to increasing the economic stability and adaptability of agricultural enterprises in Ukraine and ensuring the stable functioning of Ukraine's agricultural sector amid the crisis transformation of the national economy.

In a war economy, N. Trusova, N. Zakharova, and I. Kohut argued that increasing the anti-crisis potential of agricultural enterprises requires implementing risk-oriented management. This approach involves systematically identifying, assessing, monitoring, and responding to risks. This type of management not only eliminates the consequences of a crisis, but also predicts risk phenomena and adapts enterprises to changing external environments. This adaptation is key to sustainability and long-term development. Additionally, the authors prove that the sustainable economic functioning of agricultural enterprises cannot be achieved without an active management policy that integrates risk elements into the management system. Thus, the anti-crisis potential of economic development is formed not only through risk neutralization, but also through constructing sustainable business models capable of withstanding long-term external shocks [16].

A modern agricultural enterprise operates under the simultaneous influence of macro- and micro-level risks, such as macroeconomic instability, inflationary processes, currency fluctuations, changes in tax and agrarian policy, market competition, and production and technological restrictions. The multifactorial nature of these risks creates the need for comprehensive anti-crisis

measures that consider all levels of economic impact [17]. In terms of protecting competitiveness as a function of anti-crisis management in a risky farming environment, this is achieved by increasing production productivity, optimizing costs, updating the material and technical base with innovations, and diversifying production and sales markets. These elements comprise the production and investment-innovation components of anti-crisis potential, ensuring the enterprise's ability to maintain its market position during crisis periods [17].

Given the current state of the agricultural sector, enterprises must transition to an adaptive model of economic development. This model involves monitoring the external environment, assessing risk factors, and promptly adjusting production and financial strategies. This approach is directly related to the coordination component of anti-crisis potential because it ensures consistent management decisions and a quick response to changes. Ensuring the competitiveness of agricultural enterprises under conditions of multifactor risk requires a comprehensive approach integrating financial stability, production efficiency, innovative development, risk management, and institutional support. This approach creates a comprehensive anti-crisis system for the economic development of agricultural enterprises. In modern economic science, anti-crisis potential is considered an integrative system including financial,

production-resource, innovation-technology, and coordination components [2; 3; 1].

The financial component determines the liquidity, solvency, financial flexibility, and investment capacity of agricultural enterprises. This is critically important during times of market instability. The resource-production component encompasses land, materials, technology, labor, and energy resources, ensuring the continuity of the production process and forming the basis of economic stability in agricultural production. The innovative and technological component reflects the implementation of digital technologies and the modernization of production, as well as innovative agricultural technologies, which increase the efficiency of economic entities and reduce their vulnerability to crisis factors. The coordination component, in turn, characterizes the quality of strategic planning, anti-crisis scenarios, and adaptive decision-making in uncertain conditions [1].

It should be emphasized that the structural components of anti-crisis potential are closely interconnected and interdependent, forming a holistic system that stabilizes the economy. Disrupting the balance of even one component decreases the overall level of anti-crisis potential and increases the risk of financial and economic instability among agricultural enterprises (Table 1).

**Table 1 Architecture of the components of the anti-crisis potential of economic development of agricultural enterprises**

Component	Constituents	Economic value	Level of resilience of anti-crisis potential
Financial	Liquidity, capital structure, creditworthiness	Ensures the ability to cover current liabilities, maintain solvency in crisis conditions and make investments in the restoration of production	Medium-high (depends on access to credit, government support and stability of cash flows)
Resource-production	Capacity, technological efficiency, logistics	Allows to maintain the continuity of the production process, optimize the use of resources and minimize production losses in conditions of shocks and restrictions	Average (decreased due to war losses of production infrastructure and resource restrictions)
Energy and technology	Digitalization, modernization of production, R&D, energy efficiency	Contributes to adaptation to energy risks, reduction of production costs, increase of technological flexibility and competitiveness of the enterprise in conditions of instability	Medium-low (constrained by high costs of energy carriers and limited investments in innovation)
Export-logistics	Diversification of sales markets, transport infrastructure, logistics channels, contractual relations, supply chain management	Ensures stability of product sales, reduces dependence on internal market restrictions, increases foreign exchange earnings and resistance to logistical disruptions under martial law	Medium-low (vulnerability to blocking of logistics routes and high transport costs)
Investment and innovation	Investment activity, access to financial resources, innovative projects, grant financing, introduction of new technologies	Forms the basis for long-term economic recovery, increases productivity, stimulates technological renewal and ensures structural modernization of agricultural production	Average (gradual growth due to international support programs and grant financing)
Coordination	Risk management, strategic planning, adaptive management, anti-crisis strategies, managerial flexibility	Ensures rapid response to crisis events, consistency of management decisions, effective coordination of resources and forecasting the trajectory of economic development of enterprises	High (strengthened by the need for adaptive management in conditions of military and economic risks)

Source: developed by the authors based on data [1; 4; 8; 10; 11; 12; 16; 18]

In the context of martial law, the anti-crisis stability of agricultural enterprises is shaped by a variety of interconnected macroeconomic, production, and market factors that influence their ability to adapt to economic crises.

The agricultural sector is particularly vulnerable due to its dependence on natural resources, logistics infrastructure, energy supply, and foreign economic markets. These factors significantly increase the riskiness of economic activity and reduce the level of anti-crisis stability of enterprises under martial law.

Inflation is a significant destabilizing factor that directly affects the growth of agricultural product costs by increasing the prices of material and technical resources, fertilizers, plant protection products, fuels, lubricants, and equipment. Inflationary processes lead to an imbalance between enterprises' costs and incomes, decreasing the profitability of production and restricting investment opportunities. This complicates the restoration of financial balance in crisis conditions. In the long term, inflation reduces enterprises' liquidity and increases the risk of financial instability [15; 1].

The second critically important factor is production losses. In martial law, these losses are caused by the destruction of production infrastructure, the mining of agricultural lands, a shortage of labor resources, and limited access to material and technical support. Reduced production volumes directly lower enterprises' income levels, worsen their financial results, and reduce their internal resources for forming anti-crisis potential. Additionally, instability in production processes increases operational risks and reduces the efficiency of utilizing resource potential [15; 18].

Logistical disruptions significantly impact anti-crisis resilience. These disruptions are manifested as blocked transport routes, increased transportation costs, export restrictions, and difficulty accessing sales markets. Disruptions to logistics chains lead to the accumulation of unsold products, loss of income, and decreased capital turnover. These factors negatively affect the financial flexibility of agricultural enterprises. During military operations, the logistical factor becomes systemic and one of the main constraints on the economic development of agricultural businesses [15; 11; 10].

O. Petrenko and A. Shevchenko made an important contribution to the development of a scientific approach to the anti-crisis resilience of the agricultural sector by studying the adaptation of agriculture to wartime realities and economic crises. According to scientists, the economic resilience of agricultural enterprises is formed through the diversification of sales markets, innovative financial instruments, and flexible production structures. This is particularly relevant for countries with transformational economies, as the mechanisms that maintain economic security through agricultural sector support form the anti-crisis potential of agricultural enterprise economic development. Military actions can significantly alter the macro- and microeconomic

environments in which agricultural enterprises operate, creating risks such as the loss of production resources and land, infrastructure destruction, logistical restrictions, labor shortages, and increased energy costs. These factors necessitate reevaluating traditional coordination approaches and establishing a new anti-crisis model. Therefore, we believe that the justification for transitioning to an adaptive model for agricultural enterprises should include flexible production planning, reorientation toward less risky crops, cost optimization, resource conservation, and product sales channel diversification. These measures establish the production and export logistics components of anti-crisis potential.

In modern conditions of instability, the economic resilience of agricultural enterprises is formed through the integration of a set of adaptation tools. Among these tools, diversification of sales markets, use of innovative financial instruments, and flexibility of production structures play a key role. Systematically combining these tools minimizes the impact of crisis shocks, increases resistance to military, inflationary, and logistical risks, and ensures the restoration of agricultural enterprises' economic potential in countries with a transformational economy [6].

First, market diversification acts as a strategic anti-crisis stabilization tool for agricultural enterprises. This involves expanding export destinations, developing new market segments, establishing alternative sales channels (direct contracts, electronic trading platforms, and cooperative associations), and reducing dependence on a single market or logistics route. In wartime, such diversification compensates for losses from blocked logistics routes, reduces price volatility risks, and ensures the stability of foreign exchange earnings. Additionally, focusing on multi-vector markets increases the competitiveness of agricultural products, integrates enterprises into global value chains, and fosters long-term economic sustainability [10].

Secondly, introducing innovative financial instruments is an important tool for increasing resilience. These instruments ensure the liquidity, investment capacity, and financial adaptability of enterprises in crisis conditions. These instruments include agricultural receipts, agricultural risk insurance, forward and futures contracts, grants and donor financing, state preferential lending programs, and public-private partnership mechanisms. Using these instruments reduces financial risks, ensures access to working capital, and supports investment processes, even in conditions of macroeconomic instability. Digital financial platforms and Environmental, Social, and Governance (ESG)-oriented investment instruments that attract long-term capital and modernize production are particularly relevant [11].

Thirdly, flexible production structures are fundamental to the economic adaptation of agricultural enterprises to crisis challenges. This flexibility is evident in the capacity to swiftly alter the allocation of arable land, optimize production expenses, and adopt energy-

efficient technologies, automation, and digital agricultural management systems. These flexible production models enable a quick response to changes in demand, resource shortages, energy price fluctuations, and logistical constraints. Additionally, diversifying production (e.g., crop production, livestock farming, and processing) reduces income loss risks and increases the sustainability of the enterprise's business model. In countries with transformational economies, such adaptability is critically important as it ensures the restructuring of the agricultural sector, increases productivity, and restores economic potential amid systemic crises [18].

The combination of diversified sales markets, innovative financial instruments, and flexible production structures creates a comprehensive economic resilience mechanism for agricultural enterprises. This mechanism not only counteracts crisis phenomena but also creates the prerequisites for sustainable development and recovery in a transformational economy.

In the current conditions of macroeconomic instability and military challenges, diversifying foreign economic relations, optimizing logistics chains, and maintaining flexible pricing policies are becoming increasingly important for developing anti-crisis potential and ensuring the economic development of agricultural enterprises. Diversifying foreign economic relations involves expanding export destinations, establishing multi-vector trade agreements, developing new market segments, and reducing dependence on specific importing countries. This strategy minimizes risks associated with political restrictions, trade barriers, currency volatility, and blocked logistics routes. For agricultural enterprises in countries with transformational economies, export diversification stabilizes foreign exchange earnings, increases solvency, and strengthens financial stability. Additionally, integration into global value chains ensures technological renewal of production and increases the competitiveness of products in international markets [9].

In conditions of crisis restrictions, optimizing logistics chains is an important tool for reducing operating costs and increasing enterprise efficiency. This includes diversifying transport routes, developing multimodal transportation, forming strategic reserves, digitizing supply chain management, and using alternative infrastructure for storing and transshipping products. In wartime, flexible logistics can compensate for losses from the disruption of traditional export channels, reduce delivery times, and minimize product losses. Effective logistics management directly affects capital

turnover, profitability, and the enterprise's ability to maintain financial stability during turbulent periods [13].

At the same time, flexible pricing policies are an important component of anti-crisis income management for agricultural enterprises. This involves using contractual mechanisms to hedge price risks (e.g., forward and futures contracts), using floating price formulas, adapting to changes in the global market, and diversifying sales channels. A flexible pricing strategy reduces the impact of price volatility on a company's financial results, ensures stable cash flow, and increases income predictability. In a transformational economy, this contributes to financial resilience and supports the investment activity of agricultural enterprises [8; 12].

The combination of diversifying foreign economic relations, optimizing logistics chains, and implementing a flexible pricing policy creates a set of mechanisms for the anti-crisis economic development of agricultural enterprises. These factors can increase adaptability, reduce external risks, and ensure the long-term economic sustainability of Ukraine's agricultural sector in the context of war and post-crisis economic changes.

**Conclusions.** Thus, the anti-crisis potential of the economic development of agricultural enterprises is a complex, multifaceted system formed by financial, production, resource, energy, technological, investment, innovation, export, logistics, and coordination factors. The economic nature of this potential lies in the enterprise's ability to ensure sustainable functioning, adapt to external shocks, and restore economic growth rates under conditions of crisis and military transformation of the economy.

Under martial law, mechanisms that diversify foreign economic relations, digitalize production management, develop alternative logistics infrastructure, and implement flexible pricing policies are of particular importance. The use of forward contracts, agricultural risk insurance, price volatility hedging, and international financial instruments strengthens enterprises' financial resilience and stabilizes their cash flows.

However, logistical disruptions and market fluctuations may exacerbate crisis phenomena, leading to income instability and reduced competitiveness of agricultural products in markets. Therefore, enhancing the anti-crisis potential of the economic development of agricultural enterprises should be based on the principles of economic resilience, strategic diversification, resource efficiency, innovation, and risk coordination. This will ensure long-term competitiveness, investment attractiveness, and resilience to external and internal crisis challenges in the context of the post-war transformation of the agricultural sector.

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