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KEY DETERMINANTS OF THE UKRAINIAN FINANCIAL ECOSYSTEM TRANSFORMATION IN THE CONTEXT OF MODERN CHALLENGES

ABSTRACT

The transformation of Ukraine’s financial ecosystem has become a defining process in the country’s adaptation to the turbulent geopolitical, economic, and technological environment of recent years. The study aims to identify the key determinants of the financial ecosystem transformation in Ukraine under the combined influence of wartime risks, regulatory reforms, and global digitalization trends. A mixed methodological approach was applied, integrating: (1) bibliometric mapping of global research using the Scopus database and VOSviewer software; (2) comparative analysis of financial ecosystems across countries; and (3) empirical assessment of Ukraine’s financial sector dynamics based on official statistics from the National Bank of Ukraine, the World Bank, etc. The results indicate that the transformation of Ukraine’s financial ecosystem is driven by multidimensional determinants operating at technological, institutional, regulatory, and behavioural levels. Digitalization has significantly expanded access to financial services and enhanced resilience during wartime, while institutional and regulatory reforms, particularly those aligned with EU standards on ESG and digitalization, have strengthened transparency, governance, and investor confidence. Ukraine’s financial ecosystem remains bank-dominated, yet non-bank financial institutions are gaining a growing strategic role, especially in consumer lending and SME finance. At the same time, behavioural determinants such as financial literacy and public trust can either reinforce or constrain transformational processes. The study concludes that the transformation of Ukraine’s financial ecosystem is not a situational response to shocks but a policy-driven, digitally oriented, and institutionally anchored process unfolding within the broader trajectory of post-war recovery and European integration. The findings contribute to the academic understanding of financial ecosystem transformation in conflict-affected economies and provide an evidence-based summary of its key determinants aimed at ensuring long-term financial stability.

Keywords: banking, finance, digitalization, sustainability, resilience, regulatory policy, EU integration, supply chain, governance, ESG

JEL Classification: E44, G21, O16, Q56

INTRODUCTION

The transformation of Ukraine’s financial ecosystem under current challenges has acquired exceptional relevance in light of profound geopolitical, economic, and technological shifts in recent years. The ongoing military actions have become a powerful shock to the financial system, which simultaneously operates under the pressure of global processes such as digitalization, including the growing role of the fintech sector, deeper integration into the European financial space, and the implementation of ESG standards. These factors together form a multidimensional context in which traditional institutions and mechanisms of the financial system require rethinking and adaptation.

The key challenges are, first, ensuring financial resilience under the conditions of a wartime economy, which is characterised by macro-financial instability, a heightened debt burden, and significant risks to the banking sector. Second, the payment infrastructure is undergoing an intensive transformation: under the influence of digital innovations and client demands, it is becoming more open, flexible, and oriented toward integration with global standards. Third, the role of non-financial development drivers,

particularly environmental, social, and governance (ESG) factors, is visibly increasing, gradually shaping a new paradigm of risk-oriented management of financial institutions.

At the same time, the transformation of Ukraine's financial ecosystem is closely interconnected with international trends. At the global level, multilayered financial networks are emerging, combining traditional institutions with digital assets, while for Ukraine, this process is intertwined with the tasks of post-war recovery, restoring investor confidence, and gradual integration into the European capital market. Thus, the issue of identifying the key determinants of the transformation of Ukraine's financial ecosystem under contemporary challenges emerges as an interdisciplinary task that integrates financial management, institutional analysis, and applied aspects of sustainable development policy. Taking into consideration the abovementioned background, the study of the determinants that define the content and direction of the financial ecosystem transformational processes becomes critically important both for scholarship and for the practice of public policy and corporate governance.

LITERATURE REVIEW

The financial ecosystem is a subject of high interest for researchers all over the world. Leading researchers pay attention to this issue and provide their results in journals with high citation indices in the Scopus or Web of Science databases. Figure 1 represents the network of authors registered in the Scopus database under the keyword "financial ecosystem".

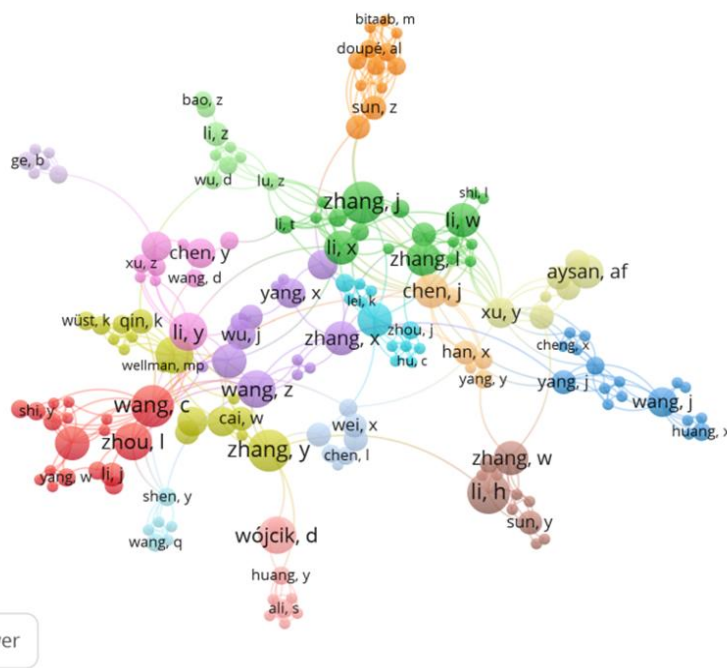


Figure 1. The network of the authors of publications in the Scopus database by the keywords "financial ecosystem". (Source: built by the authors based on data from the Scopus database using the VOSviewer application)

A number of Nobel Prize winners in economics have studied directions for transformational changes in the financial ecosystem. Thus, Bernanke, B.S. (2023) emphasises the important role of financial institutions in maintaining economic stability, and focuses on the need for strong regulation of the financial ecosystem to prevent future crises, to form the resilience of the state economy in terms of external and internal shocks.

Farhi and Tirole (2021) investigate the issues of financial ecosystem development, in particular in the context of avoiding a financial crisis, and emphasize the importance of effective regulation of banks and other financial institutions to achieve economic stability.

At the same time, the 2022 Nobel Prize winner Diamond, D.V. (2023) argues that in the 21st century, the traditional model of the financial and banking sector has been replaced by a new distributed reality of investment flows with a rapid development of non-bank financial intermediaries and complex derivative financial instruments that form the newest financial ecosystem.

Researchers pay significant attention to the regulation of the financial system, in particular, on the principles of sustainable development. Nobel Prize winner, Shiller, R.J. (2022), substantiated the need to create new, improved financial instruments and regulatory mechanisms that helped strengthen investor protection and prevent crises. Puschmann & Quattrocchi (2023) proved the ability of sustainable finance to influence economic development in the face of modern challenges, the transformation of priority industries with reduced emissions, and the promotion of “greening.” Colaert (2022) proved that sustainable finance has significant potential to become the main instrument of financial regulation, which determines the key vector of transformation of the financial ecosystem. Bodellini (2024) explains the need to harmonize financial sector regulation and introduce clearer criteria for qualifying sustainable financial products. It is notable that financial ecosystem development is connected to innovations, regulatory trends, and the environment. Thus, researchers provide interdisciplinary works.

Figure 2 data represents the keywords network created on the basis of the Scopus database.

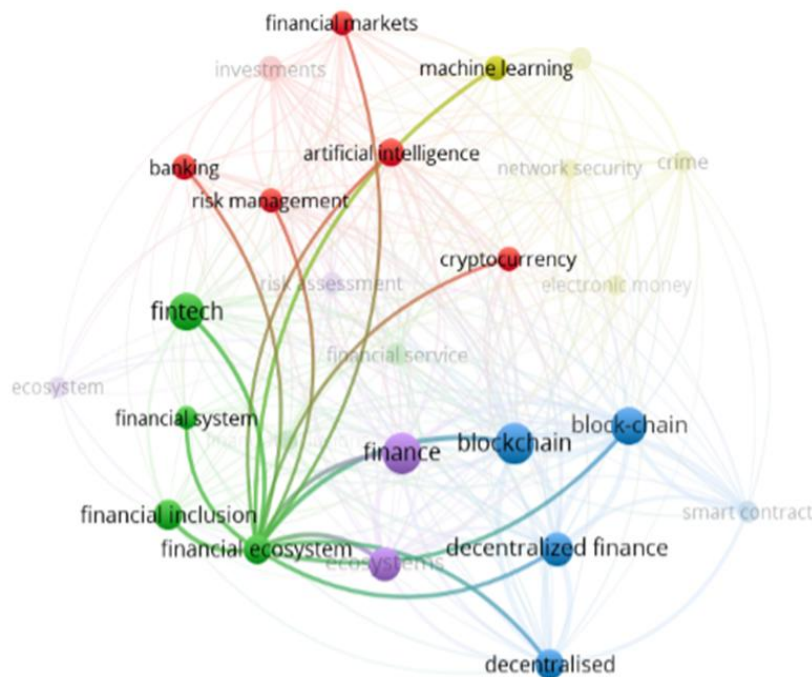


Figure 2. The keywords network of the publications in the Scopus database by the keyword “financial ecosystem”. (Source: built by the authors based on data from the Scopus database using the VOSviewer application)

As it is represented in Figure 2, the financial ecosystem is studied by researchers in connection with other topics, especially financial inclusion, decentralised finance, blockchain, cryptocurrency, AI, machine learning, fintech, etc. It is worth mentioning the study by Ghaemi et al. (2024) that reveals a complex dynamic relationship between digital financial innovations and sustainable investment practices, as well as between other components of the digital financial ecosystem and sustainable markets.

Wang et al. (2023) prove the crucial role of innovative financial technologies in shaping a new financial ecosystem in general and promoting corporate innovations in particular.

At the same time, Choi et al. (2023) proved the need to use the latest financing instruments to support business sustainability, preserve economic potential in conditions of shocks, such as pandemics, military operations, etc.

However, there is little research on the financial ecosystem of Ukraine, its structure, transformation trends, and determinants, especially in the Scopus database. The Scopus database contains only 3 articles with both keywords “financial ecosystem” and “Ukraine” (Figure 3).

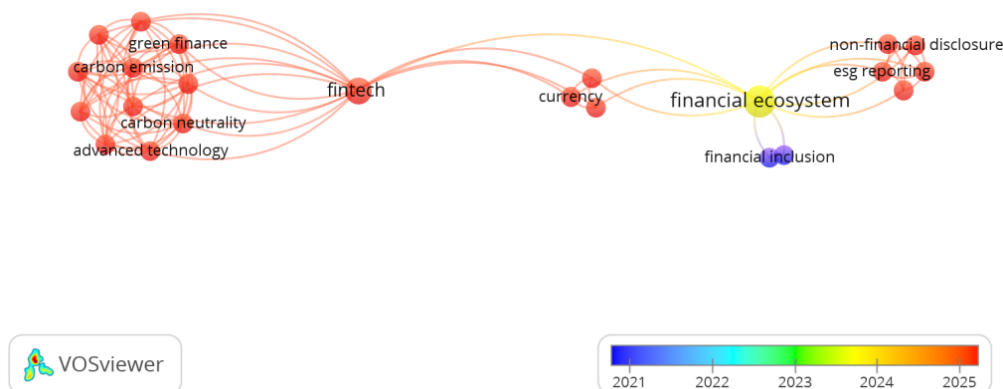


Figure 3. The keywords network of the publications in the Scopus database by the keywords “financial ecosystem” and “Ukraine”.
(Source: built by the authors based on data from the Scopus database using the VOSviewer application)

Figure 3 demonstrates that research studies on the financial ecosystem are connected to digital technologies, fintech, and sustainability issues. At the same time, the available works do not provide a clear outline of the vectors of transformation of the financial ecosystem, required for the restoration of Ukraine on the basis of resilience and sustainable development, especially during wartime, which confirms the need for further research.

AIMS AND OBJECTIVES

The aim of the study is to identify the key determinants of the financial ecosystem transformation in Ukraine under the combined influence of wartime risks, regulatory reforms, and global digitalisation trends.

The objectives of the research are:

- to provide the dynamic analysis of the financial ecosystem of Ukraine and determine its key tendencies;
- to assess the role of digitalisation processes, including the development of digital payments, fintech solutions, and cashless infrastructure, in enhancing the resilience and accessibility of the financial ecosystem;
- to outline the main regulatory framework changes and other challenges of the financial ecosystem development.
- to identify the strengths and weaknesses of Ukraine’s governance indicators as compared to other countries grouped by income.

METHODS

The methodological framework of this study combines bibliometric, statistical, and analytical approaches, ensuring both conceptual depth and empirical rigour. The research design is aimed at identifying and systematizing the key determinants of the transformation of Ukraine’s financial ecosystem under modern challenges.

Bibliometric analysis. Bibliometric methods were applied to explore the global and national academic discourse. The Scopus database was used as the primary source of indexed publications. Based on a preliminary literature review, a set of keywords was developed, including “financial ecosystem”, “digitalisation”, “fintech”, “banking”, “cryptocurrency”, “risk management”, and “Ukraine.” Data processing and visualisation were conducted using VOSviewer 1.6.20, which enabled the construction of keyword co-occurrence maps, clustering of thematic areas, and identification of intellectual structures and research trends shaping the debate on financial ecosystem transformation.

Empirical and statistical analysis is focused on assessing the dynamics of Ukraine’s financial ecosystem. The analytical base was formed from official statistics of the National Bank of Ukraine (NBU) and international organisations such as the World Bank. The dataset analysis included the following:

1. Structure and dynamics of financial sector assets.

2. Dynamic analysis of financial institutions (banks, finance companies, credit unions, insurance companies, pawnshops).
3. Payment infrastructure and cashless transactions indicators.

Descriptive statistics and trend analysis were applied to trace structural changes in the financial ecosystem during 2015–2025, with particular emphasis on wartime dynamics and further post-war adaptation.

Comparative analysis. To contextualize the Ukrainian case, a comparative framework was developed by grouping countries according to income level and economic structure (advanced (high-income) economies, upper-middle-income countries, emerging markets, developing economies, and conflict-affected states). This approach enabled distinguishing both universal determinants of financial ecosystem transformation and country-specific features relevant to Ukraine.

Finally, *institutional and regulatory analysis* involved a review of strategic documents, regulatory acts, and international agreements influencing the transformation processes of Ukraine’s financial ecosystem. In particular, the analysis covered the NBU’s strategic documents, program arrangements with the IMF, and the process of harmonizing national financial regulation with EU standards. This approach allowed the authors to identify institutional and governance drivers of transformation and their interaction with technological determinants.

RESULTS

The development of the financial ecosystem of Ukraine is characterized by periods of volatility and stabilizations, and is influenced by global crises, the macroeconomic situation in the country, and meeting different challenges. During the last decade, the financial ecosystem has been quite turbulent because of a number of crises, but it has also shown a lot of resilience.

Economic and political crises have a huge influence on the financial sector and require regulatory flexibility in order to meet challenges. Ukraine faced a severe financial crisis in 2014–2015, triggered by political instability and the beginning of the war conflict. GDP dropped by 6.6% in 2014, in 2015 it fell by 9.9%, and inflation exceeded 40% (NBU, 2015). Ukraine moved toward monetary independence and financial stability, abandoning a fixed exchange rate regime, and the hryvnia started floating from 2015. At the same time, capital mobility was restricted through administrative measures to stabilize reserves (NBU, 2025). In order to overcome the crisis and to strengthen the banking system, the National Bank of Ukraine introduced some policy changes. The National Bank of Ukraine officially adopted inflation targeting (5% ±1%) in 2016 (Nikolaychuk, 2025). This marked a decisive commitment to monetary independence. As a result of the policy shifts, inflation fell from 43% in 2015 to around 9% in 2019 (Trading Economics, 2025); international reserves rose steadily from approximately USD 13 billion in 2015 to USD 25 billion in 2019 (NBU, 2019). In 2022, inflation targeting was temporarily de facto suspended amid emergency measures, sharp inflation acceleration (exceeding 26% in 2022), fixed exchange rate arrangements, and capital controls, while monetary policy focused on financial stability and macroeconomic resilience under IMF-supported programs in terms of war. By 2023–2024, as inflation decelerated and reserves recovered due to sustained external financing, the NBU gradually restored key elements of the inflation-targeting framework, eased FX restrictions, and reaffirmed price stability as the primary medium-term objective (NBU, 2024d). It is worth mentioning that Ukraine’s financial ecosystem is bank-dominated, with non-bank financial institutions playing targeted roles (factoring, leasing, consumer micro lending, etc.). Banks have a leading position in the structure of financial sector assets (Figure 4).

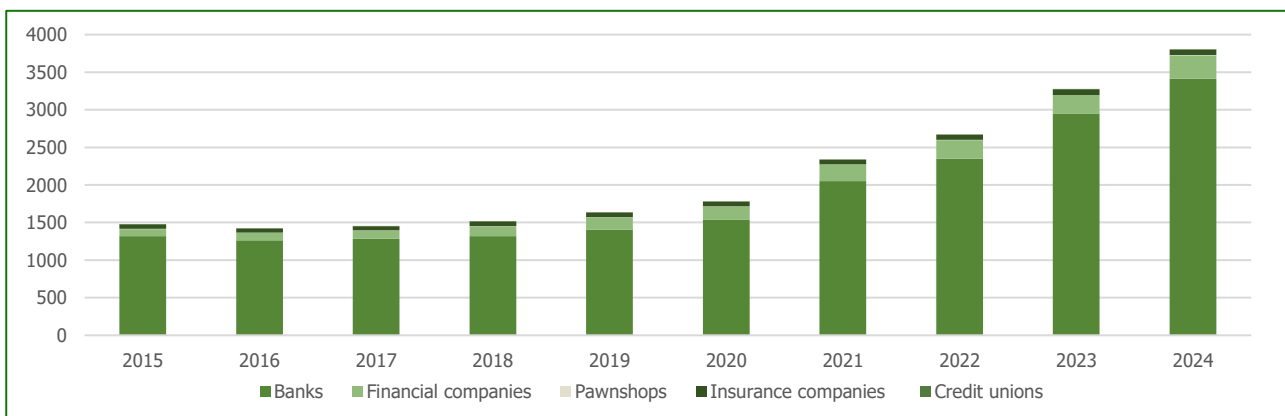


Figure 4. Structure of the Ukrainian financial sector assets, UAH billions. (Source: built by the authors based on NBU data (NBU 2025a, 2025b))

Because of the abovementioned crisis and regulatory shifts, the number of banks decreased in 2015, and the total amount of their assets fell as well. However, as shown in Figure 4, bank assets have been increasing since 2017. Other financial institutions' assets also have an increasing trend. It is notable that at the end of 2024, the share of banks in the structure of the financial sector assets is 8 times more than that of nonbank financial institutions (NBFI) at all. Finance companies expanded notably in 2024 because legal-entity lessors were reclassified into the finance-company segment from 1 January 2024; so the step-up in that bar is therefore structural rather than organic growth. Such policy and accounting changes visibly reshape the intra-NBFI mix, even when total NBFI share moves only slightly (NBU, 2025b). According to the NBU data (NBU 2025a, NBU 2025b), market structure is bifurcating: concentration in banks has been drifting down, while concentration across NBFI segments has been edging up – another reason the NBFI bars are dominated by a few players. It is notable that financial intermediaries show a pronounced consolidation over the past decade (Figure 5).

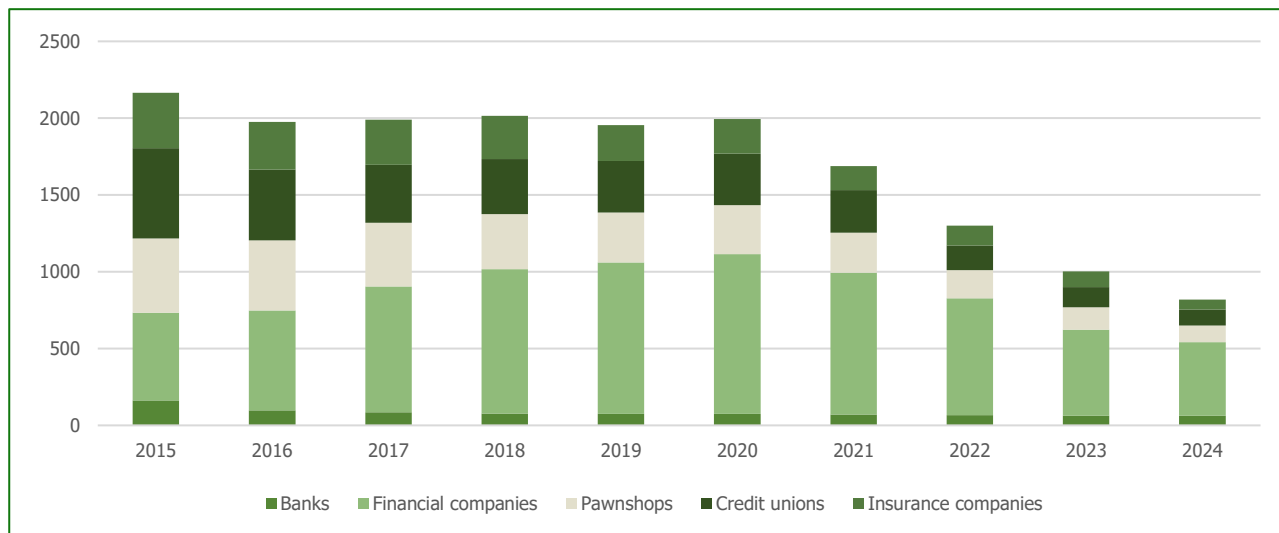


Figure 5. Number of financial service providers in Ukraine during 2015-2024. (Source: built by the authors based on NBU data (NBU 2025a, 2025b))

Figure 5 data demonstrates that every major segment, except financial companies, shows a downward trajectory in the number of licensed providers. The banking sector has a long-running negative trend. It began during the 2014-2015 financial crisis, when the number of banks rapidly decreased and continues to this day. Due to the NBU's efforts to meet stricter EU financial sector standards during the last decade, the number of banks has almost halved from 117 institutions at the end of 2015 to 61 by the end of 2024, indicating continuing consolidation alongside the asset pattern shown (NBU, 2025b). It is notable that in the period 2015-2020, only financial companies demonstrated an increase in the number of providers. Between 2021 and 2024, financial companies declined from 922 to 479 entities, pawnshops from 261 to 109, insurers from 155 to 65, and credit unions from 278 to 104; by March 2025, these fell further to 451, 108, 63, and 98, respectively (NBU, 2025b). Several structural forces explain the observed pattern. The NBU's supervisory tightening and reporting modernization have raised compliance costs and standards – lessors were reclassified into the finance-company segment in 2024, credit unions moved to monthly reporting from the beginning of 2025, while finance companies and pawnshops began monthly balance-sheet reporting from 1 April 2025 – accelerating exits and mergers among the smallest institutions. The Registry itself shrank by 37 institutions in Q1 2025 (NBU, 2025b) – mainly finance companies and credit unions – showing that the cleansing cycle has not yet ended. On the structure side, the NBU (2025b) reports that concentration has risen gradually across non-bank segments, a natural corollary of exits among small institutions and a factor that reinforces the dominance of larger, better-capitalized players visible in the shrinking bars of Figure 5. So, interpreting the decline in provider counts solely as a loss of intermediation capacity would be misleading. The system has simultaneously become more digital and concentrated.

An important era in Ukraine's financial ecosystem development, with the focus on financial inclusion and digitalization, can also be outlined: mobile banking apps, such as Monobank, launched in 2017, and fintech start-ups expanded. By 2020, around 21% of Ukrainians actively used online banking, though a significantly higher percentage of the population had bank cards, and the use of non-cash payments was increasing rapidly (NBU, 2021). At this time, Ukraine leaned strongly on monetary independence and financial openness, at the cost of a managed exchange rate regime. In the face of the COVID-19 pandemic, NBU cut the key policy rate to 6% in 2020, which marked a historic low (NBU, 2020). In such conditions, credit support programs (like "5-7-9% loans" for SMEs) helped sustain businesses. Furthermore, as with the

majority of sectors, COVID-19 stimulated the digital finance boom: the share of cashless transactions exceeded 60% of all card transactions by the end of 2021 (InfoSapiens, 2021). Besides that, Ukraine ranked 4th among the top countries in cryptocurrency adoption in 2021 (Chainalysis, 2021).

From 2022 to 2025, the trajectory of Ukraine’s financial ecosystem was decisively shaped by the full-scale war that began on 24 February 2022. At the outset of the war, the National Bank of Ukraine introduced exceptional wartime measures, including a fixed hryvnia exchange-rate regime and a package of administrative foreign exchange restrictions, designed to stop panic, preserve bank functioning, and stabilise foreign-exchange reserves during the most acute phase of the shock. Over time, those measures were gradually recalibrated, and a policy of phased liberalisation was launched as the authorities sought a balance between stability and restoring capital mobility. The NBU’s strategy documents and successive announcements describe this path from emergency controls toward progressive easing and targeted liberalisation, including several packages of foreign exchange liberalisation measures in 2024–2025.

The IMF and other international partners played a central role in underwriting macro-financial stability during wartime. In March 2023, Ukraine and the IMF agreed on a multi-year financing framework (the Extended Fund Facility and related arrangements) that recognised the extraordinary fiscal needs of a country at war while attaching conditionality aimed at preserving macroeconomic discipline and governance reforms necessary for medium-term reconstruction. Periodic IMF reviews through 2024–2025 continued to anchor external creditor support and to signal that predictable multiyear financing would remain a linchpin of macroeconomic policy (Betliy, 2023).

The Ukrainian banking sector, despite wartime damage to the real economy and infrastructure, demonstrated notable resilience. Regulatory stress tests and resilience assessments resumed after the initial shock (2023 onward) and found that most banks maintained adequate capital buffers and liquidity margins in the aggregate, helped by prudent provisioning, the NBU’s crisis measures, and continued supervisory oversight (NBU, 2024a). At the same time, the sector continued to evolve structurally: the NBU and the state continued efforts to strengthen the Deposit Guarantee Fund, to shore up operational resilience in digital channels, and to align supervisory practice with EU standards as part of longer-term EU-integration reforms.

During the war, consumer behaviour and payments infrastructure continued shifting toward cashless channels (Figure 6).

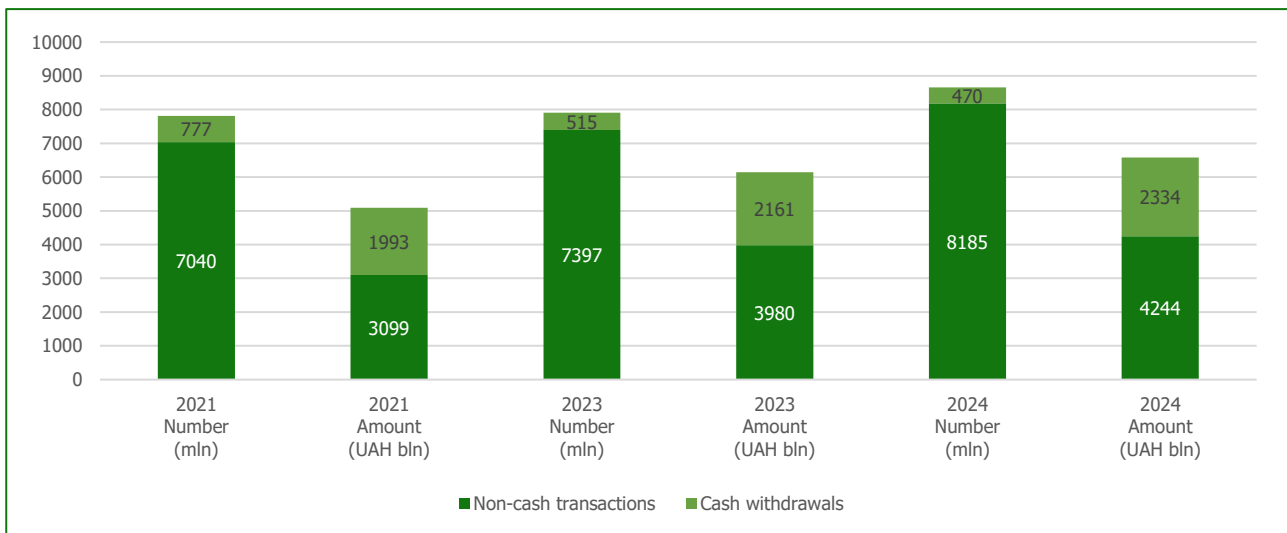


Figure 6. Number and amount of cash and non-cash operations in Ukraine during 2021-2024. (Source: built by the authors based on NBU data (NBU 2024b, 2024c, 2025a))

Figure 6 documents a decisive shift in card usage patterns toward cashless payments, with the dominance of non-cash operations becoming more pronounced over time. In absolute terms, the number of non-cash transactions rose from 7,040 million in 2021 to 8,185 million in 2024, while cash-withdrawal transactions fell from 777.2 million to 469.6 million over the same period. These dynamics are consistent with the National Bank’s oversight statistics and underscore a structural reallocation of card usage away from cash acquisition and toward payment at merchants and online (NBU, 2024c). The total amount of non-cash operations increased from UAH 3,099.1 billion in 2021 to UAH 4,243.5 billion in 2024. By contrast, the value of cash withdrawals also rose – from UAH 1,992.6 billion to UAH 2,334.0 billion – even as their frequency declined, implying larger average withdrawals. The Banking Sector Review (NBU, 2025a) explicitly reports that the average amount of a cash withdrawal increased by 19% in 2024 and that, by the end of that year, the long-running decline in the

share of cash transactions temporarily halted, which helps reconcile the simultaneous fall in the count of withdrawals with the rise in their aggregate value.

So, even during wartime, Ukrainians increased cashless card transactions, the share and volume of cashless payments rose in 2023 and 2024, and by many metrics exceeded pre-war levels, reflecting both the rapid expansion of mobile and internet banking and the operational advantages of electronic payments in a constrained environment. This digitalization trend reinforced financial inclusion in some respects (convenience, continuity of payments in many regions) while also exposing new operational-resilience and cyber-security priorities for regulators and banks (NBU, 2024b). The determinants of this transformation are technological as much as behavioral. Within cashless operations, contactless and NFC methods overwhelmingly predominate: in 2024, contactless/NFC transactions exceeded those involving physical card reading by 22.4 times in number and 17.9 times in value, indicating deep user adoption of proximity and device-based payments (NBU, 2025a). At the same time, every second cashless card transaction occurred through a POS terminal, reflecting the centrality of retail acceptance to the observed growth. The supply side has moved in lockstep: banks and payment providers added 53,600 POS terminals in 2024, materially strengthening the infrastructure that enables contactless spending. The ATM network contracted, and card usage continued to rise, evidencing a migration from physical outlets to electronic rails (NBU, 2024c).

At the same time, much attention has been paid to the integration of the Ukrainian payment system into EU standards such as PSD2/PSD3, SEPA, through the harmonisation of financial regulation with EU directives, which have been progressed under the EU–Ukraine Association Agreement. The regulatory framework and its orientation play an important role in the development of the financial system. Eurointegration processes have influenced the banking system of Ukraine towards green transition, implementing ESG standards. The integration of sustainability principles into the practices of financial ecosystem actors outlines a trajectory of harmonisation with international standards of green finance, sustainable investment, and corporate governance, reflecting the global trend of shifting from purely financial metrics to multidimensional assessments of systemic resilience, where environmental and social aspects become an integral part of financial stability. It is notable that in terms of CSRD implementation, ESG and sustainability considerations are still at the beginning stage of development, but seemingly starting to shape strategic decisions, aligning Ukrainian financial institutions with international standards and signalling a move toward sustainable finance (Antoniuk et al, 2025).

Furthermore, based on the significant research background on the importance of institutional and regulatory quality (Bernanke, B.S. (2023), Bayraktar et al (2023), Chang (2022)), governance indicators are worth studying in the context of financial ecosystem transformations. The analysis of the Worldwide Governance Indicators (World Bank, 2024a) across World Bank income groups reveals a clear relationship between governance quality and level of development (Figure 7).

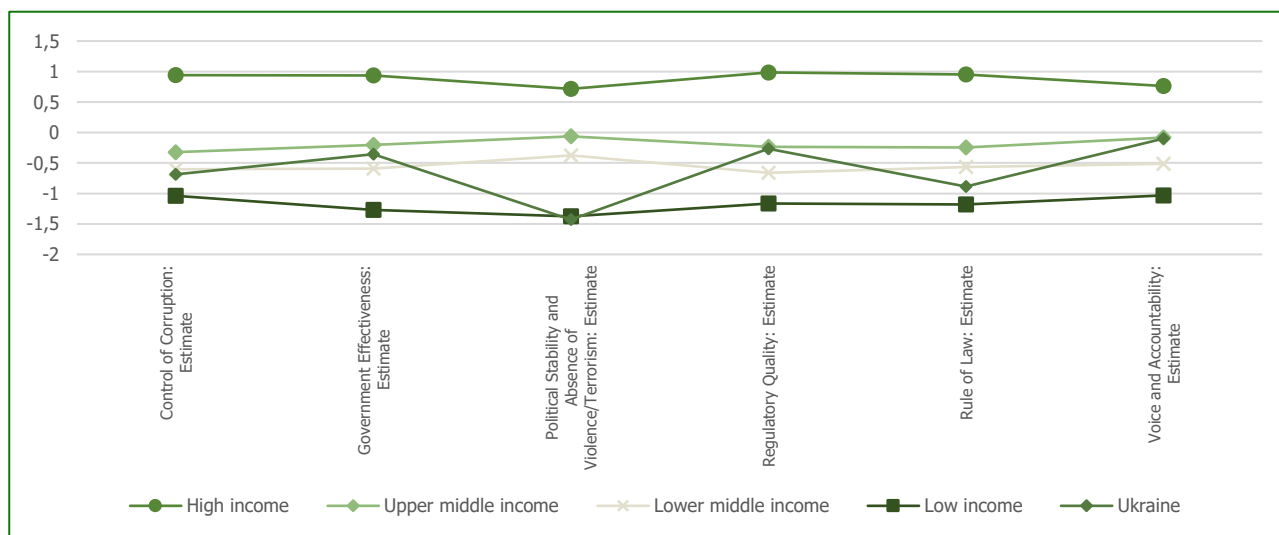


Figure 7. Average values of Worldwide Governance Indicators (203 countries) by income group, and Ukraine, 2023. (Source: developed by the authors based on World Bank data (World Bank (2024a), World Bank (n.d.)).

As expected, high-income countries demonstrate the strongest institutional indicators across all six dimensions, while low-income countries record the weakest scores, reflecting persistent structural and governance gaps. Based on the year 2023 data, Ukraine, classified as an upper-middle-income economy, generally aligns with the average performance of its income

group but shows notable variations across individual indicators. Its scores for “regulatory quality and voice and accountability” are consistent with the upper-middle-income group average, indicating comparable institutional capacity and civic participation. However, the indicator for “political stability and absence of violence/terrorism” is at its lowest point, approximately equivalent to the average level of low-income countries, reflecting the ongoing effects of the full-scale war. Meanwhile, “control of corruption”, “government effectiveness”, and “rule of law” remain slightly below the upper-middle-income average, suggesting areas where institutional strengthening is still required.

The transformation of financial ecosystems across different country groups reflects varying stages of economic maturity, institutional stability, and exposure to global integration processes. As shown in Table 1, determinants influencing financial ecosystem development differ systematically by income level and structural characteristics, yet all share the underlying goal of ensuring stability, inclusion, and competitiveness under changing global conditions.

Table 1. Key determinants and focus areas of financial ecosystem transformation, by country groups (based on income level and stability). (Source: summarised by the authors based on World Bank (2024b), Bernanke, B.S. (2023), Diamond, D.V. (2023), Ullah et al (2025), and authors' findings)

Country Group	Determinants	Focus Areas
High-income/ advanced economies	Aging demographics Shift from banking to capital markets ESG-driven investments High integration into global value chains	Sustainable finance, ESG innovation; aligning investment portfolios with green transition goals. Pension system reform and demographic adaptation: addressing ageing-related fiscal and financial pressures. Diversification of funding sources beyond traditional banking. Supply chain transparency and resilience (promoting digital traceability and compliance with sustainability standards).
Upper-middle-income countries	Need to accelerate the shift to innovation Growing middle class & urbanisation	Strengthening financial intermediation and improving access to affordable credit for SMEs. Reducing informality through digitalisation, expanding digital payment systems, and tax transparency.
Lower-middle income/emerging economies	Need to adopt modern technologies and successful business practices from abroad. Access to international capital Integration into regional blocs (EU, ASEAN, MERCOSUR, etc.)	Diversifying sources of financing, developing local capital markets, and green bond segments. Leveraging regional blocs, using integration frameworks (EU, ASEAN, MERCOSUR) to harmonise regulations and attract FDI. Urbanisation-led demand for infrastructure finance, designing innovative PPPs, and sustainable city investment models.
Low-income/developing economies	Dominance of remittances Financial inclusion challenges Limited ICT infrastructure Resource dependence (agriculture, extractives)	Expanding financial inclusion (mobile banking, microfinance, and fintech for underserved populations). Harnessing remittances for development: promoting formal channels and investment-linked remittance schemes. Building digital infrastructure: scaling connectivity and e-government platforms to support financial services. Diversifying economic base by investing in value-added processing for agricultural and extractive exports.
Fragile/transition/conflict-affected states	Political & institutional stability Reconstruction and donor dependence Vulnerability to external shocks (war, crises) Need for integration into international standards	Institutional rebuilding and governance reform (strengthening transparency, anti-corruption, and public finance management). Accessibility of finance through digitalisation and fintech adoption. Donor coordination and impact finance (ensuring aid effectiveness through blended finance and measurable outcomes). Shock resilience mechanisms (creating fiscal buffers and emergency financing tools).

In high-income and advanced economies, the evolution of financial ecosystems is primarily shaped by structural and sustainability-driven transformations rather than by crisis management. Ageing demographics and the gradual shift from traditional banking intermediation toward capital market financing are redefining the sources of liquidity and investment. These economies lead the global transition toward ESG-oriented investment frameworks and green finance instruments, while their deep integration into global value chains ensures both diversification and interdependence of capital flows.

In contrast, middle-income and emerging economies face a dual challenge: sustaining macro-financial stability while expanding access to capital for real-sector growth. Their ecosystems are often characterised by high reliance on the banking sector (as illustrated by Ukraine’s case as well), with limited penetration of capital markets and underdeveloped institutional investors. Integration into regional blocs, such as the European Union, ASEAN, or MERCOSUR, plays a crucial role in anchoring reforms, enhancing regulatory alignment, and attracting foreign investment. For these countries, the growing

urbanised middle class and digital transformation represent major drivers of financial inclusion and innovation, particularly in fintech and mobile banking sectors.

Low-income and developing economies exhibit the most constrained financial ecosystems, where the dominance of remittances and resource-based revenues substitutes for diversified domestic finance. Structural limitations, such as low ICT infrastructure penetration and widespread informality, hinder financial deepening and resilience. For such economies, donor support and multilateral assistance remain key to maintaining macroeconomic stability, but they rarely translate into systemic transformation without concurrent institutional reforms.

Finally, fragile, transition, and conflict-affected states, including Ukraine, face a distinctive configuration of determinants. Their financial ecosystems are shaped by the tension between reconstruction needs and macro-financial stabilisation imperatives.

So, for the argument on key determinants of the financial ecosystem transformation, there can be several points. First, regulatory modernization, institutional quality, and prudential clean-up on the basis of eurointegration and sustainability are primary drivers of institutional counts. Second, rapid digitalization of payments and distribution compensates for provider exits, helping preserve (and in some channels expand) functional access despite fewer institutions. In sum, the declining tallies signal not a collapse of intermediation, but a transition toward a more consolidated, digitally enabled ecosystem shaped by supervisory reform and technological adoption. Third, the wartime need for a future post-war operating environment has favored scale and resilience, tilting market structure toward fewer, larger players.

DISCUSSION

The research demonstrates that Ukraine's financial ecosystem has been driven by a combination of technological, institutional, and behavioural determinants. Digitalization has been particularly influential, with mobile banking, online payments, and digital wallets expanding access to financial services and enabling continuity amid economic and geopolitical shocks. At the same time, the central bank as a regulator has strengthened risk management and resilience frameworks, including stress-testing, capital buffer policies, and contingency planning, to safeguard stability under conditions of high uncertainty.

Regulatory and institutional reforms have further underpinned ecosystem transformation, promoting transparency, governance, and alignment with EU directives, while technological infrastructure improvements enhance operational reliability and support innovation. Global economic integration and disintegration processes, including trade disruptions and capital flow volatility, impose external pressures that affect policy and market behaviour. In parallel, consumer trust and financial literacy remain critical, as public confidence and understanding directly influence the adoption of services and the effectiveness of reforms. Together, these determinants reflect a financial ecosystem adapting to technological, institutional, and geopolitical challenges in an environment of growing uncertainty.

The inclusion of governance indicators in this analysis provides an empirical foundation for explaining why financial ecosystem transformation depends not only on macroeconomic or technological factors but also on the institutional environment in which financial actors operate. The Worldwide Governance Indicators (World Bank, 2024a) capture core dimensions, such as regulatory quality, government effectiveness, and control of corruption, that directly shape the efficiency, transparency, and resilience of financial systems. For Ukraine, where institutional recovery is taking place amid war-related disruptions, the results highlighted both progress and fragility. The country's alignment with upper-middle-income averages in "regulatory quality and voice and accountability" supports its capacity to pursue digital transformation and integrate ESG principles into financial governance. However, deficiencies in "rule of law", "government effectiveness" and "control of corruption" continue to limit the financial sector's ability to channel resources efficiently into the real economy. Thus, this analysis reinforces the conceptual model in which institutional quality serves as a meta-determinant (in line with Bernanke, 2023; Bayraktar et al., 2023), a factor that conditions how other determinants (such as digitalization, external financing, and market integration) influence financial system transformation.

Furthermore, as shown in the findings of Bayraktar et al (2023), the impact of financial development on economic growth becomes significant only when accompanied by strong institutional quality. In contrast, when institutional factors are excluded from the model, financial development indicators show no statistically significant influence on economic growth. Similar findings support these conclusions in terms of the overall institutional quality of a country (Chang, 2022). This fact, together with the reforms in the Ukrainian financial and banking sector over the last decade, allows us to suggest that much of the stability and innovative development, even in times of crisis, is a result of more resilient and qualitative institutions formed over the last decade.

In terms of both digitalization and integration into global financial ecosystems, some research finds uneven effects depending on the level of economic development. Ullah et al (2025) show that digital financial transactions and economic growth enhance financial development, while bank risk hinders it. Governance and global financial integration also support financial development, though financial integration weakens the global “digital financial transactions - financial development” link but strengthens it in middle- and low-income economies. These results highlight region-specific dynamics and the need for tailored policies promoting digital inclusion and integration.

Strengthening the conclusions on the importance of digitalization, as showcased by Ukraine, we agree with Wang J. et al. (2023) and Chi, Li, and Zhong (2025), who prove the key role of innovative financial technologies in shaping a financial ecosystem overall, and promoting industry-specific innovations as well. Our study provides evidence that in crisis-affected economies, like Ukraine, these technologies may become crucial for the accessibility of financial services, better transparency, and further boosting a country’s capacity for international financial integration and access to capital.

According to recent studies (Kolosova, V. (2024), Heyets, V. (2024) the dependence on external financing, vulnerability to geopolitical and security shocks, and the need to rebuild institutional trust influence the trajectory of financial system development in conflict-affected states. Our study proves that in Ukraine’s case, the process of aligning with EU financial and regulatory standards is not only a condition for future integration but also a stabilising factor that helps attract foreign capital and technical assistance. However, prolonged conflict and fiscal pressures make sustaining financial intermediation to the real economy particularly challenging.

Worth noting, Ukraine’s financial ecosystem transformation amid war is inseparable from its supply chains, which underpin economic activity, trade, and competitiveness. Some research (Ruan et al., 2025; Sun, Xiong, 2025) revealed in particular that the interconnectedness between financial ecosystems and supply chain competitiveness remains generally understudied. Furthermore, they highlight that supply chain financing development is an important focus area for countries with greater dependence on agriculture, such as Ukraine. In this regard, the role of supply chain finance and a deeper empirical assessment of the influence of transformative processes in the financial ecosystem on it is worth further study.

Limitations of the study are connected with the comparative simplification. The use of aggregated country groups by income level (high-, middle-, low-income, and fragile states) provides a useful typology but may overlook internal heterogeneity and country-specific institutional nuances. Also, the analysis relies on secondary data from international databases such as the World Bank and NBU, which, while credible, may not fully capture the rapid institutional and financial changes in Ukraine’s wartime context. Given the ongoing nature of the war and post-conflict recovery, the data reflect a transitional stage rather than a completed transformation, which limits the ability to generalise long-term effects.

Despite these limitations, this study provides a structured perspective on the determinants shaping the transformation of Ukraine’s financial ecosystem under conditions of systemic stress. It integrates institutional, regulatory, digital, and euro-integrative dimensions to highlight how governance quality, financial development, and resilience mechanisms interact in a fragile, war-affected economy. Future research should extend these findings through quantitative modelling, broader cross-country comparisons, and sector-level analyses, particularly of supply chain finance and green reconstruction finance, to capture the evolving dynamics of Ukraine’s post-war economic recovery and integration into global financial networks on the basis of resilience and sustainability.

CONCLUSIONS

The conducted research has confirmed that the transformation of Ukraine’s financial ecosystem is not a spontaneous process but rather the result of multidimensional determinants simultaneously operating at technological, institutional, regulatory, and behavioural levels. Empirical results show that Ukraine’s financial ecosystem continues to retain the structural dominance of the banking sector, while the relative role of non-bank financial institutions is gradually increasing. This trend is driven by regulatory interventions, reclassification procedures, and targeted state programmes, which reshape the contours of the ecosystem without fundamentally shifting away from the bank-centred model.

At the same time, the dynamics of the payment infrastructure and the spread of digital channels demonstrate that digitalization acts as a key determinant of resilience and continuity. The expansion of contactless payments, mobile banking, and tokenized cards, alongside the introduction of new payment frameworks, has compensated for the reduction in the number of licensed intermediaries. Thus, functional access to financial services has been preserved and even expanded despite systemic shocks caused by the war, which confirms the broader thesis regarding the ability of technological innovations to mitigate the risks of institutional consolidation and ensure financial inclusion under conditions of significant uncertainty. Institutional and regulatory determinants play a decisive role, particularly the supervisory reforms of the NBU,

the implementation of stress-testing mechanisms, and sector consolidation, which have laid the foundations for macro-financial stability.

In parallel, the harmonisation of Ukraine's financial regulation with EU standards has deepened integration with the EU and has become a stabilising factor that enhances investor confidence and the quality of governance. Under these conditions, it can be argued that institutional reforms simultaneously act as both a prerequisite for financial resilience and a mechanism for Ukraine's integration into the European financial architecture. In addition, the study revealed the gradual emergence of ESG factors as an additional determinant of financial ecosystem transformation. Behavioural determinants, in particular consumer trust and financial literacy, also play a decisive role in shaping the trajectory of financial ecosystem development. The success of implementing digital innovations, non-cash instruments, and regulatory reforms directly depends on public trust in the system and the ability of households and businesses to effectively utilise new financial instruments. This highlights the interdependence between technological infrastructure and social capital in ensuring the effectiveness of transformational processes.

Therefore, the transformation of Ukraine's financial ecosystem can be conceptualised as a policy-driven, digitally oriented, and institutionally anchored process, unfolding at the intersection of domestic reforms, wartime resilience strategies, and external integration. It is characterised not by radical disruptions but by gradual restructuring, where adaptation and continuity prevail over systemic breaks. Ukraine's trajectory of financial ecosystem transformation represents a hybrid model combining features of both middle-income economies and post-conflict states, with resilience, sound governance, and adaptability acting as the defining determinants.

Based on the results of the study, several promising directions for future research can be identified, in particular: 1) further development of econometric modelling of the interconnections between digitalization, financial stability, and ESG integration, which would allow a deeper understanding of the causal relationships underlying transformational processes; 2) more detailed empirical analysis of consumer behavioural patterns, trust levels, and financial literacy as key determinants of demand for financial services and products; 3) comparative studies of Ukraine's experience with other post-conflict countries and EU member states, which would make it possible to classify unique and universal features of transformational processes; 4) investigation of the financial implications of green finance and sustainable investments, as these are likely to determine the strategic directions of Ukraine's financial ecosystem in the post-war recovery phase.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

All authors have contributed equally.

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CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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КЛЮЧОВІ ДЕТЕРМІНАНТИ ТРАНСФОРМАЦІЇ ФІНАНСОВОЇ ЕКОСИСТЕМИ УКРАЇНИ В УМОВАХ СУЧАСНИХ ВИКЛИКІВ

Трансформація фінансової екосистеми України стала визначальним процесом в адаптації країни до турбулентного геополітичного, економічного та технологічного середовища останніх років. Метою дослідження є визначення ключових детермінант трансформації фінансової екосистеми в Україні під спільним впливом ризиків воєнного часу, регуляторних реформ і глобальних тенденцій цифровізації. У роботі застосовано змішаний методологічний підхід, що інтегрує: (1) бібліометричне картування глобальних досліджень із використанням бази даних Scopus і програмного забезпечення VOSviewer; (2) порівняльний аналіз фінансових екосистем у різних країнах; і (3) емпіричну оцінку динаміки фінансового сектора України на основі офіційної статистики Національного банку України, Світового банку тощо. Результати показують, що трансформація фінансової екосистеми України зумовлена багатовимірними детермінантами, що діють на технологічному, інституційному, регуляторному та поведінковому рівнях. Цифровізація значно розширила доступ до фінансових послуг і підвищила стійкість під час воєнного часу, водночас інституційні та регуляторні реформи, зокрема ті, що відповідають стандартам ЄС щодо ESG та цифровізації, посилили прозорість, управління й довіру інвесторів. Фінансова екосистема України залишається переважно банківською, проте небанківські фінансові установи відіграють дедалі більшу стратегічну роль, особливо в споживчому кредитуванні та фінансуванні малого й середнього бізнесу. Водночас поведінкові детермінанти, такі як фінансова грамотність і громадська довіра, можуть і посилювати, і стримувати трансформаційні процеси. Висновки дослідження свідчать, що трансформація фінансової екосистеми України є не ситуативною реакцією на шоки, а політично обумовленим, цифрово орієнтованим та інституційно закріпленим процесом, що розгортається в рамках ширшої траєкторії майбутнього повоєнного відновлення та європейської інтеграції. Результати дослідження сприяють академічному розумінню трансформації фінансової екосистеми в економіках, що постраждали від конфліктів, та надають обґрунтований доказом виклад її ключових детермінант для забезпечення тривалої фінансової стабільності.

Ключові слова: банківська справа, фінанси, цифровізація, сталий розвиток, стійкість, регуляторна політика, євроінтеграція, ланцюг поставок, управління, ESG

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