

DOI: 10.55643/fcaptp.4.69.2026.5301

Iryna Vakhovych

D.Sc. in Economics, Professor, Rector,
Lutsk National Technical University,
Lutsk, Ukraine;
ORCID: 0009-0002-6867-627X

Iryna Boiarko

D.Sc. in Economics, Professor, First
European University, Kyiv, Ukraine;
e-mail: iboarko@ieu.edu.ua
ORCID: 0000-0003-0690-2251
(Corresponding author)

Olena Zarutska

D.Sc. in Economics, Professor of the
Department of Finance, Banking and
Insurance, University of Customs and
Finance, Dnipro, Ukraine;
ORCID: 0000-0001-7870-9608

Valeriia Fesenko

D.Sc. in Economics, Professor of the
Department of Accounting, Audit,
analyses and Taxation, University of
Customs and Finance, Dnipro, Ukraine;
ORCID: 0000-0002-0317-0895

Larysa Sloboda

Candidate of Economic Sciences,
Associate Professor of the IT STEP
University, Lviv, Ukraine
ORCID: 0000-0002-8953-9111

Olena Sereda

PhD of Economics, Associate Professor
of the Department of Finance, Kyiv
National University of Technologies and
Design, Kyiv, Ukraine;
ORCID: 0000-0003-0547-2077

Received: 01/07/2026

Accepted: 25/08/2026

Published: 31/08/2026

© Copyright

2026 by the author(s)



This is an Open Access article
distributed under the terms of the
[Creative Commons CC-BY 4.0](https://creativecommons.org/licenses/by/4.0/)

TRANSFORMATION OF BANKING RISKS AND THEIR IMPACT ON FINANCIAL STABILITY: IDENTIFICATION AND CONTEMPORARY CHALLENGES

ABSTRACT

This study examines the transformation of banking risks and their impact on the financial stability of Ukraine's banking system under prolonged systemic shocks. The purpose is to identify the relationships among shock sources, banking risks, transmission channels, indicators of financial materialisation, and shock-absorption mechanisms, with particular attention to the full-scale war. The empirical analysis covers 2018–2025 and uses official data from the National Bank of Ukraine, including non-performing loans, provisioning, profitability, lending, customer funds, capital and liquidity indicators, and the Financial Stress Index. A quantitative structural-dynamic design is applied, combining phase-based comparison, analysis of rates of change and percentage-point shifts, and triangulation of financial evidence for hypothesis testing. The results show that the 2022 shock simultaneously activated credit, market, foreign-exchange, interest-rate, operational, and macrofinancial risks, but their materialisation was asymmetric. Asset quality and profitability deteriorated sharply, whereas customer funding, liquidity, and solvency remained comparatively resilient. In 2023–2025, profitability, lending, and asset quality recovered while the underlying military shock persisted. This pattern indicates that financial stability under a prolonged systemic shock depends not on the disappearance of risk but on the banking system's capacity to limit transmission, absorb losses, and adapt its operating mechanisms.

The scientific novelty lies in distinguishing resistance, primary adaptation, and adaptive resilience as successive stages of banking-system response and in defining adaptive resilience as the capacity to maintain and develop core banking functions while the source of systemic shock remains active. The findings support an interconnected but asymmetric interpretation of risk transmission and demonstrate the mediating role of capital, liquidity, stable funding, profitability, and operational continuity in preventing materialised risks from escalating into systemic banking destabilisation. The findings may be useful for researchers studying financial stability and systemic risk, central banks and supervisory authorities developing macroprudential and prudential responses to prolonged shocks, and banking institutions seeking to strengthen risk management, stress-testing practices, and financial and operational resilience.

Keywords: banking risks, financial stability, systemic risk, financial stress, banking resilience, adaptive resilience, Ukraine, wartime shock

JEL Classification: G21, G28, G32, E44, E58

INTRODUCTION

Ensuring financial stability remains one of the key objectives of modern financial systems, because the banking sector's ability to perform financial intermediation, maintain payment continuity, mobilise savings, and support lending to the economy largely depends on its capacity to withstand internal and external shocks. At the same time, growing geopolitical and geoeconomic uncertainty, changing monetary conditions, the digitalisation of financial services, and increasing interdependence among financial institutions are substantially reshaping the environment in which banking risks emerge and the channels through which they affect financial stability.

The evolution of international approaches to banking regulation reflects a gradual broadening of the understanding of risk and of the mechanisms required to ensure banking-sector resilience. Basel I introduced a risk-weighted approach to capital adequacy; Basel II expanded it by combining minimum capital requirements, supervisory review, and market discipline; and Basel III, developed in response to the lessons of the global financial crisis, strengthened requirements for the quality and adequacy of capital, liquidity, leverage, and risk management (Basel Committee on Banking Supervision [BCBS], 2014). The subsequent consolidation of these provisions within the Basel Framework demonstrates a shift towards a more integrated regulatory approach in which credit, market, and operational risks are considered in conjunction with capital adequacy, liquidity, and banks' capacity to absorb the adverse consequences of financial shocks.

The contemporary risk environment combines traditional credit, foreign-exchange, interest-rate, market, and liquidity risks with geopolitical, operational, cyber, and infrastructure risks that may acquire systemic dimensions. Financial stability therefore depends not only on the magnitude of an individual risk but also on the interaction among risks, the channels through which they are transmitted, and the availability of sufficient capital, liquidity, and regulatory buffers to absorb shocks.

These issues are particularly relevant for Ukraine, whose banking system has been operating under a prolonged full-scale wartime shock. The war simultaneously affects borrowers' solvency, the quality of bank assets, the foreign-exchange market, public finances, digital and energy infrastructure, banks' operational continuity, and the behaviour of economic agents. Under such conditions, traditional banking risks interact with military, geopolitical, macrofinancial, and technological risks, making their integrated identification and the assessment of their impact on banking-system financial stability especially important.

LITERATURE REVIEW

Financial stability and banking risks have long been central topics in international and Ukrainian research. The theoretical foundations of financial instability were developed in the works of Minsky (1986), Mishkin (1999), Crockett (1997), Schinasi (2004), and other scholars. Despite differences in definitions, most approaches understand financial stability as the capacity of the financial system to perform its core functions of intermediation, resource allocation, and payments continuously, withstand internal and external shocks, and limit their adverse effects on the real economy.

The further development of financial-stability theory shifted the research focus from the condition of individual financial institutions to the systemic nature of risk, interbank interdependence, and shock-propagation mechanisms. Jackson and Pernoud (2021) systematise the mechanisms through which systemic risk emerges in financial networks, showing that interconnections can simultaneously support diversification and create channels for risk propagation. Duan et al. (2021), using a sample of 1,584 banks from 64 countries, confirm that a large external shock increases systemic risk and that its materialisation depends on bank characteristics and the regulatory environment. Chen et al. (2021) extends this line of research by examining the relationship among bank regulation, capital, and systemic risk. Accordingly, contemporary research increasingly treats risk not in isolation but in relation to its transmission channels and banks' capacity to absorb the consequences of shocks.

Changes in the macrofinancial environment have renewed the importance of traditional banking risks while strengthening their interdependence. Jiang et al. (2024), analysing the effects of monetary tightening on U.S. banks, show that higher interest rates can increase bank vulnerability through declines in the market value of assets, particularly where capitalisation is insufficient, and funding structures are unstable. Interest-rate, market, and liquidity risks may therefore reinforce one another, and their simultaneous materialisation may acquire systemic significance.

The digitalisation of banking has, in turn, transformed the nature of operational risk. Aldasoro et al. (2022) identify the financial sector's heightened exposure to cyber incidents and the potential for their effects to propagate. Banks' dependence on shared digital infrastructure and external technology and cloud-service providers creates conditions in which a local operational incident may become a source of systemic vulnerability. Cyber risk should therefore be considered not only as an internal technological risk of an individual bank but also as a potential channel of disruption to financial stability.

A separate strand of contemporary research addresses risks originating outside the banking sector. Geopolitical tensions, armed conflicts, fragmentation of international financial and trade relations, and sanctions may affect banks through deterioration in borrowers' financial condition, asset revaluation, exchange-rate volatility, changes in funding costs and cross-border capital flows, and disruptions to operating conditions. Under these circumstances, geopolitical risk becomes a complex external shock whose consequences are transmitted to the banking system through credit, foreign-exchange, market, liquidity, and operational channels.

Research on climate-related risks and their integration into banking is also expanding. Wu et al. (2024) establish a relationship between climate risk and banks' systemic risk, including through deterioration in loan quality, while capital adequacy and profitability can mitigate the adverse effects of such shocks. In the Ukrainian literature, Shcherbakova and Pavliuk (2025) examine the development of green (climate) banking, identify the roles of the NBU and commercial banks, and propose approaches to integrating climate-finance principles into banks' lending and investment activities. Thus, climate factors are gradually moving from the domain of sustainable finance into the broader field of banking-risk management.

Ukrainian scholarship has developed a substantial theoretical and methodological foundation for analysing financial stability, banking-system resilience, and banking risks. Baranovskyi (2004) considers financial stability in conjunction with financial security and the financial system's capacity to withstand internal and external destabilising influences. Heiets (2020) emphasises the macroeconomic nature of financial imbalances and the interdependence of the financial and real sectors, whereas Koziuk (2017) examines financial stability in the context of central banking, systemic risks, macrofinancial imbalances, and institutional regulatory capacity.

The financial resilience of banks and banking risk management are addressed directly by Dziubliuk and Mykhailiuk (2009), Dovhan (2012), and Prymostka (2018). Dziubliuk and Mykhailiuk link banking-system resilience to the effectiveness of financial intermediation, lending activity, and banks' ability to perform their functions in a changing macroeconomic environment. Dovhan focuses on the theoretical and methodological foundations of banking-system resilience, its determinants, and mechanisms for ensuring it. Prymostka develops methodological approaches to identifying, assessing, and managing credit, interest-rate, foreign-exchange, and liquidity risks and examines their relationship with banking performance.

An important strand of Ukrainian research concerns regulatory mechanisms for ensuring financial stability. Kuznietsova and Pohorelenko (2021) examine banking-sector stability in relation to capitalisation, liquidity, structural characteristics, and the effectiveness of regulatory mechanisms. Mishchenko, Naumenkova, and Mishchenko (2023) address systemic and operational risks, capital and liquidity issues, and risk-management instruments, emphasising the need to account for the sources and transmission channels of risk. In the work of Vasylieva and co-authors, banking and systemic risks are linked to quantitative assessments of banks' systemic importance and to differentiated regulatory approaches based on institutional risk profiles (Buriak et al., 2015; Vasylieva et al., 2014).

A separate area of Ukrainian research is the development of quantitative tools for assessing the stability of financial and banking systems. Kozmenko and Kuzmenko (2013) propose an approach to modelling the dynamics of Ukrainian banking-system stability as a time series by defining a stability indicator, identifying its determinants, and decomposing system-forming components. This line of research is further developed by Shkolnyk et al. (2021), who assess the stability of Ukraine's financial system comprehensively using indicators of financial depth, access, efficiency, and stability. This broadens the methodological toolkit from the assessment of individual banking characteristics to an integrated measurement of financial-system stability.

Zarutska's research is particularly relevant to the development of a risk-oriented approach because it examines the heterogeneity of Ukrainian banks' business models and corresponding risk profiles. Using monthly reporting data for 63 Ukrainian banks for 2018–2023, structural-functional grouping, and Kohonen self-organising maps, Zarutska et al. (2024) identify groups of banks with different asset-formation and funding models and corresponding risks. Certain business models exhibit elevated credit and foreign-exchange risks, supporting the need for differentiated risk-oriented bank assessment. This is especially important because the same external shock may have different consequences for banks with different asset, liability, and income structures.

The synthesis of international and Ukrainian research makes it possible to systematise the principal directions of the contemporary scholarly debate on banking risks and financial stability (Table 1).

The synthesis demonstrates a gradual shift in the scholarly debate from the analysis of individual banking risks towards systemic, structural-functional, and risk-oriented assessment. Existing approaches, however, tend to focus either on a particular type of risk or on financial resilience, systemic importance, or bank risk profiles. This limits the scope for comprehensively identifying interactions among risks because, in actual banking-system operations, credit, interest-rate, foreign-exchange, market, liquidity, operational, and other risks are not autonomous: a single external shock can activate several channels of risk materialisation simultaneously.

Table 1. Systematisation of contemporary research directions on banking risks and financial stability.

Research direction (representative studies)	Level of manifestation	Main transmission channel	Main indicators	Insufficiently studied aspect
Systemic risk and propagation of financial shocks (Minsky, 1986; Jackson & Pernoud, 2021; Duan et al., 2021; Buriak et al., 2015; Shkolnyk et al., 2021)	Systemic	Institutional interdependence, common exposures, shock propagation	Systemic importance, interconnectedness, concentration of exposures	Interaction of multiple transmission channels under large-scale external shocks
Credit risk (Mishkin, 1999; Chen et al., 2021; Dziubliuk & Mykhailiuk, 2009; Dovhan, 2012; Prymostka, 2018; Zarutskaya et al., 2024)	Bank/system	Borrower solvency → asset quality → losses → capital	NPLs, credit losses, provisions, portfolio quality	Mutual reinforcement of credit, macrofinancial, geopolitical, and wartime risks
Interest-rate, foreign-exchange, and market risks (Jiang et al., 2024; Prymostka, 2018; Zarutskaya et al., 2024)	Bank/system	Changes in interest rates, exchange rates, and asset values → balance-sheet revaluation	Interest margin, FX position, maturity structure, asset revaluation	Mutual transformation of risks under a systemic shock
Liquidity risk (Schinasi, 2004; Dovhan, 2012; Prymostka, 2018; Kuznietsova & Pohorelenko, 2021; Zarutskaya et al., 2024)	Bank/system	Changes in the funding base → liquidity → asset structure and lending	LCR, funding structure, deposits, high-quality liquid assets	Impact of structural liquidity imbalances on banks' risk profiles
Operational and cyber risk (Aldasoro et al., 2022; Mishchenko et al., 2023)	Bank/system	Disruption of operational continuity, payments, and digital infrastructure	Cyber incidents, operational losses, scale and duration of disruptions	Transformation of a local incident into systemic risk
Geopolitical and wartime risk (Heiets, 2020; Koziuk, 2017; Korneev et al., 2025)	Macroeconomic/systemic	Transmission through credit, FX, market, liquidity, and operational channels	Asset quality, FX position, funding costs, operational losses	Simultaneous materialisation of several risk types in response to a single shock
Climate risk and climate banking (Wu et al., 2024; Shcherbakova & Pavliuk, 2025)	Bank/system	Loan quality, asset revaluation, lending and investment activity	Physical and transition exposures, credit losses, green finance	Integration of climate factors into comprehensive banking-risk assessment
Financial resilience and risk absorption (Schinasi, 2004; Duan et al., 2021; Kozmenko & Kuzmenko, 2013; Shkolnyk et al., 2021; Kuznietsova & Pohorelenko, 2021; Dovhan, 2012; Zarutskaya et al., 2024)	Bank/system	Loss absorption and preservation of the banking system's core functions	Capital, liquidity, profitability, asset quality, composite indicators	Integration of resilience assessment with identification of risk sources, transmission, and interaction

Accordingly, the integrated relationship among the source of the initial shock, the type of banking risk, its transmission channel, indicators of materialisation, and the financial and regulatory buffers that absorb its effects remains insufficiently studied. This research gap is particularly important for Ukraine's banking system, where traditional banking risks arise and materialise under the simultaneous influence of military, macroeconomic, geopolitical, infrastructure, technological, and climate-related factors.

AIMS AND OBJECTIVES

The aim of the study is to comprehensively identify risks to the financial stability of Ukraine's banking system and establish the relationships among the sources of risk shocks, types of banking risks, their transmission channels, indicators of materialisation, and factors that absorb adverse consequences under military, macroeconomic, geopolitical, infrastructure, and technological challenges.

To achieve this aim, the following research objectives were defined:

1. To systematise risks to banking-system financial stability, taking into account changes in their composition and forms of manifestation under contemporary systemic shocks.
2. To determine the relationships among shock sources, types of banking risks, and transmission channels, including the potential for risks to reinforce one another and move from the individual to the systemic level.
3. To identify indicators of the materialisation of the principal risks and the factors that absorb them, thereby characterising the banking system's capacity to withstand adverse effects and preserve financial stability.
4. To assess the formation and materialisation of risks to the financial stability of Ukraine's banking system during the full-scale war and identify the most significant risks and transmission channels under current conditions.

Based on the research aim, objectives, and gaps identified in the literature review, the following hypotheses were formulated.

- **H1.** Systemic shocks affect banking-system financial stability not through the isolated action of individual banking risks but through their interconnected transmission and mutual reinforcement, whereby local risks may acquire systemic characteristics.
- **H2.** The magnitude of the impact of risks on banking-system financial stability depends on its capacity to absorb the consequences of shocks, determined primarily by capital adequacy, liquidity, profitability, and asset quality.
- **H3.** During the full-scale war, the risk profile of Ukraine's banking system is characterised by stronger interaction between traditional banking risks and military, macroeconomic, geopolitical, infrastructure, and technological shocks; however, their materialisation does not necessarily lead to deterioration in financial stability when sufficient absorption buffers are available.

METHODS

The study applies a quantitative and structural-dynamic research design to assess the transformation of banking risks and financial resilience in Ukraine under prolonged systemic shocks. The empirical analysis covers 2018–2025 and combines annual and intra-annual banking-sector indicators depending on their publication frequency, availability, and methodological comparability. The selected period makes it possible to distinguish the pre-war risk environment, the initial shock caused by Russia's full-scale invasion in 2022, and the subsequent adaptation of the banking sector in 2023–2025.

The empirical framework is based primarily on official data from the National Bank of Ukraine (NBU, 2025a, 2025b, 2025d, 2025f; 2026), including banking supervision statistics, Banking Sector Reviews, Financial Stability Reports, data on non-performing loans (NPLs), prudential indicators, assets and liabilities, lending, customer funds, profitability, capital and liquidity. The NBU Financial Stress Index (FSI) (NBU, 2025c) is additionally used as an external aggregate measure of the intensity of financial stress. Macroeconomic indicators published by the State Statistics Service of Ukraine are used where necessary to interpret changes in the external economic environment.

The analysis is conducted for the banking sector as a whole. This level of aggregation was selected because the research hypotheses concern the response of the banking system to systemic rather than institution-specific shocks. Where indicators published by the NBU are based on different statistical coverage or methodological principles, they are not mechanically merged into a single time series. Comparisons are performed only within methodologically consistent datasets.

Identification and classification of banking risks

At the first stage, the principal risks affecting the Ukrainian banking sector were identified and classified according to their source, transmission channel, form of financial materialisation and potential systemic consequences. The classification covers credit, liquidity, interest-rate, foreign-exchange, market and operational risks, as well as systemic risks arising from military, macroeconomic, infrastructural and geopolitical shocks.

The analytical relationship between these components is represented as:

$$S_t \rightarrow R_{i,t} \rightarrow T_{i,t} \rightarrow M_{i,t} \rightarrow F_t, \quad (1)$$

where S_t denotes the systemic shock at time t ; $R_{i,t}$ is the risk of type i ; $T_{i,t}$ is the corresponding transmission channel; $M_{i,t}$ represents its financial materialisation; and F_t denotes the resulting effect on the financial condition and stability of the banking sector.

This approach is consistent with the general logic of systemic-risk analysis employed by the Basel Committee on Banking Supervision and the International Monetary Fund, according to which the significance of a risk depends not only on its source but also on the channels through which the shock is transmitted and amplified within the financial system.

Financial indicators and measurement of risk materialisation

The empirical assessment uses indicators reflecting four interrelated dimensions of the banking sector: asset quality, profitability, funding and liquidity, and capital resilience.

Credit-risk materialisation is primarily assessed using the share of non-performing loans:

$$NPL_T = \frac{NPL_t^{gross}}{Loans_t^{gross}}, \quad (2)$$

where NPL_T is the share of non-performing loans in the gross loan portfolio at time t , %; NPL_t^{gross} – denotes the gross amount of non-performing loans at time t ; $Loans_t^{gross}$ – denotes the gross loan portfolio at time t .

Changes in NPLs are interpreted jointly with loan-loss provisioning because an increase in provisions represents the direct financial recognition of expected credit losses. This makes it possible to distinguish changes in the formal share of problematic assets from the actual financial burden associated with deterioration in loan quality.

Profitability is assessed using net profit and, where required for interpretation, return on assets (ROA) and return on equity (ROE):

$$ROA_t = \frac{Net\ Profit_t}{Average\ Assets_t} \cdot 100\%, \quad (3)$$

$$ROE_t = \frac{Net\ Profit_t}{Average\ Equity_t} \cdot 100\%, \quad (4)$$

where ROA_t is return on assets, %; ROE_t is return on equity, %; $Net\ Profit_t$ is the bank's net profit for period t ; $Average\ Assets_t$ is the average value of total assets during period t ; $Average\ Equity_t$ is the average value of total equity during period t ; and t denotes the reporting period.

The analysis of profitability is conducted jointly with changes in provisioning and the tax environment. This is particularly important for 2023–2025, when the dynamics of banks' net profit were influenced not only by their operating performance but also by changes in the taxation of banking profits.

Funding resilience is assessed through the dynamics of household and corporate customer funds. Their behaviour during periods of elevated stress is used to determine whether deterioration in asset quality and profitability was accompanied by a corresponding deterioration in the banking sector's funding base.

Capital and liquidity indicators are used to assess the capacity of the banking sector to absorb materialised losses while maintaining its core functions. Their interpretation follows the prudential logic underlying the Basel III framework and NBU banking regulation. The study does not construct an additional composite index of capital and liquidity buffers because aggregation could conceal differences in their economic functions: liquidity buffers primarily protect banks against funding and cash-flow shocks, whereas capital buffers absorb materialised financial losses.

Measurement of financial stress

System-wide financial stress is assessed using the Financial Stress Index (FSI) of the National Bank of Ukraine. The study does not construct an alternative author-defined Financial Stability Index. Instead, the official NBU FSI is used as an external measure of the intensity and dynamics of stress in the Ukrainian financial system.

The index integrates indicators relating to major segments of the financial system and therefore complements banking-sector indicators by showing whether changes observed in banks occurred against the background of broader financial-system stress.

For analytical purposes, the relationship is represented as:

$$S_t \rightarrow FSI_t \rightarrow M_t, \quad (5)$$

where S_t represents the systemic shock, FSI_t denotes the observed level of financial stress, and M_t represents the financial manifestation of the shock in banking-sector indicators.

The FSI is interpreted as a measure of the intensity of financial stress rather than the probability of a future crisis. Consequently, its decline does not necessarily indicate that the underlying source of systemic risk has disappeared. This distinction is particularly important for Ukraine, where the external military shock persisted throughout the period in which financial stress gradually declined.

Structural-dynamic analysis

To identify changes in the response of the banking sector to systemic shocks, the observation period is divided analytically into three stages:

1. *Pre-shock period (2018–2021)* – characterised by post-crisis balance-sheet adjustment and a gradual reduction in legacy credit risk.
2. *Initial systemic shock (2022)* – characterised by the simultaneous materialisation of military, macroeconomic, credit, market and operational risks.
3. *Adaptation period (2023–2025)* – characterised by changes in the structure and intensity of risk materialisation while the underlying external shock remained in place.

The magnitude of changes in financial indicators is assessed using rates of change:

$$g_{X,t} = \frac{X_t - X_{t-1}}{X_{t-1}}, \quad (6)$$

where $g_{X,t}$ is the rate of change in the respective financial indicator, %; X_t and X_{t-1} denote the values of the respective financial indicator in the current and preceding periods, respectively.

For indicators expressed as percentages, structural changes are additionally measured in percentage points:

$$\Delta X_t = X_t - X_{t-1}, \quad (7)$$

where ΔX_t denotes the change in the respective indicator, expressed in percentage points.

This approach is applied, in particular, to the NPL ratio and other relative banking indicators.

The analysis focuses not only on the direction of individual indicators but also on their joint dynamics. A simultaneous deterioration in asset quality, provisioning, profitability and the FSI is interpreted as evidence of broad risk materialisation, whereas divergent movements between these indicators and funding, liquidity or capital variables are used to identify differences in the strength of individual transmission channels.

Assessment of shock absorption and adaptive resilience

The ability of the banking sector to absorb systemic shocks is assessed by comparing the magnitude of risk materialisation with changes in the indicators representing financial buffers and operational continuity.

Conceptually, the final effect of a shock is expressed as:

$$Impact_t = f(Shock_t, Transmission_t, Buffer_t), \quad (8)$$

where $Impact_t$ denotes the observed financial effect of the shock; $Shock_t$ is its intensity; $Transmission_t$ represents the channels through which it affects the banking system; and $Buffer_t$ denotes the sector's capacity to absorb financial losses and liquidity pressures.

Equation (8) is a conceptual analytical representation rather than an econometrically estimated functional relationship. Accordingly, the study does not interpret observed associations as estimates of causal effects.

The analysis distinguishes between resistance, primary adaptation, and adaptive resilience. Resistance refers to the capacity to withstand the immediate effects of a shock using buffers accumulated before its occurrence. Primary adaptation refers to the subsequent restoration of key financial parameters. Adaptive resilience is defined as the capacity of the banking sector to maintain its core financial and operational functions under the prolonged influence of a systemic shock rather than only to recover after that shock has ended.

Hypothesis-testing framework

The three research hypotheses are evaluated through triangulation of structural, dynamic and financial evidence rather than through a single statistical indicator.

- **H1** is considered supported when a systemic shock is accompanied by simultaneous materialisation of several banking-risk indicators, while their differing magnitude and direction indicate interconnected but asymmetric transmission channels. The empirical evidence includes changes in NPLs, provisioning, profitability, the FSI, and funding indicators.
- **H2** is considered supported when substantial materialisation of credit and financial losses is not accompanied by a proportional deterioration in funding, liquidity and capital indicators. Such divergence is interpreted as evidence that accumulated buffers limit the transmission of the initial shock into systemic banking instability.
- **H3** is considered supported when the initial systemic shock is followed by a sustained change in the trajectory and structure of banking-risk indicators and when the recovery of key financial parameters occurs while the underlying external shock persists. Particular attention is paid to the joint dynamics of NPLs, profitability, lending, capital, liquidity and the FSI during 2023–2025.

The correspondence between the hypotheses, analytical dimensions and evaluation criteria is summarised in Table 2.

Hypothesis	Analytical dimension	Main indicators	Method	Evaluation criterion
H1	Interconnected risk transmission	NPL, provisions, profit, FSI, customer funds	Structural-dynamic and comparative analysis	Simultaneous materialisation of several risks combined with differences in the strength of their financial manifestation
H2	Shock-absorption capacity	capital, liquidity, customer funds, profitability, asset quality	Comparative analysis of risk materialisation and financial buffers	Materialisation of losses without proportional deterioration in funding, liquidity and solvency
H3	Transformation of the risk profile	NPL, FSI, profit, lending, capital and liquidity	Temporal and phase-based comparative analysis	Change in the trajectory of key indicators after 2022 and subsequent stabilisation/adaptation while the systemic shock persists

The combined methodological framework therefore allows the analysis to move from the identification of individual risks to the assessment of their transmission, financial materialisation and absorption. Importantly, the approach distinguishes between the existence of systemic risk, the observed level of financial stress, and the resilience of the banking system. This distinction provides the methodological basis for determining whether the post-2022 improvement in banking indicators reflects the disappearance of risk or, alternatively, the strengthening of the banking sector's capacity to function under a persistently elevated risk environment.

RESULTS

The analysis of the risk environment of Ukraine's banking sector shows that its transformation in 2018–2025 was driven by shocks of different nature, with the most pronounced structural break occurring after the onset of the full-scale war. Unlike earlier crisis episodes, the wartime shock simultaneously affected credit, foreign exchange, interest-rate, liquidity, market, and operational risks. This requires these risks to be assessed not as autonomous components but as interconnected elements of a common transmission mechanism.

Transformation of the risk profile and financial parameters of the banking sector

The results make it possible to systematise the main sources of risk, transmission channels, financial manifestations, and potential systemic effects (Table 3).

Table 3. Risk sources, transmission channels, financial manifestations, and potential systemic effects.

Risk source	Primary risk	Transmission channel	Financial manifestation	Potential systemic effect
War and geopolitical shock	Systemic	Simultaneous impact on borrowers, markets, and infrastructure	Credit losses, provisioning, FX and market volatility	Higher financial stress
Deterioration in borrowers' financial condition	Credit	Defaults and deterioration in asset quality	NPLs, provisions, lower profitability	Pressure on capital
Exchange-rate fluctuations	Foreign exchange	Revaluation of assets and liabilities; changes in debt burden	FX losses and changes in solvency	Higher credit and market risk
Changes in interest rates	Interest-rate	Revaluation of assets; changes in funding costs	Changes in interest margin and asset values	Profitability risk
Changes in depositor behavior	Liquidity	Outflow or reallocation of funding	Changes in liquid assets and funding costs	Liquidity risk
Infrastructure damage and cyberattacks	Operational	Disruption of banking and payment systems	Operating costs and service interruptions	Transmission to other risks
Macroeconomic shock	Complex	Income, inflation, exchange rate, and interest-rate channels	Changes in asset quality, lending, and profitability	Higher systemic risk

The matrix indicates that the systemic nature of risk is shaped not only by the scale of the initial shock but also by the capacity of one channel to transmit its effects to other components of banks' balance sheets. A deterioration in borrowers' financial condition translates into credit losses and provisioning, affecting profitability and capital; exchange-rate and interest-rate changes alter the value of assets and liabilities; and operational disruptions may simultaneously amplify liquidity, credit, and reputational risks. Therefore, the financial effect of a systemic shock depends on the configuration of interconnected transmission channels rather than on a single isolated risk.

Comparable annual indicators confirm a substantial change in the financial condition of the banking sector after 2022 and, at the same time, its subsequent adaptation (Table 4).

Table 4. Selected comparable indicators of Ukraine's banking sector, 2018–2025. Note: The table includes only indicators for which a methodologically comparable annual series is available for the entire 2018–2025 period. Growth rates of net hryvnia corporate and household loans and net assets are analysed separately because the NBU publications do not provide a fully homogeneous annual series for all years under the same reporting perimeter and methodology. (Source: compiled by the authors based on National Bank of Ukraine data (NBU, 2025d, 2025f; 2026))

Indicator	2018	2019	2020	2021	2022	2023	2024	2025
NPL ratio, %	52.8	48.4	41.0	30.0	38.0	37.4	30.3	13.9
Net profit, UAH billion	22.3	58.4	39.7	77.4	21.9	83.2	90.9	126.8

Recent lending dynamics nevertheless provide additional evidence of post-shock adaptation. In 2024, net hryvnia corporate loans increased by 20.6% year on year and net hryvnia household loans by 39.9%, while net assets rose by 16.2%. In 2025, the corresponding growth rates were 35.6%, 33.9%, and 17.2%, respectively (NBU, 2025d).

The most pronounced materialisation of the wartime shock occurred in 2022. The NPL ratio increased from 30.0% to 38.0%, while provisions rose from UAH 3.4 billion to UAH 121.2 billion. At the same time, the banking sector's net profit fell from UAH 77.4 billion in 2021 to UAH 21.9 billion in 2022, or by approximately 71.7%. The combination of deteriorating asset quality, sharply higher provisioning, and weaker financial results indicates that the systemic shock was initially transmitted primarily through the credit channel (NBU, 2025d, 2025f).

However, different components of the banking system reacted asymmetrically. Despite the deterioration in asset quality and profitability, the funding base did not contract proportionally: in 2022, household funds increased from UAH 727 billion to UAH 933 billion and corporate funds from UAH 800 billion to UAH 943 billion. Thus, the credit and income channels displayed a strong negative response, whereas customer funding remained resilient. This provides empirical evidence that a systemic shock does not imply equal intensity of materialisation across all related risks (NBU, 2025f). The dynamics of the NPL ratio provide the clearest quantitative evidence of the materialisation of credit risk and the subsequent improvement in asset quality during the analysed period (Figure 1).

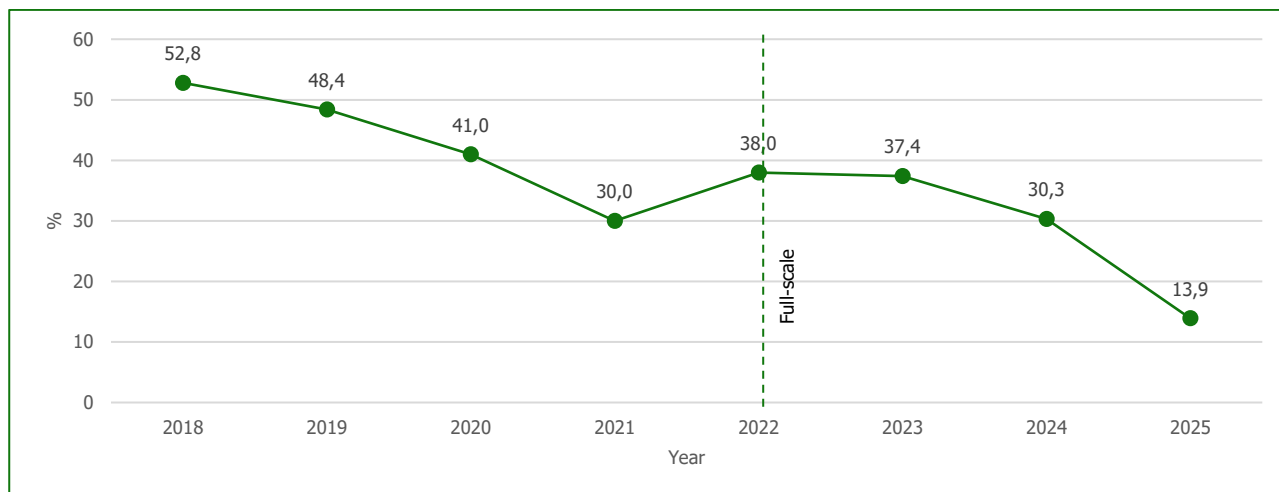


Figure 1. Share of non-performing loans in Ukraine's banking sector, 2018–2025. (Source: constructed by the authors based on National Bank of Ukraine data (NBU, 2025d))

In 2018–2021, the NPL ratio declined steadily, reflecting balance-sheet clean-up and improving loan-portfolio quality. The full-scale war interrupted this trend: in 2022 the ratio increased by 8.0 percentage points. From 2023, however, the downward trajectory resumed, and by the end of 2025 the NPL ratio had fallen to 13.9%, its lowest level in more than fifteen years. This decline should not be interpreted mechanically as an equivalent reduction in credit risk. In 2025, the indicator was materially affected by write-offs of legacy problem loans, particularly by state-owned banks, together with the expansion of new performing lending. Therefore, the NPL ratio should be interpreted jointly with lending, profitability, capital, liquidity, and financial-stress indicators (NBU, 2025d).

Financial stress and the shock-absorption capacity of the banking system

The systemic nature of shocks is additionally reflected in the National Bank of Ukraine's Financial Stress Index (FSI). According to the NBU (2025c), the FSI ranges from 0 to 1 and aggregates 20 indicators grouped into five sub-indices: banking, household behavior, corporate securities, government debt, and the foreign exchange market. The NBU emphasizes that the index measures the current level of stress rather than future risks.

The full-scale invasion caused a sharp increase in the FSI, with all major components rising simultaneously, which confirms the systemic nature of the initial shock. Subsequently, the index moved downward despite the persistence of the war. In the second half of 2025, it remained volatile, but by year-end it was at its lowest levels since the start of the full-scale invasion. This distinction is analytically important: the persistence of a systemic source of risk does not necessarily imply continuously high realised financial stress. The dynamics of net profit further demonstrate the scale of the initial financial shock and the subsequent recovery of the banking sector's loss-absorption capacity (Figure 2).

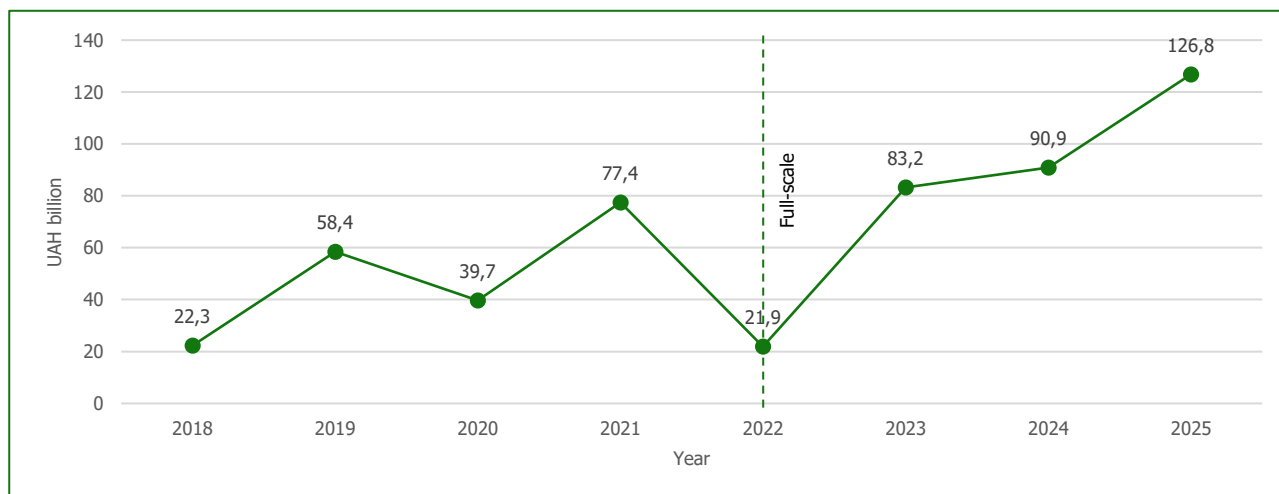


Figure 2. Net profit of Ukraine's banking sector, 2018–2025. (Source: constructed by the authors based on National Bank of Ukraine data (NBU, 2025f; 2026))

The combination of financial indicators allows four stages of the banking sector's response to be distinguished: the pre-shock state, the primary shock, primary adaptation, and adaptive resilience. In 2022, the sector absorbed substantial credit losses and provisioning needs without experiencing a systemic liquidity or solvency crisis. In 2023–2024, profitability, credit activity, and asset quality gradually recovered. By 2025, rapid credit growth, a further decline in NPLs, strong profitability, and low financial stress coexisted with the continued wartime shock. This pattern indicates a transition from resistance to adaptive resilience rather than a return to the pre-war risk environment. The identified changes make it possible to distinguish successive stages in the banking sector's response to the prolonged systemic shock, from its initial materialisation to the formation of adaptive resilience (Figure 3).

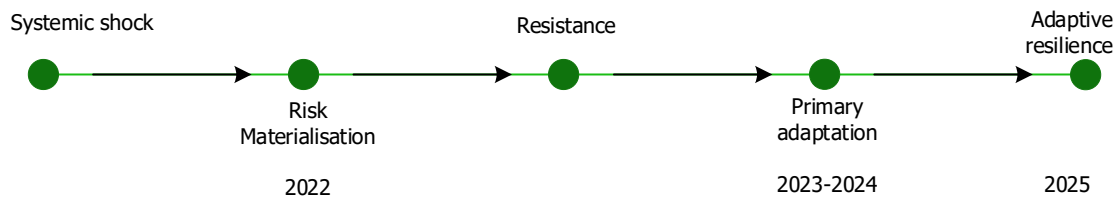


Figure 3. Transition of Ukraine's banking sector from systemic shock to adaptive resilience.

After the approximately 71.7% decline in net profit in 2022, the indicator exceeded its pre-war level already in 2023 and reached UAH 126.8 billion in 2025. Nevertheless, nominal profit growth cannot be treated as a self-sufficient indicator of lower risk. The NBU reported that return on equity before tax decreased from 58.6% in 2023 to 52.4% in 2024 and 50.0% in 2025. Thus, financial adaptation was reflected not in a monotonic improvement of every indicator but in the sector's capacity to compensate for the materialisation of certain risks through liquidity, capital, profitability, and changes in the structure of assets and funding (NBU, 2025a, 2025f; 2026).

Testing hypotheses H1-H3

H1 assumed that systemic shocks affect financial stability through interconnected risk transmission rather than through isolated banking risks. The simultaneous increase in NPLs, surge in provisioning, collapse in profit, and sharp rise in the FSI in 2022 demonstrate the joint materialisation of several risk channels. At the same time, the continued growth of customer funds shows that transmission intensity differed across channels. H1 is therefore supported: the systemic shock activated interconnected risks, but their materialisation was asymmetric.

H2 assumed that the final impact of shocks on financial stability depends on the banking system's capacity to absorb losses. Despite the marked deterioration in asset quality and large provisioning in 2022, the banking system retained customer funding, liquidity, solvency, and operational continuity. In subsequent years, profitability and lending recovered, while the 2025 resilience assessment confirmed that most of the sector retained sufficient capital. H2 is therefore supported by the structural and dynamic evidence: financial and operational buffers limited the transformation of the external shock into systemic banking destabilisation.

H3 assumed that the full-scale war caused a structural transformation of the banking system's risk profile. The results reveal a clear phase shift: sharp risk materialisation in 2022; recovery of key financial parameters in 2023–2024; and, in 2025, a combination of lower financial stress and NPLs with strong lending and profitability while the systemic external shock persisted. H3 is therefore supported. The banking sector did not simply return to its pre-war state; it formed a new mode of operation under a structurally more complex risk environment.

Table 5. Summary of hypothesis-testing results.

Hypothesis	Key financial evidence	Established pattern	Result
H1	NPL: 30.0% → 38.0%; provisions: UAH 3.4 → 121.2 billion; profit: UAH 77.4 → 21.9 billion; sharp FSI increase	Synchronous but asymmetric materialisation of interconnected risks	Supported
H2	Household funds: UAH 727 → 933 billion; corporate funds: UAH 800 → 943 billion; liquidity and capital preserved	Buffers limited the transformation of the shock into systemic banking destabilisation	Supported
H3	NPL: 38.0% (2022) → 13.9% (2025); profit: UAH 21.9 → 126.8 billion; strong lending growth; FSI at post-invasion lows	Adaptive trajectory under persistent systemic external shock	Supported

Taken together, the results support the following sequence of banking-sector transformation: Systemic shock → Risk materialisation → Resistance → Primary adaptation → Adaptive resilience. Resistance reflects the system's ability to withstand the initial shock using financial and operational buffers accumulated beforehand. Primary adaptation captures the recovery of key parameters after their initial deterioration. Adaptive resilience, unlike conventional post-crisis recovery, denotes the capacity to maintain the core functions of the banking system while the systemic shock itself remains active.

The expanded mechanism can be represented as:

$$S_t \rightarrow R_t \rightarrow T_t \rightarrow M_t \rightarrow FStress_t \rightarrow B_t \rightarrow A_t \rightarrow AR_t. \quad (9)$$

The key result of the study is the identification of the transition of Ukraine's banking system from primary resistance to adaptive resilience. In 2022, accumulated financial and operational buffers enabled the system to withstand the initial systemic shock; in 2023–2024, the main financial parameters recovered; and in 2025, preserved liquidity and capital, restored credit activity, higher profitability, and lower financial stress demonstrated the banking sector's capacity to function in a structurally riskier environment. Financial stability under a prolonged systemic shock is therefore determined not by the absence or minimisation of risks as such, but by the capacity to limit their transmission, absorb their financial consequences, and adapt operating mechanisms to the transformation of the risk environment.

DISCUSSION

The findings of this study both support and extend the existing literature on systemic banking risk and financial stability. The first area of convergence concerns the interconnected nature of banking risks. Jackson and Pernoud (2021) demonstrate that financial interconnectedness has a dual effect: it can facilitate risk diversification while simultaneously creating channels through which shocks propagate across financial institutions. This proposition is consistent with the results obtained for Ukraine, where the full-scale invasion affected credit quality, provisioning, profitability, market conditions, and financial stress simultaneously. However, the Ukrainian evidence adds an important qualification: risk transmission was asymmetric. While credit risk and profitability reacted sharply to the initial shock, customer funding and liquidity remained comparatively stable. Thus, interconnectedness determines the potential channels of shock propagation but does not imply an equal intensity of risk materialisation across all components of the banking system. This extends the network-based interpretation of systemic risk proposed by Jackson and Pernoud (2021), according to which interconnectedness can simultaneously provide diversification benefits and create channels for contagion.

The results are also consistent with Duan et al. (2021), who, based on a sample of 1,584 banks from 64 countries, showed that a large-scale external shock increases systemic risk, while the extent of its materialisation depends on bank characteristics and the regulatory environment. The Ukrainian case confirms this dependence under an exceptionally severe and persistent exogenous shock but further demonstrates that its financial consequences may differ substantially across individual transmission channels. This supports H1 while refining its interpretation: systemic risk transmission should be understood as an interconnected but asymmetric process, rather than as a uniform deterioration in all banking indicators.

A second important area of comparison concerns the role of financial buffers. Chen et al. (2021) link systemic risk to banking regulation and capital, thereby drawing attention to the capacity of banks to absorb the consequences of shocks rather than merely to their exposure to risk. The present findings are consistent with this approach. The substantial materialisation of credit losses in Ukraine in 2022 did not evolve into a systemic liquidity or solvency crisis, indicating that capital, liquidity, stable customer funding, profitability, and operational continuity acted as shock-absorption mechanisms. The results therefore support H2 but also allow an important distinction to be made: financial buffers do not necessarily prevent risks from materialising; rather, they limit the transformation of materialised risks into systemic financial destabilisation.

This interpretation is consistent with the broader concept of financial-system resilience developed by Anand et al. (2013), whose network model demonstrates that the effects of macroeconomic fluctuations, declining asset prices, liquidity conditions, and interconnected exposures depend on the structure and resilience of the financial system. The Ukrainian evidence extends this argument by showing that shock-absorption capacity is determined not only by financial interconnectedness but by the combined effect of capital, liquidity, funding stability, profitability, and operational continuity.

The interaction between interest-rate, market, liquidity, and capital risks also corresponds to the findings of Jiang et al. (2024). Their analysis of US banks shows that higher interest rates can increase bank vulnerability through declines in the market value of assets, particularly when capital positions are insufficient and funding structures are unstable. In the literature reviewed for this study, this mechanism is interpreted as evidence that interest-rate, market, and liquidity risks

may reinforce one another. The Ukrainian case reveals a related but distinct configuration: profound macrofinancial disturbances did not generate a systemic liquidity crisis because funding and capital buffers constrained the transmission of market pressures. This comparison reinforces the conclusion that the same type or magnitude of external shock may produce different financial outcomes depending on the system's absorption capacity.

The findings concerning operational risk similarly complement those of Aldasoro et al. (2022), who emphasise the financial sector's exposure to cyber incidents and the potential propagation of their effects through common digital infrastructure and external technology providers. In Ukraine, however, operational risk has acquired a broader structure because cyber threats have interacted with physical infrastructure destruction, energy disruptions, communication failures, and other consequences of war. The preservation of banking and payment services under these conditions suggests that operational resilience itself can serve as an absorption mechanism that prevents non-financial disruptions from being transformed into broader financial instability.

The results also complement studies focused specifically on the Ukrainian banking system. Korneev et al. (2025), examining financial stress and banking resilience under martial law, conclude that the Ukrainian banking sector preserved financial and operational resilience despite exceptional wartime disturbances. This conclusion is supported by the present findings, but our analysis shifts the focus from establishing the presence of resilience to explaining the mechanism of its transformation over time. Similarly, recent Ukrainian research on wartime stress testing emphasises the need to adapt capital assessment and stress scenarios to new geopolitical and military risks. These studies reinforce the conclusion that the wartime environment changes not merely the magnitude but also the composition of banking risks.

This observation is particularly important for H3. Existing studies predominantly analyse how individual vulnerabilities – credit deterioration, interest-rate shocks, liquidity pressures, cyber incidents, or network contagion – affect banking stability. The present findings indicate that a prolonged systemic shock changes not only the level of banking risk but also its structure. Credit risk dominated the initial financial materialisation of the wartime shock, whereas subsequent adaptation reduced some vulnerabilities while changing the relative importance of others, including interest-rate, operational, sovereign, and geopolitical risks. Consequently, an improvement in individual indicators such as NPLs or financial stress should not automatically be interpreted as a proportional reduction in the overall risk environment.

The most important difference between the present findings and previous research concerns the interpretation of resilience itself. Existing approaches generally conceptualise financial resilience as the capacity to withstand shocks, absorb losses, preserve liquidity and solvency, and subsequently restore normal functioning. Our results indicate that this interpretation is insufficient when the source of the systemic shock remains continuously active. The Ukrainian banking system did not follow a conventional shock → deterioration → termination of shock → recovery sequence. Instead, key financial indicators recovered while the primary systemic shock persisted.

This provides the basis for distinguishing resistance, primary adaptation, and adaptive resilience. Resistance reflects the ability to withstand the initial shock through buffers accumulated before its occurrence. Primary adaptation captures the subsequent restoration and reconfiguration of key financial parameters. Adaptive resilience represents a qualitatively different stage: the capacity of the banking system to maintain and subsequently expand its core functions while the systemic shock itself remains active. The sequence identified in the study – Systemic shock → Risk materialisation → Resistance → Primary adaptation → Adaptive resilience – therefore extends the conventional shock-absorption interpretation of banking resilience.

This distinction also explains the apparently contradictory coexistence of exceptionally high external risks and improving internal financial indicators. Systemic risk, financial stress, and financial stability should not be treated as interchangeable categories. Systemic risk reflects the potential and channels of shock propagation; financial stress characterises the current degree of risk materialisation; financial stability reflects the capacity of the system to absorb losses, adapt, and maintain its core functions. Accordingly, declining NPLs or financial stress do not necessarily indicate the disappearance of systemic risk. This interpretation is consistent with the conceptual differentiation derived from the empirical results.

Overall, comparison with previous research shows that the findings confirm the interconnected nature of systemic banking risk identified by Jackson and Pernoud (2021) and Duan et al. (2021); support the importance of capital, liquidity, regulation, and other absorption mechanisms emphasised by Chen et al. (2021) and resilience-oriented studies; and corroborate the conclusions of recent Ukrainian research regarding the capacity of the banking sector to withstand wartime disturbances. At the same time, the study extends the existing literature by demonstrating the asymmetric materialisation of interconnected risks, distinguishing risk materialisation from loss of financial stability, and identifying adaptive resilience as a distinct stage in the response of a banking system to a prolonged systemic shock.

The study has several limitations. The analysis is based primarily on aggregate banking-sector indicators for 2018–2025 and therefore does not capture differences across individual banks. The relatively short observation period and exceptional wartime environment also limit causal interpretation, while changes in some indicators, particularly NPLs, reflect not only underlying risk dynamics but also write-offs, portfolio restructuring, regulatory measures, and changes in lending volumes. Accordingly, the findings should be interpreted as evidence of structural and dynamic relationships at the banking-system level rather than isolated causal effects of individual risk factors.

Future research should therefore test the proposed transition from resistance to adaptive resilience using bank-level panel data, higher-frequency indicators, and cross-country evidence. Particular attention should be paid to differences in ownership, business models, capitalisation, liquidity, funding structures, and sovereign exposure. This would make it possible to determine whether adaptive resilience is specific to Ukraine's wartime banking environment or represents a broader pattern of financial-system transformation under prolonged systemic shocks.

CONCLUSIONS

The study of the transformation of banking risks and their impact on the financial stability of Ukraine's banking sector under prolonged systemic shocks allows the following conclusions to be drawn.

First, the relationship between banking risks, systemic risk, financial stress, and financial stability was clarified. Under large-scale shocks, individual banking risks form interconnected transmission channels, while systemic risk reflects the potential for shock propagation, financial stress characterises its current materialisation, and financial stability reflects the banking system's capacity to absorb losses and maintain its core functions.

Second, the transformation of Ukraine's banking risk profile in 2018–2025 was identified. The full-scale invasion simultaneously intensified credit, market, foreign-exchange, interest-rate, operational, and macrofinancial risks, but their materialisation was asymmetric. The deterioration in asset quality, provisioning, and profitability in 2022 contrasted with the stability of customer funding and liquidity, demonstrating that a systemic shock does not produce proportional deterioration across all components of the banking system.

Third, the role of shock-absorption mechanisms in maintaining financial stability was established. Capital and liquidity buffers, stable customer funding, operational continuity, profitability recovery, and regulatory adaptation limited the transmission of realised losses to the banking system as a whole. Thus, financial buffers primarily mitigate the consequences of risk materialisation rather than eliminate the underlying risks.

Fourth, the structural-dynamic analysis revealed a gradual transition from the initial shock to adaptation. After the deterioration in 2022, profitability, lending, and asset quality recovered in 2023–2025 while the military and geopolitical shock persisted. This indicates adaptation to a structurally altered risk environment rather than a return to pre-war conditions.

Fifth, the results supported H1–H3: banking risks demonstrated interconnected but asymmetric materialisation; financial and operational buffers constrained systemic destabilisation; and the prolonged shock resulted in a structural transformation of the banking risk profile. The relationship between systemic shocks and financial stability is therefore mediated by the banking system's absorption and adaptive capacities.

The scientific novelty lies in distinguishing resistance, primary adaptation, and adaptive resilience as successive stages of banking-system response to a prolonged systemic shock. Adaptive resilience is defined as the capacity to maintain and develop core banking functions while the source of the systemic shock remains active. Accordingly, the proposed transformation mechanism is: Systemic shock → Risk materialisation → Resistance → Primary adaptation → Adaptive resilience. The study also establishes the asymmetric nature of interconnected risk materialisation and distinguishes persistent systemic risk from its current manifestation in financial stress.

Further research should test the proposed adaptive-resilience mechanism using bank-level and higher-frequency data and examine its applicability to banking systems in other countries exposed to prolonged systemic shocks. Particular attention should be paid to the effects of bank ownership, capitalisation, liquidity, funding structures, and regulatory interventions.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

All authors have contributed equally.

FUNDING

The Authors received no funding for this research.

CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

REFERENCES

1. Aldasoro, I., Gambacorta, L., Giudici, P., & Leach, T. (2022). The drivers of cyber risk. *Journal of Financial Stability*, 60, Article 100989. <https://doi.org/10.1016/j.jfs.2022.100989>
2. Anand, K., Gai, P., Kapadia, S., Brennan, S., & Willison, M. (2013). A network model of financial system resilience. *Journal of Economic Behavior & Organization*, 85, 219–235. <https://doi.org/10.1016/j.jebo.2012.04.006>
3. Bakalo, I. I. (2025). Stress testing of the banking system of Ukraine: Tools, scenarios and results in wartime conditions. *Scientific Notes of Ostroh Academy National University, "Economics" Series*, 37(65), 37–42. [https://doi.org/10.25264/2311-5149-2025-37\(65\)-37-42](https://doi.org/10.25264/2311-5149-2025-37(65)-37-42)
4. Balytska, M. V., & Tkachenko, A. P. (2025). Experience of the National Bank of Ukraine in ensuring stability of banking system under the conditions of modern challenges in Ukraine. *Ekonomika ta suspilstvo*, 72, Article 132. <https://doi.org/10.32782/2524-0072/2025-72-132>
5. Baranovskyi, O. I. (2004). *Finansova bezpeka v Ukraini: Metodolohiia otsinky ta mekhanizmy zabezpechennia*. Kyiv National University of Trade and Economics.
6. Baranovskyi, O. I., & Lahno, A. A. (2022). The nature of financial security of the banking system. *Svit finansiv*, 3(72), 141–155. <https://doi.org/10.35774/SF2022.03.141>
7. Basel Committee on Banking Supervision. (2014). *Basel III: The net stable funding ratio*. Bank for International Settlements. <https://www.bis.org/bcbs/publ/d295.htm>
8. Buriak, A., Lyeonov, S., & Vasylieva, T. (2015). Systemically important domestic banks: An indicator-based measurement approach for the Ukrainian banking system. *Prague Economic Papers*, 24(6), 715–728. <https://doi.org/10.18267/j.pep.531>
9. Chen, L., Li, H., Liu, F. H., & Zhou, Y. (2021). Bank regulation and systemic risk: Cross-country evidence. *Review of Quantitative Finance and Accounting*, 57(1), 353–387. <https://doi.org/10.1007/s11156-020-00947-0>
10. Crockett, A. (1997). Why is financial stability a goal of public policy? In *Maintaining financial stability in a global economy* (pp. 7–36). Federal Reserve Bank of Kansas City.
11. Dovhan, Z. M. (2012). *Finansova stiikist bankivskoi systemy Ukrainy: Problemy otsiniuvannya ta zabezpechennia*. Ukrainian Academy of Banking of the National Bank of Ukraine.
12. Duan, Y., El Ghouli, S., Guedhami, O., Li, H., & Li, X. (2021). Bank systemic risk around COVID-19: A cross-country analysis. *Journal of Banking & Finance*, 133, Article 106299. <https://doi.org/10.1016/j.jbankfin.2021.106299>
13. Dziubliuk, O. V., & Mykhailiuk, R. V. (2009). *Finansova stiikist bankiv yak osnova efektyvnoho funktsionuvannya kredytnoi systemy*. Ternopil National Economic University.
14. Heiets, V. M. (2020). *Fenomen nestabilnosti: Vyklyk ekonomichnomu rozvytku*. Akadempriodyka. <https://doi.org/10.15407/akadempriodyka.403.456>
15. International Monetary Fund. (2019). *Financial soundness indicators compilation guide 2019*. <https://doi.org/10.5089/9781484396209.069>
16. Jackson, M. O., & Pernoud, A. (2021). Systemic risk in financial networks: A survey. *Annual Review of Economics*, 13, 171–202. <https://doi.org/10.1146/annurev-economics-083120-111540>
17. Jiang, E. X., Matvos, G., Piskorski, T., & Seru, A. (2024). Monetary tightening and U.S. bank fragility in 2023: Mark-to-market losses and uninsured depositor runs? *Journal of Financial Economics*, 159, Article 103899. <https://doi.org/10.1016/j.jfineco.2024.103899>
18. Korneev, V., Dziubliuk, O., Tymkiv, A., Antkiv, V., & Kucherenko, N. (2025). Assessment of banks' resilience and financial stress in countercyclical martial law conditions. *Journal of Banking Regulation*, 26(2), 232–244. <https://doi.org/10.1057/s41261-024-00256-9>
19. Kozmenko, O., & Kuzmenko, O. (2013). Modeling the stability dynamics of Ukrainian banking system. *Banks and Bank Systems*, 8(2), 55–62. [https://doi.org/10.21511/bbs.8\(2\).2013.01](https://doi.org/10.21511/bbs.8(2).2013.01)
20. Kuznietsova, A. Ya., & Pohorelenko, N. P. (2021). Mechanism for ensuring the financial stability of the banking system of Ukraine. *Financial and Credit Activity: Problems of Theory and Practice*, 2(33), 37–47. <https://doi.org/10.18371/fcaptp.v2i33.206396>
21. Minsky, H. P. (1986). *Stabilizing an unstable economy*. Yale University Press.
22. Mishchenko, V. I., Naumenkova, S. V., & Mishchenko, S. V. (2023). Operational risk management in payment systems. *Ekonomichnyi prostir*, 183, 74–82. <https://doi.org/10.32782/2224-6282/183-13>
23. Mishkin, F. S. (1999). Global financial instability: Framework, events, issues. *Journal of Economic Perspectives*, 13(4), 3–20. <https://doi.org/10.1257/jep.13.4.3>
24. National Bank of Ukraine. (2025a). *Banking sector review, February 2025*. <https://bank.gov.ua/en/news/all/oqlyad-bankivskogo-sektoru-lyutiy-2025-roku>
25. National Bank of Ukraine. (2025b). *Financial stability report*. <https://bank.gov.ua/en/stability/report>

26. National Bank of Ukraine. (2025c). *Financial stress index*. <https://bank.gov.ua/en/stability/fsi/>
27. National Bank of Ukraine. (2025d). *Non-performing loans*. <https://bank.gov.ua/en/stability/npl/>
28. National Bank of Ukraine. (2025e). *Resilience assessment of Ukrainian banks, 2025*. https://bank.gov.ua/admin_uploads/article/Resilience%20Assessment_Results_2025_eng.pdf
29. National Bank of Ukraine. (2025f). *Supervisory statistics*. <https://bank.gov.ua/en/statistic/supervision-statist>
30. National Bank of Ukraine. (2026). *Banking sector review, February 2026*. https://bank.gov.ua/admin_uploads/article/Banking_Sector_Review_2026-02_eng.pdf
31. Prymostka, L. O. (2018). The essence and sources of credit risks in banking activities. In L. O. Prymostka (Ed.), *Bank risk management* (pp. 154–162). Kyiv National Economic University named after Vadym Hetman.
32. Schinasi, G. J. (2004). *Defining financial stability* (IMF Working Paper No. 04/187). International Monetary Fund. <https://doi.org/10.5089/9781451859546.001>
33. Shcherbakova, O., & Pavliuk, K. (2025). Development of green (climate) banking in Ukraine. *RFI Scientific Papers*, 2, 36–46. <https://doi.org/10.33763/npndfi2025.02.036>
34. Shkolnyk, I., Kozmenko, S., Kozmenko, O., Orlov, V., & Shukairi, F. (2021). Modeling of the financial system's stability on the example of Ukraine. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 16(2), 377–411. <https://doi.org/10.24136/eq.2021.014>
35. Vasylieva, T. A., Lyeonov, S. V., & Boiko, A. O. (2014). The impact of implicit bank consolidation on systemic risk in the banking system of Ukraine. *Actual Problems of Economics*, 15(9), 384–389.
36. Wu, B., Wen, F., Zhang, Y., & Huang, Z. (2024). Climate risk and the systemic risk of banks: A global perspective. *Journal of International Financial Markets, Institutions and Money*, 95, Article 102030. <https://doi.org/10.1016/j.intfin.2024.102030>
37. Zarutskaya, O., Dobrovolska, O., Masiuk, I., Sonntag, R., & Ortmanns, W. (2024). Risk management through a Kohonen map bank business model survey: The case of Ukraine. *Banks and Bank Systems*, 19(2), 221–233. [https://doi.org/10.21511/bbs.19\(2\).2024.18](https://doi.org/10.21511/bbs.19(2).2024.18)

Вахович І., Боярко І., Заруцька О., Фесенко В., Слобода Л., Серета О.

ТРАНСФОРМАЦІЯ БАНКІВСЬКИХ РИЗИКІВ І ЇХНІЙ ВПЛИВ НА ФІНАНСОВУ СТАБІЛЬНІСТЬ: ІДЕНТИФІКАЦІЯ ТА СУЧАСНІ ВИКЛИКИ

У роботі досліджено трансформацію банківських ризиків і їхній вплив на фінансову стабільність банківської системи України в умовах тривалих системних шоків. Метою є ідентифікація взаємозв'язків між джерелами шоків, видами банківських ризиків, каналами їх трансмісії, індикаторами фінансової матеріалізації та механізмами абсорбції наслідків із особливою увагою до умов повномасштабної війни. Емпіричний аналіз охоплює 2018–2025 рр. та ґрунтується на офіційних даних Національного банку України щодо непрацюючих кредитів, резервів, прибутковості, кредитування, коштів клієнтів, капіталу, ліквідності й Індексу фінансового стресу. Застосовано кількісний структурно-динамічний дизайн, що поєднує фазовий порівняльний аналіз, оцінювання темпів зміни й структурних зрушень у відсоткових пунктах і триангуляцію фінансових даних для перевірки гіпотез. Установлено, що шок 2022 р. одночасно активізував кредитний, ринковий, валютний, процентний, операційний і макрофінансовий ризики, однак їх матеріалізація була асиметричною. Якість активів і прибутковість різко погіршилися, водночас ресурсна база, ліквідність і платоспроможність залишалися порівняно стійкими. За 2023–2025 рр. відновилися прибутковість, кредитування та якість активів за збереження базового воєнного шоку.

Наукова новизна полягає у виокремленні опірності, первинної адаптації та адаптивної стійкості як послідовних етапів реакції банківської системи та в трактуванні адаптивної стійкості як здатності зберігати й розвивати основні банківські функції за умов продовження системного шоку. Результати підтверджують взаємопов'язаний, але асиметричний характер трансмісії ризиків і визначальну роль капіталу, ліквідності, стабільного фондування, прибутковості й операційної безперервності в стримуванні системної дестабілізації. Одержані результати можуть бути корисні для науковців, які досліджують фінансову стабільність і системні ризики, центральних банків та органів банківського нагляду під час формування макропруденційних і пруденційних заходів реагування на тривалі системні шоки, а також для банківських установ у процесі вдосконалення управління ризиками, стрес-тестування та забезпечення фінансової й операційної стійкості.

Ключові слова: банківські ризики, фінансова стабільність, системний ризик, фінансовий стрес, стійкість банківської системи, адаптивна стійкість, Україна, воєнний шок

JEL Класифікація: G21, G28, G32, E44, E58