

“Structural imbalances in Ukraine’s financial market and their interrelationship with the effectiveness of state regulation in 2020–2024”

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STRUCTURAL IMBALANCES IN UKRAINE'S FINANCIAL MARKET AND THEIR INTERRELATIONSHIP WITH THE EFFECTIVENESS OF STATE REGULATION IN 2020–2024

Abstract

The relevance of the study lies in the fact that maintaining the financial stability of the banking sector does not always ensure the recovery of lending to the real economy. The article aims to identify and quantitatively assess structural imbalances in Ukraine's financial market during 2020–2024 and to substantiate priority areas for improving state regulation, considering the relationships among banking-sector asset growth, capitalization, and lending intensity. The article frames this problem in the context of wartime financial system transformation, where regulatory policy must balance preserving systemic resilience with restoring banks' credit function and supporting economic recovery.

The methodological basis of the study includes structural-dynamic analysis, correlation-regression modeling, and the calculation of an aggregated financial stability indicator based on official data from the National Bank of Ukraine and the State Statistics Service of Ukraine. The results show that the growth of banking-sector assets and capital in 2020–2024 was accompanied by a substantial decline in the loan-to-deposit ratio – from 67.6% in 2021 to 39.4% in 2024. Regression estimates indicate an inverse relationship between bank asset growth and credit transformation, suggesting that resources were primarily directed toward liquid, low-risk instruments rather than lending to the real economy. It is concluded that compliance with capitalization requirements supports macrofinancial stability but does not guarantee lending activity recovery.

Improving state regulation effectiveness requires targeted credit incentives for banks, developing partial credit guarantee mechanisms, differentiating regulatory requirements by asset structure, expanding refinancing programs for productive lending, and strengthening control over the allocation of bank liquidity to the real economy.

Keywords

financial market, imbalance, bank capitalization,
lending, liquidity, banking sector, regulation,
supervision, resilience, Basel

JEL Classification

G21, G28

INTRODUCTION

The current stage of global economic development is characterized by increased macroeconomic instability, growing financial risks, and deepening structural transformations, which bring the effectiveness of state regulation of financial markets to the forefront. The experience of financial crises in recent decades has shown that imperfect regulatory mechanisms lead to the accumulation of systemic risks, distortions in the credit mechanism, and a decline in confidence in financial institutions, which negatively affects long-term economic dynamics.

For Ukraine, this issue is of particular importance due to prolonged transformation processes in the financial sector, the need to maintain macrofinancial stability, and the adaptation of the regulatory system

to modern standards of risk-oriented supervision. As part of the institutional modernization of the financial system, requirements for bank capitalization are being strengthened, supervisory mechanisms are being improved, and the role of macroprudential instruments is increasing. At the same time, the preservation of the formal stability of the banking sector is not always accompanied by the proper fulfillment of its basic function – the transformation of attracted resources into lending to the real sector of the economy.

In this study, structural imbalances in the financial market are understood as the mismatch between the growth of banking-sector assets and capital, on the one hand, and the decline in the intensity of credit transformation of resources, on the other. Such a mismatch means that the accumulation of financial resources does not translate into a proportional expansion of lending; therefore, the stabilizing function of regulation prevails over its development-oriented function. The scientific literature sufficiently covers issues of financial stability, capitalization, and macroprudential regulation; however, the relationship between the scale of the banking sector, its capital base, and its ability to ensure credit transmission in a transforming economy remains insufficiently studied.

Thus, the research gap lies in the absence of a comprehensive quantitative substantiation of how the growth of banking sector assets and capital relates to the intensity of lending to the real sector and what this means for assessing the effectiveness of state regulation of the financial market. Accordingly, the scientific problem of this study is to define the conceptual basis of a regulatory approach that simultaneously ensures an adequate level of capitalization, reduces systemic risks, and creates conditions for restoring a fully functional credit transmission mechanism.

1. LITERATURE REVIEW

The effectiveness of state regulation of the financial market is examined in contemporary academic literature not only through the ability of the state to prevent crises, maintain bank solvency, and contain systemic risks, but also through the capacity of the regulatory system to ensure the full functioning of financial intermediation. For Ukraine in 2020–2024, this issue is particularly relevant, since during this period the banking sector demonstrated growth in assets, capital, and profitability, while these processes were not accompanied by a proportional strengthening of lending to the real sector of the economy.

The theoretical foundation of this study is the theory of financial intermediation, within which banks are viewed as institutions that transform savings into loans and investments. In the classical study by Diamond and Dybvig (1983), it is argued that banks create liquidity by combining short-term liabilities with long-term assets; however, this structure simultaneously generates potential vulnerability to liquidity crises. This argument is important for the analysis of Ukraine's financial market, as it shows that the formal stability of the

banking sector does not always mean that it effectively performs its credit intermediation function.

The further development of financial intermediation theory is presented in the work of Holmström and Tirole (1997), who demonstrate that the ability of financial intermediaries to support investment activity depends on their capitalization, monitoring function, and the allocation of financial resources among borrowers, banks, and investors. For this study, such an approach is essential, as it allows bank capital to be considered not as an isolated indicator of stability, but as a factor whose significance should be assessed through its effect on lending and the financing of economic activity.

Another important theoretical direction is the theory of the credit channel of monetary transmission. Bernanke and Gertler (1995) show that the effect of monetary policy on the economy is transmitted not only through changes in interest rates, but also through the availability of bank credit. Under conditions of information asymmetry, increasing risks, or deterioration in bank balance sheets, lending may decline even when the banking system remains liquid. This argument is directly related to the focus of the article, since in

Ukraine in 2020–2024 the expansion of banking assets did not ensure a corresponding increase in credit support for the real sector.

Empirical studies of the credit channel confirm that the structure of bank balance sheets significantly affects banks' lending behavior. Kashyap and Stein (2000), using a large sample of banks, demonstrated that the response of lending to monetary changes depends on banks' liquidity and balance-sheet position. Jiménez et al. (2012) showed that monetary policy affects the supply of bank credit through banks' balance sheets, capital, liquidity, and risk level. Thus, the international empirical literature confirms that, in order to assess the effectiveness of regulation, it is insufficient to analyze only the total assets or capital of the banking sector; it is also necessary to consider whether these resources are transformed into lending to the economy.

The issue of bank capital and its relationship with lending is also addressed in contemporary studies of financial stability. Gambacorta and Shin (2018) demonstrate that bank capital affects the cost of funding and the growth rate of lending; therefore, capitalization is not only a regulatory indicator, but also a channel through which credit activity is influenced. At the same time, this relationship is not automatic: under conditions of high uncertainty, banks may use capital and liquidity to preserve stability rather than to expand their loan portfolios. This logic is particularly relevant for analyzing Ukraine under the conditions of the pandemic, full-scale war, and elevated macrofinancial risks.

The study by Laeven and Levine (2009) complements this discussion by analyzing the relationship between bank regulation, corporate governance, and bank risk-taking. The authors show that regulatory rules alone do not guarantee a reduction in risks if they do not take into account the incentive structure of banks, owners, and management. This argument is important for evaluating state regulation of the financial market, as it emphasizes the need to analyze not only formal regulatory standards, but also the actual behavior of financial institutions.

Ukrainian institutional studies also emphasize that the effectiveness of state regulation of the financial market depends on the coherence of reg-

ulatory, fiscal, monetary, and structural policies (Ukrainska, 2021; Kotelevets, 2022; Antonova & Antonov, 2023; Tymoshenko, 2025). These studies are important for understanding the national context, as they show that the formal availability of regulatory instruments does not guarantee the effective functioning of the financial market without institutional consistency, strategic priorities, and policy coordination. At the same time, these studies do not sufficiently explain the mechanism through which regulatory stability is transformed – or fails to be transformed – into actual credit activity in the banking sector.

A separate group of Ukrainian studies focuses on macrofinancial stability, the strategic modernization of the financial market, deglobalization risks, and the transformation of financial flows (Onyshko & Belin, 2022; Belin, 2024; Safarli et al., 2024). These studies identify changes in the operating conditions of Ukraine's financial market and the growing role of the state in stabilizing the financial system. However, they mostly consider assets, capitalization, liquidity, non-performing loans, and lending as separate indicators, whereas their interrelationship as a manifestation of structural imbalance requires further theoretical and empirical explanation.

Empirical assessments of Ukraine's financial market indicate a contradiction between the growth of certain banking sector indicators and limited credit activity (Levkovska et al., 2023; Tatarin & Polovko, 2023; National Bank of Ukraine, 2024; State Statistics Service of Ukraine, 2025). These findings are consistent with the international theory of the credit channel, as they demonstrate that the growth of banks' resource base does not necessarily mean the strengthening of credit transformation. Therefore, the relationship between assets, capital, the share of non-performing loans, and the loan-to-deposit ratio should be considered as an indicator of deeper structural imbalances in the financial market.

Fiscal and budgetary studies complement this analysis, since the state influences the financial market not only through banking regulation, but also through budgetary policy, public debt management, tax mechanisms, and the redistribution of financial flows (Tymoshenko, 2017; Mykhasiuk

& Kosovych, 2021; Prokopenko et al., 2021; Panukhnyk et al., 2022; Khaustova, 2023). During periods of crisis and economic instability, typical of wartime, banks may redirect resources toward lower-risk or state-guaranteed instruments, which supports their profitability and formal stability but at the same time reduces their role in financing businesses and households. This creates a situation in which state regulation ensures financial system stability, yet does not fully stimulate its developmental function.

Contemporary literature increasingly focuses on the digital transformation of the financial market, artificial intelligence, digital financial services, and new financial monitoring tools (Lysenko et al., 2024; Skliarenko et al., 2024; Bobro et al., 2025). These studies reveal the potential of digitalization to reduce transaction costs, increase transparency, accelerate data exchange, and improve regulatory control. At the same time, the development of digital taxation, cryptocurrency markets, and new financial instruments creates additional challenges for state regulation (Mehboob, 2021; Melnyk et al., 2022; Novosad, 2023; Tymoshenko, 2025). Thus, digital transformation expands regulatory capacities, but it does not eliminate the core issue – whether the financial resources of the banking sector are capable of being transformed into productive lending.

A critical analysis of the existing literature makes it possible to identify several research gaps. First, in some studies, financial stability, capitalization, and profitability of the banking sector are effectively equated with regulatory effectiveness, although the international theory of financial intermediation indicates the need to assess the credit function of banks as well. Second, studies focused on Ukraine do not sufficiently integrate the theory of the credit channel, which explains why banks may restrict lending even when they possess assets, capital, and liquidity. Third, previous studies mostly analyze individual financial indicators, but do not always consider them as interrelated elements of structural imbalance.

Thus, this article is positioned at the intersection of financial intermediation theory, credit channel theory, studies of bank capital, and the institutional approach to state regulation. Unlike studies in

which regulatory effectiveness is assessed mainly through the stability of the banking system, this research examines banking sector assets and capitalization through their relationship with credit transformation. This approach makes it possible to identify the structural asymmetry of Ukraine's financial market in 2020–2024 and to show that effective state regulation should be evaluated not only by its ability to stabilize the financial system, but also by its capacity to support lending to the real sector of the economy.

The study aims to identify and quantitatively assess structural imbalances in the functioning of Ukraine's financial market in 2020–2024 and to substantiate directions for improving state regulation, taking into account the relationship between banking sector capitalization, the scale of banking sector assets, and the intensity of lending to the real sector of the economy.

Based on the unresolved issues identified in the literature, the following hypotheses are proposed:

- H1: *The growth of banking sector assets is not accompanied by a proportional increase in lending to the real economy.*
- H2: *An increase in the capitalization of the banking sector does not automatically lead to an increase in lending to the real economy.*

2. METHODS

The research was conducted based on a quantitative approach to assessing the effectiveness of state regulation of the financial market by comparing the scale of the banking sector, its capitalization, and the intensity of credit transformation in 2020–2024. The primary data were obtained from official publications of the National Bank of Ukraine and the State Statistics Service of Ukraine for 2020–2024: total assets of the banking sector, capital and reserves, financial result before taxation, share of non-performing loans, loan-to-deposit ratio, money supply M3 and GDP.

Variables and symbols: t – year of observation (2020–2024). A_t – banking sector assets at the end of the year, UAH billion; C_t – capital and reserves

at the end of the year, UAH billion; LTD_t – loan-to-deposit ratio, %; NPL_t – share of non-performing loans, %; $M3_t / GDP_t$ – monetization of the economy, %.

The research procedure (algorithm) is as follows:

- an annual array $\{A_t, C_t, LTD_t, NPL_t, M3_t / GDP_t\}$ was formed;
- the financial stability indicator and capitalization ratio are calculated;
- a structural-dynamic analysis of A_t, C_t and their relationship with LTD_t, NPL_t is performed;
- a correlation analysis (Pearson) was performed for the relationships between $A_t, C_t, LTD_t, K_{cap,t}$ in 2021–2024;
- one-factor and two-factor linear regression models were constructed for quantitative interpretation of the association of assets and capital with LTD_t .

Calculation formulas. Aggregate indicator of financial stability of the banking sector:

$$K_{FS} = \frac{\sum_{i=1}^n GI_i \cdot a}{n}, \quad (1)$$

where K_{FS} – aggregated financial stability ratio of the banking sector; GI_i – gross financial result of the banking sector in the i -th year (profit before tax), UAH billion; n – number of years in which a positive financial result was recorded; a – normative capitalization ratio corresponding to Basel III approaches ($\alpha = 10\%$ is accepted).

Capitalization ratio:

$$K_{cap} = \frac{C}{A}. \quad (2)$$

Econometric specifications:

$$LTD_t = \beta_0 + \beta_1 A_t + \varepsilon_t, \quad (3)$$

$$LTD_t = \beta_0 + \beta_1 A_t + \beta_2 C_t + \varepsilon_t, \quad (4)$$

where β_0 – constant term; β_1 – sensitivity coefficient of credit transformation to changes in assets; ε_t – random error.

The parameters were estimated using the least squares method. However, due to the limited number of annual observations, the regression results are interpreted exclusively as exploratory and illustrative. They are not used as a basis for strong causal conclusions or for forecasting. The main analytical emphasis is placed on the structural proportions of the banking sector, the dynamics of capitalization, the persistence of non-performing loans, the weakening of credit transformation and the gap between the expansion of banking assets and their contribution to financing the real economy.

This methodological approach makes it possible to assess not only the formal stability of the banking sector, but also the structural asymmetry between asset growth, capitalization, credit activity and the effectiveness of state regulation in the financial market.

A limitation of the study is the restricted number of annual observations for the period 2020–2024. For this reason, the correlation and regression estimates presented in the article should not be interpreted as statistically robust econometric evidence. Their purpose is limited to supporting the structural interpretation of observed tendencies and identifying the direction of indicative relationships between banking sector assets, capitalization and the loan-to-deposit ratio. Therefore, the conclusions of the study are based primarily on structural-dynamic analysis, comparison of financial proportions and institutional interpretation of regulatory effectiveness.

Further research may expand the empirical basis by using quarterly data, a longer time horizon, or additional variables, such as interest rates, liquidity ratios, government securities in bank portfolios, deposit dynamics, lending by sector, regulatory capital adequacy, and macroeconomic risk indicators. This would allow for more reliable econometric testing of the relationship between financial market imbalances and the effectiveness of state regulation.

3. RESULTS

At the beginning of the 21st century, the shortcomings inherent in the national model of financial market regulation (primarily those related to the lack of clearly defined goals and priorities in law enforcement) did not allow for the full utilization of relevant institutions to enhance the efficiency of financial organizations' operations. The underdevelopment of the conceptual framework for regulating financial market sectors (as a system of standardized requirements for market participants and unified approaches to the regulation of similar operations) often led to fragmentation and duplication of legal norms. These institutional shortcomings created conditions for the accumulation of imbalances in the financial sector, which reduced the consistency of regulatory signals and the efficiency of financial resource redistribution.

To quantitatively assess the stability of the banking sector in the context of macroprudential regulation requirements, it is advisable to use an aggregated indicator of the regulatory burden on banks' capital, which summarizes the relationship between profitability and risks in dynamics. The aggregated indicator is calculated using the following formula:

$$K_{FS} = \frac{\sum_{i=1}^n GI_i \cdot a}{n}, \quad (5)$$

where K_{FS} – aggregated financial stability ratio of the banking sector; GI_i – gross financial result of the banking sector in the i -th year (profit before tax), UAH billion; n – number of years in which a positive financial result was recorded; a – normative capitalization ratio corresponding to Basel III approaches ($\alpha = 10\%$ is accepted).

The proposed indicator allows generalizing the dynamics of the banking system's profitability, tak-

ing into account regulatory capital requirements, and is used for comparative analysis of financial stability over time (Table 1).

As can be seen from Table 1, there is a sharp decline in the loan-to-deposit ratio from 67.6% in 2021 to 39.4% in 2024, which quantitatively reflects the weakening of the credit channel of monetary transmission and the growth of unrealized liquidity in the banking system. The share of non-performing loans increased from 30.0% to a peak of 37.3% in 2023, indicating an accumulation of credit risk in the context of war shocks, but in 2024, it fell to 30.3%, returning to pre-war levels and confirming a gradual recovery in asset quality. At the same time, the level of monetization of the economy (M3/GDP) increased from 37.0% in 2021 to almost 50% in 2022, reflecting the expansion of the money supply against the backdrop of a decline in GDP, after which it stabilized at 44-45% in 2023–2024. The financial performance of the banking sector is highly volatile: a decline in profits to UAH 24.7 billion in 2022 was followed by growth to UAH 104.9 billion in 2024, which led to a corresponding increase in the aggregated financial stability ratio KFS from UAH 2.47 billion to UAH 10.49 billion. Taken together, these quantitative changes indicate that macrofinancial stability has been maintained, while structural imbalances between banks' liquidity and their lending activity have intensified. The decline in the LTD ratio amid simultaneous growth in assets means that the increase in the banking sector's resource base was mainly due to liquid or low-risk instruments, rather than expansion of lending to the real sector. Thus, formal macrofinancial stability was not accompanied by a proportional strengthening of the financial intermediation function.

At the same time, for a comprehensive assessment of the effectiveness of state regulation of the financial market, it is advisable to supplement the

Table 1. Key indicators of financial stability of Ukrainian banks, 2021–2024 (at the end of the period)

No.	Indicator	Years			
		2021	2022	2023	2024
1	Share of non-performing loans (NPL), %	30.0	32.1	37.3	30.3
2	Loan-to-deposit (LTD) ratio, %	67.6	50.2	42.1	39.4
3	Money supply M3 / GDP, %	37.0	49.8	45.2	44.6
4	Banking sector profit, UAH billion	77.5	24.7	86.5	104.9
5	Aggregated financial stability ratio (K_{FS}), UAH billion	7.75	2.47	8.65	10.49

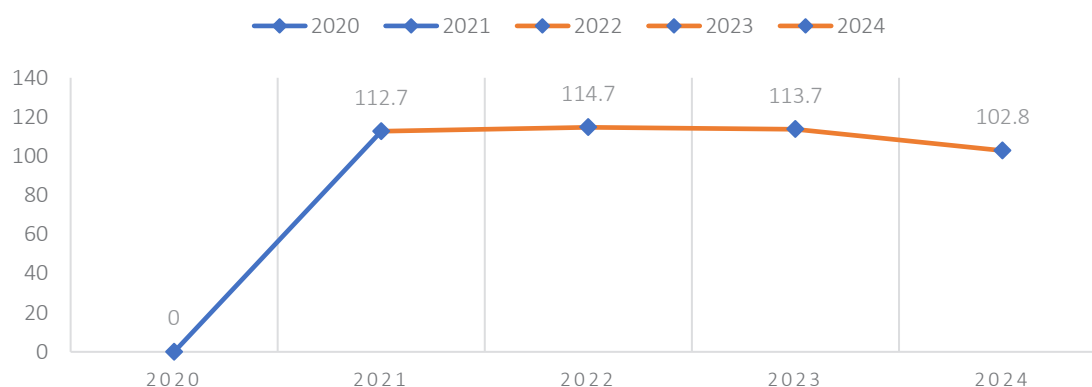


Figure 1. Dynamics of the assets of the Ukrainian banking sector, UAH billion (at the end of the period)

analysis of financial stability indicators with a study of the dynamics of banking sector assets, which reflect the scale of accumulated financial resources and structural shifts in the functioning of the banking system (see Figure 1). It is assets that serve as an integral indicator of the banking sector's response to regulatory impulses, changes in monetary conditions, and fiscal needs of the state, as well as to the transformation of the risk environment.

The dynamics of the assets of the Ukrainian banking sector in 2020–2024 indicate steady growth in their actual volume, which did not stop even during the period of full-scale war. During the period under review, the total assets of banks increased from UAH 1,822 billion in 2020 to UAH 2,752 billion in 2024, i.e., they grew more than 1.5 times. At the same time, in 2022–2024, the actual value

of assets exceeded the level that would have been formed by the pre-war inertial trend, due to the growth of banks' liquid assets, investments in government securities, and the expansion of operations with the central bank. The fact that the actual trajectory of assets exceeds the inertial trend indicates a structural change in the balance of bank assets, towards liquidity and low-risk instruments. This confirms that the scale of the sector grew faster than its lending activity.

A similar positive trend is also characteristic of the capital of the Ukrainian banking sector (see Figure 2).

Figure 2 shows that the volume of capital and reserves increased from UAH 210 billion in 2020 to UAH 322 billion in 2024, which indicates that the banking system remains sufficiently capitalized

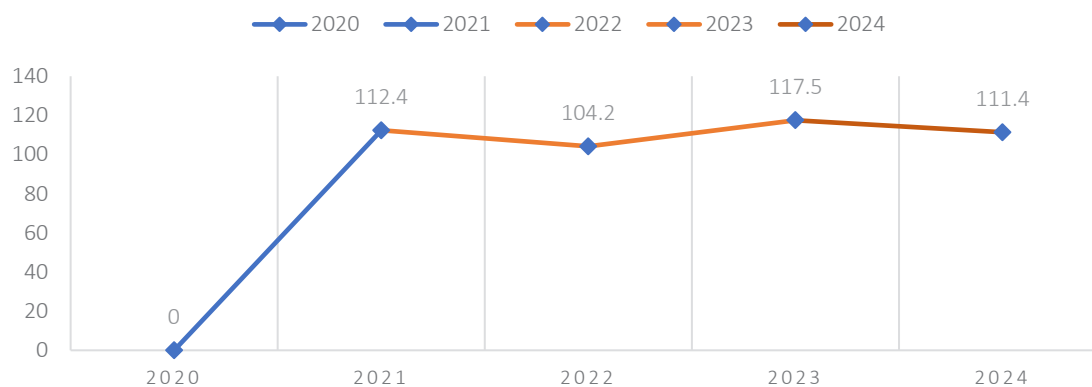


Figure 2. Dynamics of the capital of the Ukrainian banking sector, UAH billion (at the end of the period)

even under conditions of increased credit risks and macroeconomic instability. Thus, the growth of assets and capital of the Ukrainian banking sector during the period under review confirms the relative financial stability of the system, while also revealing a structural asymmetry between the scale of accumulated banking resources and the level of their transformation into lending to the real sector. Capital growth ensured regulatory resilience, but did not guarantee automatic intensification of credit transformation. This indicates asymmetry between the stabilizing and developmental functions of regulation.

To assess the adequacy of the banking sector's own capital, it is advisable to use the capitalization ratio, which is calculated using the following formula:

$$K_{cap} = \frac{C}{A}, \quad (6)$$

where K_{cap} – capitalization ratio of the banking sector; C – capital and reserves of the banking sector, UAH billion; A – total assets of the banking sector, UAH billion.

The calculations are presented in Table 2.

Table 2. Capitalization ratio of the Ukrainian banking sector in 2020–2024

Year	Indicator		
	Capital, UAH billion	Assets, UAH billion	Capitalization ratio
2020	210	1,822	0.115
2021	236	2,053	0.115
2022	246	2,354	0.105
2023	289	2,676	0.108
2024	322	2,752	0.117

The calculation of the capitalization ratio shows that in 2020–2024, its value fluctuated between 10.5% and 11.7%, which exceeds the minimum regulatory requirements and indicates that the Ukrainian banking sector remains sufficiently financially stable. The temporary decline in the ratio in 2022 reflects the outpacing growth of assets against the backdrop of increased risks, but in 2023–2024, a recovery of the indicator is observed, driven by the growth of banks' capital and profitability. It can be stated that the dynamics of K_{cap} confirm the ad-

equacy of capital in terms of regulatory requirements, but do not in themselves characterize the efficiency of resource use in the credit process.

To quantitatively establish the relationship between the size of the Ukrainian banking sector and its ability to transform attracted resources into lending to the real sector, a correlation analysis was conducted for the period 2021–2024. This period was chosen due to the availability of comparable official annual data and its coverage of various phases of macroeconomic dynamics, including the pre-war year, the period of full-scale war, and the stage of partial stabilization.

Three basic indicators based on data obtained in a previous study were used for the analysis:

- A – total assets of the Ukrainian banking sector, UAH billion, reflecting the overall scale of bank balance sheets;
- C – capital and reserves of the banking sector, UAH billion, characterizing the reserve of financial stability and the ability to cover risks;
- LTD – loan-to-deposit ratio, %, used as a proxy indicator of lending intensity, as it directly reflects the share of attracted resources directed to lending operations.

At the first stage, a vector of observations (A_t , C_t , LTD_t) was formed for each year of the study period, where $t = 2021, 2022, 2023, 2024$. At the second stage, Pearson's linear correlation coefficients were calculated between the corresponding data series, which allows us to estimate the direction and density of the linear relationship between variables given a limited number of observations (see Table 3).

Table 3. Correlation matrix of indicators “assets – capital – lending” (2021–2024)*

Indicator	Assets (A)	Capital (C)	(LTD)	$K_{cap} = C/A$
Assets (A)	1.00	0.93	−0.98	0.03
Capital (C)	0.93	1.00	−0.86	0.39
(LTD)	−0.98	−0.86	1.00	0.13
$K_{cap} = C/A$	0.03	0.39	0.13	1.00

Note: * Correlations are illustrative in nature due to the small sample size ($n=4$) and are used to identify the direction of relationships.

The results show a strong direct correlation between assets and capital ($r = 0.93$), which is consistent with the balance sheet logic of increasing the resource base and capital support for sector growth. At the same time, the correlation between assets and the LTD ratio is strongly inverse ($r = -0.98$), i.e., asset growth in 2022–2024 was accompanied by a decline in the intensity of credit transformation. Here, we can verify that the previously proposed hypothesis 1 about the existence of a statistically significant relationship between the scale of the banking sector and the intensity of credit transformation is confirmed. Thus, the correlation coefficient $r = -0.98$ between assets and LTD indicates a strong inverse relationship, i.e., asset growth was accompanied by a decline in credit activity. This confirms the existence of structural asymmetry.

This quantitatively confirms the structural asymmetry of the war period: assets grew mainly due to the accumulation of liquidity and increased investments in low-risk instruments, while the credit channel remained subdued. The correlation between capital and the LTD ratio is also negative ($r = -0.86$), which is consistent with the fact that capital accumulation under elevated risk conditions does not automatically transform into credit expansion, but often reflects adaptation to the risk environment and regulatory requirements. Capital accumulation under conditions of increased risk primarily served a buffer function rather than stimulating the expansion of lending.

In order to deepen the quantitative analysis of the relationship between the size of the banking sector and its lending activity, a simple linear regression model was constructed in which the intensity of the loan-to-deposit transformation is the dependent variable.

The dependent variable used is LTD_t , i.e., the loan-to-deposit ratio in year t , %. The explanatory variable selected is A_t , the total assets of the Ukrainian banking sector in year t , UAH billion. The choice of this particular specification is due to the results of the correlation analysis, which revealed a strong inverse relationship between assets and the LTD ratio, as well as the desire to minimize the model with a limited number of observations. Thus, the basic regression model will look like this:

$$LTD_t = \beta_0 + \beta_1 A_t + \varepsilon_t, \quad (7)$$

where β_0 – constant term; β_1 – sensitivity coefficient of credit transformation to changes in assets; ε_t – random error.

Based on the results of the least squares estimation, the following equation was obtained:

$$LTD_t = 125.4 - 0.031 A_t, \quad (8)$$

where A_t is measured in UAH trillion.

The obtained value of the coefficient $\beta_1 < 0$ indicates a negative linear effect of the growth of banking sector assets on the intensity of credit transformation. Hypothesis 2, that capitalization growth alone does not ensure an increase in the intensity of credit transformation without structural restructuring of assets, is confirmed by the results of regression analysis. The negative value of β_1 (-0.031) means that an increase in assets by UAH 100 billion was accompanied by a decrease in LTD by approximately 3.1 percentage points. This quantitatively proves that the scale of growth of the banking system did not transform into a corresponding expansion of lending.

The estimated parameter $\beta_1 = -0.031$ means that an increase of UAH 100 billion in the total assets of the banking sector was accompanied, on average, by a decrease in the LTD ratio of approximately 3.1%. This quantitatively confirms the earlier conclusion that in 2021–2024, the growth of the banking system's assets occurred primarily not through the expansion of lending to the real sector, but as a result of liquidity accumulation and investment in low-risk financial instruments.

The high value of the model's coefficient of determination ($R^2 \approx 0.96$) is consistent with the results of the correlation analysis and indicates that changes in the scale of banking assets explain a significant part of the variation in the credit transformation indicator during the period under review. The high value of $R^2 \approx 0.96$ indicates that the variation in LTD during the study period is largely explained by changes in the scale of assets. This confirms the systemic nature of the identified dependence.

It should be noted that the results of the regression analysis are analytical and illustrative in nature, since the number of observations is limited ($n = 4$). In this regard, the model is used not for forecasting, but for quantitative confirmation of the direction and economic content of the identified structural dependencies between the assets of the banking sector and its lending activity.

Based on the results of the regression analysis, it is advisable to move on to discussing the role of state regulation in shaping the aforementioned asymmetry, in particular, macroprudential instruments, liquidity regimes, and incentives for the revival of lending.

The results indicate that in 2021–2024, the banking sector maintained balance-sheet stability and capital adequacy, while the efficiency of transforming accumulated resources into lending declined. The observed dynamics are consistent with the two research assumptions: first, the expansion of the banking sector was accompanied by a decrease in lending activity; second, capital accumulation, without corresponding changes in the structure of assets, did not lead to an increase in lending intensity.

Given the limited number of observations, these findings should not be interpreted as statistically robust confirmation of the hypotheses or as evidence of a causal relationship. Rather, they provide indicative support for the interpretation that, under wartime conditions, the growth of assets and capital primarily performed a stabilizing function, while the credit transformation function of the banking sector remained weakened.

4. DISCUSSION

The results show that the growth of banking sector assets and capital was not accompanied by a corresponding strengthening of credit transformation. This suggests that financial stability should be understood not only as the ability of banks to maintain an adequate level of capital and profitability, but also as the capacity of the financial system to provide lending to the real sector. In this respect, the findings are consistent with Belin (2024), Kotelevets (2022), and Ukrainka (2021), who em-

phasize the importance of institutional coherence in regulatory policy and its orientation toward the long-term development of the financial market.

The identified asymmetry between banks' resource expansion and the decline in lending intensity partly supports international studies showing that the formal stability of the financial system does not eliminate the risk of hidden imbalances. In particular, Demirguc-Kunt and Detragiache (1997) link such imbalances to the quality of supervision, while John and Mahar (1998) associate them with the consequences of insufficiently controlled financial liberalization. At the same time, the results of this article refine previous approaches: the problem lies not only in weak regulation, but also in the fact that even with a capital buffer, banks may choose a conservative model of resource allocation focused on liquid and low-risk assets.

The reasons for the obtained results may be related to increased uncertainty, changes in the structure of bank assets, greater caution regarding credit risk, and the influence of fiscal needs on the allocation of bank liquidity. This interpretation is consistent with the studies by Onyshko and Belin (2022), Dykan and Tolstova (2021–2022), Khaustova (2023), and Prokopenko et al. (2021), which emphasize the need to combine fiscal, structural, and macroprudential instruments. Therefore, regulatory policy should be aimed not only at maintaining bank stability, but also at creating incentives for the productive use of financial resources.

From a macroprudential perspective, the results indicate that capitalization requirements are a necessary but insufficient condition for the recovery of lending activity. In the context of Basel III logic, this means that, alongside capital adequacy control, it is advisable to assess the structure of assets, the quality of the loan portfolio, and the capacity of the banking system to support credit transmission. However, given the limited number of observations, the regression results should be interpreted as analytical confirmation of the direction of relationships, rather than as evidence of causal effects. Therefore, conclusions regarding regulatory implications should be treated as recommendations rather than as definitively proven policy effects.

The results extend previous studies by combining three dimensions within one analytical framework – assets, capitalization, and credit transformation. This makes it possible to show that the effectiveness of state regulation of the financial market cannot be assessed only through financial stability indicators. It should also take into account the quality of financial intermediation, that is, the ability of the banking system to direct accumulated resources toward lending to the real sector of the economy.

Future research should focus on expanding the time sample, including indicators of asset structure, the share of government securities, loan portfolio risk, funding costs, and monetary policy parameters. This would allow for a more accurate identification of the specific regulatory and market factors that constrain lending activity, as well as an assessment of the effectiveness of specific instruments – partial credit guarantees, targeted refinancing, incentives for lending to small and medium-sized enterprises, and differentiated supervision based on the structure of bank assets.

The normative parameter $\alpha = 10\%$ applied in the K_{FS} aggregated indicator formula is methodologically consistent with the logic of Basel III as an approach to the total level of capital requirements (minimum capital adequacy + conservation buffer). At the same time, the capitalization ratio $K_{cap} = C / AK$ reflects a risk-oriented assessment of capital adequacy and, in economic terms, is close to the idea of a leverage ratio as a “backstop” to the risk-weighted standards of Basel III. The observed K_{cap} range of 10.5–11.7% indicates the presence of a significant balance sheet capital reserve, but the interpretation of this result must take into account that Basel III operates primarily with Capital / RWA and Tier1 / Exposure indicators. Therefore, to ensure “strict” compliance with international standards in national practice, it is essential to monitor both risk-weighted capital adequacy ratios and non-risk leverage restrictions in parallel. In practical terms, this leads to a key conclusion: an increase in assets without a proportional reinforcement of capital under elevated risk conditions inevitably reduces the credit transformation potential and amplifies procyclicality, which directly contradicts the macroprudential philosophy of Basel III.

At the same time, the interpretation of the relationship between assets, capitalization, and lending should remain consistent with the analytical limits defined in the methodology. Since the empirical analysis is based on a small number of annual observations, the results should not be used to introduce additional econometric specifications at the discussion stage. Instead, they should be interpreted as indicative evidence that the expansion of bank balance sheets and the preservation of capital adequacy were not sufficient to restore credit transformation under wartime conditions.

From this perspective, the observed dynamics suggest that capitalization acted primarily as a stabilizing buffer, while the structure of asset allocation determined whether accumulated resources could be transformed into lending to the real sector. The decline in the loan-to-deposit ratio against the background of growing assets and capital indicates that a significant part of banking resources was directed toward liquid and low-risk instruments. Therefore, the key regulatory issue is not only the maintenance of capital adequacy, but also the creation of incentives that would reduce the gap between the accumulation of financial resources and their productive credit use.

This interpretation is consistent with the macroprudential logic of Basel III, according to which capital and liquidity standards are necessary for systemic resilience but should not substitute for the assessment of financial intermediation quality. In wartime conditions, such an approach is particularly important because regulation must balance the need to preserve bank stability with the need to support the recovery of lending to the real economy.

In contrast to approaches that evaluate the effectiveness of financial regulation mainly through the preservation of capital adequacy, profitability, and systemic stability, the results of this study indicate the need to distinguish between the stabilizing and developmental functions of regulation. The Ukrainian case in 2021–2024 shows that the preservation of banking sector resilience under wartime conditions did not automatically ensure the restoration of credit intermediation. The increase in assets and capital created a necessary buffer against macrofinancial shocks, but the simultaneous de-

cline in the loan-to-deposit ratio demonstrates that accumulated resources were only partially transformed into lending to the real sector.

This finding is particularly important in the context of wartime financial system transformation. Under conditions of military risk, fiscal pressure, uncertainty, and elevated credit risk, state regulation inevitably operates within a system of trade-offs. On the one hand, the priority of maintaining liquidity, solvency, and confidence in the banking system requires conservative macroprudential policy and sufficient capital buffers. On the other hand, excessive concentration of banking resources in liquid and low-risk instruments may weaken the credit channel and limit the ability of the financial system to support economic recovery. Therefore, the effectiveness of regulation cannot be reduced to the absence of banking instability; it should also be assessed through the extent to which the banking sector performs its financial intermediation function.

The obtained results add to the existing literature by showing that wartime financial resilience may coexist with a decline in credit transformation. This means that the growth of banking sector assets and capital should not be interpreted as an unconditional sign of regulatory success. Its economic significance depends on the structure of asset allocation and on whether regulatory policy creates incentives for the productive use of accumulated financial resources. In this sense, the Ukrainian

experience demonstrates a specific form of structural imbalance – the coexistence of sufficient capitalization and weakened lending activity.

From a policy perspective, this implies that the post-war adjustment of financial regulation should not be limited to maintaining Basel III-oriented capital and liquidity standards. These standards remain necessary for preserving systemic resilience, but they should be complemented by instruments that reduce the gap between bank stability and credit expansion. Such instruments may include risk-sharing mechanisms, partial credit guarantees, targeted incentives for lending to small and medium-sized enterprises, differentiated supervision based on asset structure, and measures aimed at reducing the share of non-performing loans. This would allow regulatory policy to move from a predominantly protective model toward a more balanced framework that combines financial stability with the recovery of productive lending.

Prospects for further research are related to expanding the time sample and including, in the models, additional variables that characterize the structure of assets, portfolio risk, and monetary policy parameters. This will allow for a deeper understanding of the relationship between regulatory instruments and the quality of financial intermediation, as well as the formation of more informed recommendations for improving the effectiveness of state regulation of the financial market.

CONCLUSIONS

The study aimed to identify and quantitatively assess structural imbalances in Ukraine's financial market during 2020–2024 and, on this basis, to substantiate areas for improving state regulation, taking into account the relationship between banking sector parameters and lending to the real economy.

The results of the analysis showed that during the period under review, there was a substantial growth in the assets and capital of the banking system, accompanied by a decline in lending intensity, as reflected in a reduction in the credit transformation ratio and the presence of an inverse relationship between the expansion of balance sheet indicators and lending activity. Such dynamics point to a gap between the accumulation of financial resources and their effective allocation to the real economy.

The synthesis of the results obtained allows us to conclude that there is a structural imbalance in the functioning of the financial market, in which the growth of the banking sector and the increase in its capitalization primarily serve a stabilizing function but do not translate into a corresponding expansion of lending. This indicates the limited capacity of the current state regulation model to ensure effective financial intermediation.

In the context of wartime financial system transformation, these findings show that the effectiveness of state regulation should not be assessed only through the preservation of banking stability, capital adequacy, and liquidity. Under conditions of military risk, fiscal pressure, and increased uncertainty, regulation inevitably involves a trade-off between maintaining systemic resilience and stimulating credit support for the real sector. Therefore, the Ukrainian case demonstrates that formal financial stability may coexist with weakened credit transformation, which makes it necessary to distinguish between the stabilizing and developmental functions of financial regulation.

In view of this, improving the effectiveness of state regulation requires combining macroprudential instruments with measures aimed at stimulating lending and structurally optimizing bank assets, which will strengthen the financial market's role in restoring economic growth.

Prospects for further research include extending the time frame of the analysis, detailing the assessment of the relationship between individual regulatory instruments, lending activity, and financial depth, and taking into account the long-term dynamics of financial sector transformation in the context of post-crisis recovery.

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REFERENCES

1. Antonova, L. V., & Antonov, A. V. (2023). Theoretical foundations of state regulation of foreign economic activity in Ukraine in the context of ensuring the economic security of the state. *Investytsii: Praktyka ta Dosvid – Investments: Practice and Experience*, 19, 130-136. (In Ukrainian). <https://doi.org/10.32702/2306-6814.2023.19.130>
2. Belin, V. S. (2024). Stratehichni Napryamy Rozvytku Finansovoho Rinku Ukrayiny V Umovakh Dehlobalizatsiyi [Strategic directions for the development of the financial market of Ukraine in the conditions of deglobalization]. *Scientific Notes of Lviv University of Business and Law*, 42, 253-261. (In Ukrainian). <https://doi.org/10.5281/zenodo.14264055>
3. Bernanke, B. S., & Gertler, M. (1995). Inside the Black Box: The Credit Channel of Monetary Policy Transmission. *Journal of Economic Perspectives*, 9(4), 27-48. <https://doi.org/10.1257/jep.9.4.27>
4. Bobro, N., Lisova, R., Parfentieva, O., Dmytrovska, V., & Kyrylenko, S. (2025). Digital transformation for cost optimisation and sustainable business operations. *European Journal of Sustainable Development*, 14(2), 158. <https://doi.org/10.14207/ejsd.2025.v14n2p158>

5. Demirguc-Kun E. A., & Detragiache, E. (1997). *The Determinants of Banking Crises: Evidence from Industrial and Developing Countries* (IMF Working Paper WP/97/106). Retrieved from <https://www.imf.org/external/pubs/ft/wp/wp97106.pdf>
6. Diamond, D. W., & Dybvig, P. H. (1983). Bank Runs, Deposit Insurance, and Liquidity. *Journal of Political Economy*, 91(3), 401-419. <https://doi.org/10.1086/261155>
7. Dykan, V. L., & Tolstova, A. V. (2021/2022). Mechanism of state regulation of reproduction and development of Ukraine's economy in market conditions. *Visnyk Ekonomiky Transportu i Promyslovosti*, 76-77, 5-12. (In Ukrainian). <https://doi.org/10.18664/btie.76-77.281940>
8. Gambacorta, L., & Shin, H. S. (2018). Why Bank Capital Matters for Monetary Policy. *Journal of Financial Intermediation*, 35, 17-29. <https://doi.org/10.1016/j.jfi.2016.09.005>
9. Holmström, B., & Tirole, J. (1997). Financial Intermediation, Loanable Funds, and the Real Sector. *The Quarterly Journal of Economics*, 112(3), 663-691. <https://doi.org/10.1162/003355397555316>
10. Jiménez, G., Ongena, S., Peydró, J.-L., & Saurina, J. (2012). Credit Supply and Monetary Policy: Identifying the Bank Balance-Sheet Channel with Loan Applications. *American Economic Review*, 102(5), 2301-2326. <https://doi.org/10.1257/aer.102.5.2301>
11. Kashyap, A. K., & Stein, J. C. (2000). What Do a Million Observations on Banks Say About the Transmission of Monetary Policy? *American Economic Review*, 90(3), 407-428. <https://doi.org/10.1257/aer.90.3.407>
12. Khaustova, V. V. (2023). Theoretical aspects of fiscal regulation of economic development of the state. *Naukovi pratsi NDFI*, 3, 89-101. (In Ukrainian). <https://doi.org/10.33763/npndfi2023.03.089>
13. Kotelevets, D. (2022). Scientific and conceptual provisions for the functioning and development of the mechanism of state regulation of economic systems. *Naukovyi Visnyk Polissia*, (1), 38-46. (In Ukrainian). [https://doi.org/10.25140/2410-9576-2022-1\(24\)-38-46](https://doi.org/10.25140/2410-9576-2022-1(24)-38-46)
14. Laeven, L., & Levine, R. (2009). Bank Governance, Regulation and Risk Taking. *Journal of Financial Economics*, 93(2), 259-275. <https://doi.org/10.1016/j.jfineco.2008.09.003>
15. Levkovska, L., Kozak, L., & Misai, V. (2023). Macroeconomic modeling in Ukraine based on behavioral economics. *Scientific Notes of Ostroh Academy National University, "Economics" Series*, 31, 79-84. (In Ukrainian). [https://doi.org/10.25264/2311-5149-2023-31\(59\)-79-84](https://doi.org/10.25264/2311-5149-2023-31(59)-79-84)
16. Lysenko, S., Bobro, N., Korsunova, K., Vasylyshyn, O., & Tatarchenko, E. (2024). The Role of Artificial Intelligence in Cybersecurity: Automation of Protection and Detection of Threats. *Economic Affairs*, 69, 43-51. <https://doi.org/10.46852/0424-2513.1.2024.6>
17. Mehboob, D. (2021). *Euro-pean countries agree to withdraw DSTs in compromise with the US*. International Tax Review. Retrieved from <https://www.internationaltaxreview.com/article/2a68rfy5bw2ycq1zyexra/european-countries-agree-to-withdraw-dsts-in-compromise-with-the-us>
18. Melnyk, L. Yu., Matros, O. M., Krochak, O. I., & Ratushna, O. P. (2022). Zakonodavche rehuliuвання opodatкування diialnosti sub'iektiv IT-sfery i sfery tsyfrovoykh komunikatsii ta yoho oblikove vidobrazhennia v Ukraini [Legislative regulation of taxation of activities of IT and digital communications entities and its accounting reflection in Ukraine]. *Oblik i Finansy*, 3(97), 62-68. (In Ukrainian). [https://doi.org/10.33146/2307-9878-2022-3\(97\)-62-68](https://doi.org/10.33146/2307-9878-2022-3(97)-62-68)
19. Mykhasiuk, I. R., & Kosovych, B. I. (2021). Toolkit of state regulation of Ukraine's economy in times of challenges. *Ekonomichnyi Prostir – Economic Space*, (172), 13-18. (In Ukrainian). <https://doi.org/10.32782/2224-6282/172-2>
20. National Bank of Ukraine (NBU). (2024). *Monetary and Financial Statistics: December 2024*. Retrieved from https://bank.gov.ua/admin_uploads/article/MFS_2024-12.pdf
21. Novosad, Yu. (2023). Osoblyvosti opodatkuвання ta stiykist rozvytku IT-haluzi v umovakh viyny [Features of taxation and sustainability of IT industry development in wartime]. *Proceedings of the Ukraine Innovate: suchasni modeli dlia vidnovlennia: zbirnyk tez dopovidei V Mizhnarodnoi multydystrylinarnoi naukovo-praktychnoi konferentsii* (pp. 139-142). Lutsk: Vezha-Druk. (In Ukrainian). Retrieved from <https://evnuir.vnu.edu.ua/handle/123456789/23092>
22. Onyshko, S., & Belin, V. (2022). Changes in Economic Policy on the Background of Increasing De-Globalization Processes and Increasing Regional Importance. *Collection of Scientific Works of the State Tax University*, 2, 66-80. (In Ukrainian). <https://doi.org/10.33244/2617-5940.2.2022.66-80>
23. Panukhnyk, O., Fedotova, Ya., & Holych, N. (2022). State budget of Ukraine-2023: Features of regulation of financial and economic processes under conditions of full-scale war. *Socio-Economic Problems and the State*, 27(2), 63-71. (In Ukrainian). <https://doi.org/10.33108/sepd2022.nom2.063>
24. Prokopenko, N. S., Tymoshenko, A. O., Fenenko, P. O., & Kucheriavyyi, A. M. (2021). Adaptatsiia biudzhethnoi systemy Ukrainy do transformatsii v ekonomichnomu seredovyschi [Adaptation of Ukraine's budgetary system to transformations in the economic environment]. *Ekonomika i Upravlinnia*, 2, 107-118. (In Ukrainian). Retrieved from http://nbuv.gov.ua/UJRN/econupr_2021_2_16
25. Safarli, C., Kolach, S., Zhyvko, M., Volskyi, O., & Bobro, N. (2024). Considering globalisation risks in the formation and implementation of international investment strategies. *Pakistan Journal of Life*

- and Social Sciences*, 22(2), 10284-10293. <https://doi.org/10.57239/PJLSS-2024-22.2.00776>
26. Skliarenko, O. V., Yahodzinskyi, S. M., Nikolaievskyi, O. Iu., & Nevzorov, A. V. (2024). Tsyfrovi interaktyvni tekhnolohii navchania yak nevidiemna skladova suchasnoho osvitnoho protsesu [Digital interactive learning technologies as an integral part of the modern educational process]. *Innovatsiina Pedagogika*, 68(2), 51-55. (In Ukrainian). <https://doi.org/10.32782/2663-6085/2024/68.2.51>
27. State Statistics Service of Ukraine. (2025). *Economic and financial indicators of Ukraine* (IMF SDDS data). Retrieved from <https://www.ukrstat.gov.ua/imf/Pokaz.html>
28. Statista Research Department. (2026). *Cryptocurrency market capitalization worldwide from 2016 to 2024*. Retrieved from <https://www.statista.com/statistics/730876/cryptocurrency-maket-value>
29. Tatarin, N. B., & Polovko, D. M. (2023). Financial market of Ukraine: analysis of the current state, threats, problems and prospects. *Halytskyi Economic Bulletin*, 83(4), 78-88. https://doi.org/10.33108/galicianvisnyk_tntu2023.04.078
30. Tymoshenko, A. (2017). Stages of Ukrainian fiscal policy formation. *Financial and Credit Activity: Problems of Theory and Practice*, 1(22), 345-350. <https://doi.org/10.18371/fcaptp.v1i22.110071>
31. Tymoshenko, Yu. O. (2025). *Ekonomichna stiikist derzhavy v umovakh kryzovykh vyklykiv* [Economic stability of the state in the conditions of crisis outbreaks]. *Modern Science: Research, Economy and Innovation. Collection of Scientific Papers with Proceedings of the 3rd International Scientific and Practical Conference* (pp. 71-74). International Scientific Unity, Zagreb, Croatia. (In Ukrainian). <https://doi.org/10.70286/isu-22.10.2025.002>
32. Ukrainska, L. O. (2021). State regulation of the national economy: Structure, methods, and modern features. *Visnyk Ekonomiky Transportu i Promyslovosti*, 74, 23-29. (In Ukrainian). Retrieved from http://nbuv.gov.ua/UJRN/Vetp_2021_74_5