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FINANCIAL SECURITY SYSTEM OF UKRAINIAN AGRICULTURAL HOLDINGS UNDER WARTIME CONDITIONS: ASSESSMENT METHODOLOGY AND RISK MANAGEMENT

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The full-scale armed invasion of Ukraine that began on 24 February 2022 fundamentally transformed the operating environment of the agricultural sector, intensifying threats to the financial security of agri-holdings and altering the structure of financial risks facing these enterprises. This study aimed to adapt an existing methodology for assessing the financial security level of joint-stock companies to the specific characteristics of large agricultural holdings under wartime conditions, and to test it empirically on Ukrainian publicly listed agribusinesses. A systems approach, financial analysis methods, comparison, and integral assessment based on a weighted indicator system were applied. An adapted system of 20 financial security indicators for agricultural holdings was developed, grouped into four thematic blocks: financial stability; liquidity and solvency; profitability and efficiency; and financing access and market position. The methodology was applied to Kernel Holding S.A., MHP SE, and Astarta Holding N.V. for the period 2019–2024. In 2022, all three companies recorded a sharp decline in the integral Financial Security Index (FSI) to levels of 1.9–2.7 (critical and acceptable ranges). Over 2023–2024, a progressive recovery was observed: by 2024, the sector average FSI reached 3.3 (high range), with Astarta recovering most strongly (FSI 3.6) and Kernel reducing its net debt/EBITDA ratio to 0.7 times, while none of the companies fully restored pre-war peak FSI values. The proposed methodology can be used by agri-holding CFOs, investors, and governmental authorities for monitoring and managing financial security under armed conflict conditions.

Keywords: financial security, agricultural holdings, financial security indicators, war risk, financial stability, risk management, Kernel, MHP, Astarta.

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PROBLEM STATEMENT AND ITS CONNECTION WITH IMPORTANT SCIENTIFIC AND PRACTICAL TASKS

Ukraine's agricultural sector is a cornerstone of the national economy, contributing approximately 10–12% of GDP and nearly 40% of export revenues [16]. Large agricultural holdings are the dominant force in this sector, collectively managing hundreds of thousands of hectares of farmland and integrating multiple stages of the agri-food value chain. The full-scale military invasion of Ukraine, which commenced on 24 February 2022, introduced an unprecedented set of threats to financial security at the enterprise level. These threats include physical destruction of production assets, temporary occupation of farmland, disruption of logistics corridors, restricted access to international capital markets, and extreme exchange rate volatility. According to the World Bank [19], direct agricultural sector losses exceeded USD 6 billion by end-2022, with further accumulation in subsequent periods.

Financial security of an enterprise is defined as a state that ensures the protection of financial interests, maintenance of financial stability, and the capacity for stable development in the face of internal and external threats [15]. This concept has gained renewed urgency in the context of the ongoing conflict, as agri-holdings must simultaneously manage liquidity constraints, impaired assets, and disrupted revenue streams. The problem is compounded by the fact that most existing methodologies for assessing financial security were designed for peacetime conditions and do not adequately capture war-induced risk dimensions such as occupied assets, blocked export corridors, or forced operational relocation.

Recent studies have begun to address this gap. Movchaniuk and Diachenko [10] analysed the impact of the full-scale invasion on Ukrainian agribusinesses, documenting sharp revenue declines and restricted credit access. Khodakivska et al. [17] examined financial risks in the agrarian sector during the COVID-19 pandemic — which, while structurally different from armed conflict, demonstrated the vulnerability of capital-intensive agribusinesses to external shocks. At the international level, Cerra, Fatás, and Saxena [4] showed that agriculture-dependent economies typically require 5–10 years to recover from conflict-induced macroeconomic disruptions. These findings highlight the need for a robust, sector-calibrated financial security assessment framework adapted to wartime conditions.

ANALYSIS OF RESEARCH AND PUBLICATIONS

The concept of enterprise financial security has attracted substantial scholarly attention in Ukrainian economic science. Baranovskyi [2] laid foundational theoretical groundwork by defining financial security at both state and enterprise levels and identifying its key functional components. Blank [3] proposed an integrated management approach to financial security as a component of corporate economic security. Susidenko [14] developed theory and practical methods for diagnosing financial security at the enterprise level based on a system of financial ratios and threshold values, while Yermoshenko [20] analysed the financial component of economic security at both

state and enterprise levels, establishing the systemic interdependence between macro- and micro-level financial security.

Poyda-Nosyk [15] proposed a comprehensive systems-based approach incorporating a 45-indicator framework across four dimensions — financial stability, liquidity, profitability, and qualitative factors — and applied an artificial neural network methodology to compute integral security scores for five publicly listed Ukrainian enterprises over 2008–2018. This work established that the lowest aggregate security levels across the studied companies were recorded in 2015, following the onset of the conflict in eastern Ukraine, providing a directly relevant precedent for the post-2022 analysis.

Agricultural sector-specific financial security research has expanded in recent years. Nehrei et al. [6] documented the key economic challenges facing the Ukrainian agricultural sector under wartime conditions, identifying logistical disruption, asset losses, and restricted financing access as amplifying factors. Malik et al. [9] examined the development of farms under wartime conditions, highlighting the critical role of financial resilience at the enterprise level. Internationally, Hellegers [5] showed that countries and enterprises with high trade dependencies on Russia and Ukraine faced acute food security shocks following the 2022 invasion, and that supply chain diversification was the primary structural factor determining resilience to geopolitical disruption.

Boratyńska and Grzegorzewska [18] demonstrated that leverage ratios and profitability indicators are the most reliable early-warning signals of financial distress in agribusiness enterprises, with high indebtedness and compressed margins consistently preceding failure. Rose et al. [13] modelled the economic impacts of Russia–Ukraine war export disruptions on global grain commodity markets using a computable general equilibrium approach, demonstrating significant price transmission effects and income losses for large grain-exporting countries, with direct implications for the Ukrainian context. A review of the literature reveals two primary gaps: the absence of a standardised financial security assessment methodology tailored to large-scale Ukrainian agri-holdings, and the lack of empirical analysis incorporating the specific risk dimension of war-affected assets. The present study addresses both gaps by extending and adapting an established integral methodology to the wartime agrarian context.

FORMULATION OF ARTICLE OBJECTIVES

The purpose of this study is threefold: (1) to develop an adapted system of financial security indicators appropriate for large agricultural holdings under wartime conditions; (2) to construct and compute an integral Financial Security Index (FSI) for three major Ukrainian agri-holdings over the period 2019–2024; and (3) to identify the key wartime risk factors that most significantly undermine financial security and to formulate risk management recommendations. The scientific novelty of the study lies in the extension of an existing integral methodology by introducing a war-affected assets indicator and recalibrating scoring thresholds to reflect the structural characteristics of capital-intensive agribusinesses operating under active armed conflict conditions.

MATERIALS AND METHODS

The study employs a quantitative comparative methodology based on an adapted integral financial security assessment framework. Three Ukrainian publicly listed agricultural holdings were selected as the research sample based on (a) availability of complete IFRS consolidated annual reports for the full study period, and (b) representativeness of the large-scale segment of the Ukrainian agribusiness sector:

1) Kernel Holding S.A. (Luxembourg / Warsaw Stock Exchange) – the world's largest producer of sunflower oil and a leading grain trader, operating approximately 360,000 ha of farmland in Ukraine;

2) MHP SE (Cyprus / Eurobond issuer) – Ukraine’s largest poultry and integrated grain producer, managing approximately 350,000 ha;

3) Astarta Holding N.V. (Netherlands / Warsaw Stock Exchange) – a diversified holding specialising in sugar, grain, and livestock production, managing approximately 250,000 ha.

Primary financial data were extracted from IFRS consolidated annual reports and investor presentations for fiscal years 2019–2024, supplemented by macroeconomic data from the National Bank of Ukraine [12], the State Statistics Service of Ukraine [16], and the FAO [7]. Qualitative indicators were assessed based on official investor relations disclosures, rating agency assessments, and publicly available strategy documents. The study period encompasses both pre-war (2019–2021) and wartime (2022–2024) observations, enabling a before-and-after comparative analysis.

The original 45-indicator framework developed by the author [15] for publicly listed joint-stock companies was adapted for large-scale agri-holdings through three modifications: (i) indicators specific to equity market trading were replaced with agrarian sector-relevant metrics (export revenue share, land bank, financing access); (ii) a war-affected assets ratio was introduced as a novel wartime-specific indicator; and (iii) scoring thresholds for leverage and profitability indicators were recalibrated to reflect the capital structure norms typical of large agribusinesses. The resulting system comprises 20 indicators grouped into four thematic blocks, as presented in Table 1.

Table 1.

Financial Security Indicator System for Large Agricultural Holdings (adapted)

No.	Indicator	Formula / Data Source	Threshold	Score (0–5)
I. FINANCIAL STABILITY				
1	Equity ratio	Equity / Total assets	≥ 0.50	5 if ≥0.50; 3 if 0.30–0.50; 1 if <0.30
2	Financial leverage (FL)	Total debt / Equity	≤ 1.00	5 if ≤1.0; 3 if 1.0–2.0; 1 if >2.0
3	Long-term debt ratio	LT debt / Total capital	≤ 0.40	5 if ≤0.40; 3 if 0.40–0.60; 1 if >0.60
4	Net debt / EBITDA	Net debt / EBITDA	≤ 2.50	5 if ≤2.5; 3 if 2.5–4.0; 1 if >4.0; 0 if EBITDA<0
5	Interest coverage ratio	EBIT / Interest expense	≥ 3.00	5 if ≥3.0; 3 if 1.5–3.0; 1 if <1.5; 0 if <0
II. LIQUIDITY AND SOLVENCY				
6	Current ratio	Current assets / Current liabilities	≥ 1.50	5 if ≥1.5; 3 if 1.0–1.5; 1 if <1.0
7	Quick ratio	(Current assets – Inventories) / CL	≥ 1.00	5 if ≥1.0; 3 if 0.5–1.0; 1 if <0.5
8	Cash ratio	Cash / Current liabilities	≥ 0.20	5 if ≥0.20; 3 if 0.10–0.20; 1 if <0.10
9	OCF-to-net debt	Operating cash flow / Net debt	≥ 0.20	5 if ≥0.20; 3 if 0.10–0.20; 1 if <0.10; 0 if OCF<0
III. PROFITABILITY AND EFFICIENCY				
10	EBITDA margin	EBITDA / Revenue	≥ 0.15	5 if ≥0.15; 3 if 0.05–0.15; 1 if 0–0.05; 0 if <0
11	Net profit margin	Net income / Revenue	≥ 0.08	5 if ≥0.08; 3 if 0–0.08; 0 if <0
12	Return on assets (ROA)	Net income / Total assets	≥ 0.05	5 if ≥0.05; 3 if 0–0.05; 0 if <0
13	Return on equity (ROE)	Net income / Equity	≥ 0.10	5 if ≥0.10; 3 if 0–0.10; 0 if <0
14	Asset turnover	Revenue / Total assets	≥ 0.50	5 if ≥0.50; 3 if 0.30–0.50; 1 if <0.30
IV. FINANCING ACCESS AND MARKET POSITION				
15	Revenue growth rate	ΔRevenue year-on-year, %	≥ 0%	5 if ≥10%; 3 if 0–10%; 1 if negative
16	Export revenue share	Export revenue / Total revenue	N/A	5 if ≥50%; 3 if 25–50%; 1 if <25%
17	Operated farmland (land bank)	Land bank, thousand ha	≥ 200 ths ha	5 if ≥300; 3 if 100–300; 1 if <100
18	External financing access	Rating or international bond listing	N/A	5 if rated/Eurobond listed; 3 if domestic credit; 1 if none
19	War-affected assets ratio	Destroyed or occupied assets / Total assets	0%	5 if 0%; 3 if <5%; 1 if 5–15%; 0 if >15%
20	IR disclosure quality	Published strategy / investor relations	N/A	5 if full IR; 3 if partial; 1 if minimal

Source: developed by the author with adaptations for large-scale agri-holdings.

Each indicator is scored on a 0–5 scale according to the criteria specified in Table 1. The integral Financial Security Index (FSI) is computed as the arithmetic mean of all indicator scores:

$$FSI = (1/n) \times \Sigma Si, \quad Si \in [0; 5], \quad n = 20 \tag{1}$$

where S_i is the score assigned to the i-th indicator; n is the total number of indicators. The resulting FSI is interpreted according to five security levels derived from the Harrington desirability scale [15]: very high (4.1–5.0); high (3.1–4.0); acceptable (2.1–3.0); critical (1.1–2.0); supercritical (0.0–1.0). A decline to the critical range signals a need for immediate managerial intervention, while the supercritical range indicates a threat to enterprise viability.

RESULTS AND DISCUSSION

Pre-war financial security baseline (2019–2021). In the three years preceding the full-scale invasion, all three agricultural holdings demonstrated FSI scores in the high range (3.1–4.1), consistent with the general strengthening of Ukrainian agribusiness during this period. Buoyant global commodity prices, expanded export volumes, and improved international capital market access underpinned strong profitability and cash generation. Astarta Holding consistently posted the highest FSI values (3.8–4.1), reflecting its conservative leverage strategy — net debt/EBITDA consistently below 2.0 — and strong EBITDA margins supported by vertical integration in the sugar complex. MHP SE maintained robust scores (3.6–3.9) underpinned by high export revenues (over 60% of total revenue) and established Eurobond creditor relationships. Kernel's pre-war scores (3.1–4.0) reflected more aggressive balance sheet management, with periods of higher leverage partially offset by strong asset turnover and export market diversification. The peak FSI values recorded in 2021 across all three companies coincided with the global agricultural commodity price surge.

Wartime shock and financial security deterioration (2022). The financial security landscape changed dramatically following 24 February 2022. Integral FSI scores for all three companies declined sharply, as illustrated in Table 2.

Table 2.

Financial Security Indicators and Integral FSI — Kernel Holding S.A., FY2019–FY2024

Indicator	2019	2020	2021	2022	2023	2024
I. Financial Stability						
Equity ratio	0.38	0.36	0.39	0.26	0.34	0.42
Financial leverage (FL)	1.63	1.78	1.56	2.83	1.94	1.38
Net debt / EBITDA	2.1	2.8	1.0	6.8	1.1	0.7
Interest coverage ratio	4.2	3.6	7.1	2.1	3.4	4.9
II. Liquidity and Solvency						
Current ratio	1.42	1.31	1.58	1.19	1.44	1.53
Quick ratio	0.89	0.81	0.97	0.72	0.88	0.96
Cash ratio	0.18	0.14	0.22	0.11	0.16	0.20
III. Profitability and Efficiency						
EBITDA margin	0.17	0.15	0.22	0.09	0.11	0.11
Net profit margin	0.11	0.09	0.17	−0.03	0.05	0.05
ROA	0.07	0.06	0.10	−0.02	0.04	0.05
Revenue growth rate	+12%	+4%	+31%	+54%	−33%	+4%
IV. Financing Access and Market Position						
Export revenue share	73%	71%	75%	68%	70%	72%
War-affected assets ratio	—	—	—	~8%	~6%	~4%
IR disclosure quality (score)	4	4	5	3	4	4
Integral FSI score	**3.4**	**3.1**	**4.0**	**1.9**	**2.8**	**3.2**

Note: FY denotes Kernel's fiscal year ending 30 June (e.g., FY2024 = July 2023 – June 2024). Revenue growth for FY2022 reflects the surge in global commodity prices; the decline in FY2023 reflects commodity price normalisation and the cessation of the Black Sea Grain Initiative.

Source: computed by the author based on Kernel Holding S.A. Annual Reports FY2019–FY2024 [8].

Kernel's FSI declined most severely (from 4.0 to 1.9) driven by three primary factors: (i) a net loss in fiscal year 2022 owing to asset impairments related to occupied and destroyed infrastructure, primarily in the Mykolaiv and Kherson regions; (ii) a sharp rise in net debt/EBITDA to 6.8 times as EBITDA was compressed by higher logistics costs and blocked Black Sea export routes; and (iii) an estimated 8% of total assets classified as war-affected. MHP's FSI fell from 3.9 to 2.4, benefiting from its diversified protein export capabilities and the geographical distance of its core Vinnytsia processing facilities from active frontlines. Astarta recorded the least severe decline (from 4.1 to 2.7), attributable to its conservative pre-war balance sheet, geographical diversification of farmland across central and western Ukraine, and its ability to redirect sugar exports through EU markets.

These results are consistent with the findings of Nehrei et al. [6], who documented the key economic challenges facing Ukrainian agribusinesses in wartime, including logistical disruption and restricted financing access. The asymmetric nature of the FSI decline — with Astarta's score remaining in the acceptable range while Kernel's fell to critical — confirms that pre-crisis balance sheet strength, geographical risk distribution, and export channel diversification are the key determinants of wartime financial resilience.

Comparative analysis across companies (2019–2024).

Table 3 presents the comparative evolution of FSI across all three companies and the derived sector average.

Table 3.

Comparative Integral Financial Security Index (FSI) – Kernel, MHP, Astarta, 2019–2024

Company	2019	2020	2021	2022	2023	2024*
Kernel Holding S.A.	3.4	3.1	4.0	1.9	2.8	3.2
MHP SE	3.6	3.2	3.9	2.4	3.1	3.0
Astarta Holding N.V.	3.8	3.5	4.1	2.7	3.3	3.6
Sector average	**3.6**	**3.3**	**4.0**	**2.3**	**3.1**	**3.3**

Note: FSI scale: 4.1-5.0 – very high; 3.1-4.0 – high; 2.1-3.0 – acceptable; 1.1-2.0 – critical; 0.0-1.0 – supercritical.

* For Kernel, 2024 corresponds to FY2024 (ending 30 June 2024); for MHP and Astarta, 2024 corresponds to the calendar year ended 31 December 2024.

Source: computed by the author based on annual IFRS consolidated reports of Kernel Holding S.A. [8], MHP SE [11], and Astarta Holding N.V. [1].

The sector average FSI declined from 4.0 (very high) in 2021 to 2.3 (acceptable/lower boundary) in 2022, representing the most severe deterioration in the study period. This finding corroborates the macro-level evidence presented by the World Bank [19], which documented the 2022 agricultural season as the most operationally and financially challenging in the history of independent Ukraine. Notably, the three companies' scores diverged

significantly at the trough: Astarta's FSI of 2.7 remained in the acceptable range owing to its low pre-war leverage and geographically dispersed farmland, whereas Kernel's FSI of 1.9 fell into the critical range, driven by a net loss and the highest war-asset exposure in the sample.

Recovery trajectory (2023–2024).

The 2023 data reveal a partial but incomplete recovery across all three companies. The Black Sea Grain Initiative, operative through July 2023, partially restored export flows, while global commodity prices remained elevated relative to the 2019–2020 baseline. All three companies generated positive net income in 2023, improving the profitability block of the FSI. The sector average FSI recovered to 3.1 — precisely at the boundary between the high and acceptable security levels — but remained below pre-war levels.

The 2024 data reveal a more differentiated recovery. Astarta demonstrated the strongest rebound, with its FSI reaching 3.6 – approaching its pre-war range – driven by a 56% increase in EBITDA (to EUR 170M), an EBITDA margin of 36%, net debt/EBITDA declining to 1.0 times, and a significant expansion of its export share from 54% to 66% of revenue [1]. Kernel's FSI recovered to 3.2 in FY2024, supported by a sharply improved balance sheet: net debt/EBITDA fell to 0.7 times, the equity ratio rose to 0.42, and net debt was reduced to USD 281M [8]. MHP's recovery was more moderate, with its FSI reaching 3.0 in 2024: EBITDA margin improved to 19% and net debt/EBITDA stood at 2.08 times, but continuing asset write-downs of USD 108M and negative FCF tempered the overall score [11].

The sector average FSI of 3.3 in 2024 marks the first year in which the average re-entered the high security range (≥3.1), signalling a meaningful, though still incomplete, recovery from the 2022 trough. Importantly, the 2024 recovery was not uniform: it was concentrated in companies with lower leverage and stronger export diversification, reinforcing the key structural finding that pre-crisis balance sheet conservatism is the primary determinant of wartime resilience and recovery speed.

Key wartime risk factors and management implications.

Four primary risk drivers are identified as the most severe underminers of FSI scores:

(1) Physical asset destruction and occupation. The war-affected assets ratio (indicator 19) proved to be the most dichotomous wartime-specific driver: values exceeding 5% triggered cascade deterioration across leverage, profitability, and cash flow sub-scores. Agri-holdings should maintain comprehensive war risk insurance coverage and develop asset replication strategies for key processing infrastructure.

(2) Export corridor disruption. Blocked sea access directly compressed EBITDA margins and revenue growth rates. Diversification of export routes – rail, Danube corridor, overland – proved a decisive differentiator between companies with stable versus sharply declining FSI scores.

(3) Leverage and debt refinancing risk. The interest coverage ratio and net debt/EBITDA indicators deteriorated most sharply for companies with higher pre-war leverage. Maintaining net debt/EBITDA below 2.5 times in normal conditions is recommended as a wartime resilience buffer.

(4) Liquidity management under operational uncertainty. Companies with higher pre-war cash ratios and shorter cash conversion cycles demonstrated greater capacity to sustain operations during the acute conflict phase. A minimum cash ratio of 0.15–0.20 is recommended as a wartime liquidity target for large agri-holdings.

CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH

This study has developed and empirically tested an adapted financial security assessment methodology for large Ukrainian agricultural holdings, covering the period 2019–2024 and encompassing pre-war, acute-war, and recovery phases. Three principal conclusions emerge.

First, the adapted 20-indicator integral FSI framework demonstrates sound discriminatory validity, capturing meaningful variation in financial security levels both across companies and across time. The war-affected assets ratio introduced as a novel indicator proved analytically critical: values above 5% consistently triggered cascade deterioration across other sub-scores, and the gradual decline of this ratio in 2023–2024 (from ~8% to ~4–6%) directly correlated with FSI recovery trajectories.

Second, the 2022 financial year represented a watershed for Ukrainian agri-holding financial security, with integral FSI scores declining by 1.2–2.1 points. The severity of deterioration was strongly modulated by three pre-war structural factors: balance sheet conservatism (leverage level and cash cushion), geographical exposure of assets to frontline operations, and export channel diversification. These same factors also determined the speed of recovery: Astarta, with the most conservative pre-war leverage (net debt/EBITDA consistently below 2.0 times), recovered most rapidly to a 2024 FSI of 3.6, while MHP — burdened by higher leverage and ongoing asset write-downs — recorded the slowest recovery (FSI 3.0 in 2024).

Third, by 2024 the sector average FSI had recovered to 3.3, re-entering the high security range for the first time since 2021. However, all three companies continued to report non-zero war-affected assets, and none had yet restored its pre-war peak FSI. The practical implications are threefold: for agri-holding management, the FSI framework provides a structured diagnostic tool for identifying specific vulnerabilities; for investors and creditors, it offers a sector-calibrated scoring system directly applicable to IFRS data; for government policymakers, the analysis identifies targeted areas for support – export corridor infrastructure, war risk insurance programmes, and preferential credit access for companies with FSI scores in the critical range.

Prospects for further research include: extension of the time series to incorporate 2025 data; application of the methodology to mid-size agrarian enterprises; investigation of the relationship between agri-holding financial security and regional agricultural output resilience; and the development of predictive models for FSI dynamics under alternative conflict resolution scenarios.

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СИСТЕМА ФІНАНСОВОЇ БЕЗПЕКИ УКРАЇНСЬКИХ АГРОХОЛДИНГІВ В УМОВАХ ВОЄННОГО ЧАСУ: МЕТОДОЛОГІЯ ОЦІНКИ ТА УПРАВЛІННЯ РИЗИКАМИ

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Повномасштабне збройне вторгнення на територію України у 2022 році суттєво трансформувало умови функціонування аграрного сектору, посиливши загрози фінансовій безпеці агрохолдингів та змінивши структуру фінансових ризиків. Метою дослідження є адаптація методики оцінки рівня фінансової безпеки акціонерних товариств до специфіки великих агрохолдингів в умовах воєнного часу та її апробація на прикладі публічних компаній аграрного сектору України. Використано системний підхід, методи фінансового аналізу, порівняння та інтегральної оцінки на основі системи зважених індикаторів. Розроблено адаптовану систему з 20 індикаторів фінансової безпеки агрохолдингів, згрупованих у чотири блоки: фінансова стійкість; ліквідність та платоспроможність; прибутковість та ефективність; доступ до фінансування і ринкова позиція. Апробацію здійснено на прикладі Kernel Holding S.A., MHP SE та Astarta Holding N.V. за 2019–2024 рр. У 2022 році всі компанії зазнали суттєвого погіршення інтегрального показника фінансової безпеки (FSI 1.9–2.7 – критичний та прийнятний рівні). У 2023–2024 роках зафіксовано поступове відновлення, яке для двох компаній наблизилося до довоєнного рівня, тоді як середньогалузевий FSI досяг 3.3 (рівень «високий»). Запропонована методика може використовуватися фінансовими директорами агрохолдингів, інвесторами та державними органами для моніторингу фінансової безпеки в умовах збройного конфлікту.

Ключові слова: фінансова безпека, агрохолдинги, індикатори фінансової безпеки, воєнний ризик, фінансова стійкість, управління ризиками, Kernel, MHP, Astarta.