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V.N. KARAZIN KHARKIV NATIONAL UNIVERSITY**

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Department: **Banking Business and Financial Technologies**

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QUALIFYING MASTER'S THESIS

on the topic:

**THE BANKING SYSTEM AND ITS ROLE IN THE
DEVELOPMENT OF THE COUNTRY'S ECONOMY**

submitted by the applicant of higher education

DING XIAOYAN

The qualifying master's thesis was accepted for
defense by the decision of the Department of
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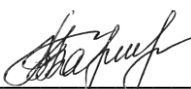
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MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
V.N. KARAZIN KHARKIV NATIONAL UNIVERSITY

Faculty	EDUCATION AND RESEARCH INSTITUTE “KARAZIN BANKING UNIVERSITY”
Department	Banking Business and Financial Technologies
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**ASSIGNMENT
FOR A QUALIFYING MASTER’S THESIS**

assigned to
DING XIAOYAN

1. The topic of the thesis: "The banking system and its role in the development of the country's economy"

Scientific advisor Valeriia BARANOVA, Doctor of Economics, Professor
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approved by the order of the University dated 17.09.2024 No. 4601-3к/1025

2. Deadline for submission of thesis by the student 18.11.2024

3. List of questions to be researched:

In chapter 1: to explore the theoretical role of banking systems in economic development and review relevant literature; to analyse the regulatory framework governing Ukraine's banking sector; to discuss the application of economic-mathematical methods and models in analysing the banking sector.

In section 2: to provide a detailed analysis of the financial health of Ukraine's banking sector; to focuses on the trends and key indicators of Ukraine's bank; to present empirical research using economic-mathematical models to quantitatively analyse the performance.

In chapter 3: to provide strategies for improving the management of non-performing loans; to emphasize the need to improve liquidity management capabilities and develop effective contingency plans; to highlight the importance of digital transformation.

4. Plan of qualifying master's thesis

№	Name of work stages
1	Selection of the topic
2	Approval of the plan and tasks of thesis
3	Implementation of thesis
4	Submission of thesis to the department to check for the presence of borrowings from other documents
5	Completion of the admission procedure for the protection of thesis
6	Defence of thesis

5. Date of assignment issuance 25.09.2024

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ABSTRACT
ON THE QUALIFYING MASTER'S THESIS "THE BANKING
SYSTEM AND ITS ROLE IN THE DEVELOPMENT OF THE
COUNTRY'S ECONOMY"
of DING XIAOYAN

Qualifying Master's work contains 66 pages, 13 figures, references 72.

The object of the banking system of Ukraine.

The subject of the study is modern approaches and methods for analyzing the banking system's role in Ukraine's economic development, focusing on its structural components and stability.

The purpose of the qualifying master's thesis is theoretical generalization and analysis of the banking system's role in Ukraine's economic development, emphasizing its contribution to financial stability, regulatory reforms, and macroeconomic performance. The study employs systematic approaches to assess the structural components, historical evolution, and impact of reforms in the Ukrainian banking system.

The tasks of the qualifying master's thesis are: to investigate theoretical approaches to the role of banking systems in economic growth and their adaptation to Ukraine's context; to analyze Ukraine's regulatory framework and its influence on banking system stability; to evaluate financial and operational performance indicators of the banking sector; to explore the dynamics of non-performing loans (NPLs) and their impact on financial stability; to assess the adoption of modern banking technologies and their role in promoting financial inclusion; to conduct experimental research, including stress testing and macroeconomic modeling, to assess resilience and challenges in Ukraine's banking sector; to develop recommendations for improving corporate governance, regulatory frameworks, and risk management in the Ukrainian banking system.

According to the results of the research, theoretical and practical recommendations focusing on enhancing financial stability, reducing systemic risks, and improving the resilience of the banking system in Ukraine. The recommendations also include strategies for adopting digital transformation, improving macroprudential regulation, and fostering financial inclusion to support economic development.

The obtained results can be applied to develop macroeconomic strategies, policy-making processes, and institutional frameworks to strengthen Ukraine's banking system according to international standards.

KEY WORDS: banking system, economic development, financial stability, non-performing loans, regulatory framework, digital transformation.

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INTRODUCTION

Actuality of the Topic. Any economy's ability to function depends on its banking system, which is essential to financial stability, economic expansion, and progress. In transitional economies like Ukraine, where the industry has experienced significant changes to bring it into compliance with international norms and address underlying systemic flaws, its function is incredibly crucial. The necessity for solid financial reforms has been highlighted by the various difficulties that Ukraine's banking sector has experienced recently, such as economic crises, structural inefficiencies, and geopolitical instability. Examining the strategies by which the banking industry may bounce back from previous crises and establish itself as a force for stability and sustained growth in a world financial landscape that is changing quickly makes this topic relevant.

Given Ukraine's ambitions for European integration, which require a high degree of conformity to international regulatory norms and practices, the subject becomes even more significant. Building public trust and drawing in foreign investment requires addressing enduring problems such as high non-performing loans (NPLs), limited financial inclusion, and antiquated governance frameworks. Furthermore, traditional banking frameworks need to be reevaluated in light of the expanding significance of digital banking and technological innovation. By bringing Ukraine's banking system into line with international standards and tackling particular regional issues, this study adds to the continuing scholarly debates and real-world initiatives to improve it. It is especially pertinent for financial firms, legislators, and regulatory agencies looking to create a competitive and robust banking industry that can satisfy contemporary economic demands.

Purpose and Tasks of the Research. This qualifying master's work aims to thoroughly examine how the banking system supports Ukraine's economic growth and offer helpful suggestions for improving its stability, effectiveness, and conformity to global best practices. The need to fix the sector's systemic flaws while utilizing its potential to promote resilience and economic growth is the driving force

behind this goal.

To achieve this purpose, the following tasks were systematically addressed:

1. To explore and critically assess theoretical approaches to understanding the role of banking systems in economic growth, particularly regarding Ukraine.
2. To evaluate the regulatory framework governing Ukraine's banking system and analyze its effectiveness in maintaining stability and fostering growth.
3. To investigate vital financial indicators, such as capital adequacy ratios, liquidity levels, and the prevalence of non-performing loans, to identify systemic vulnerabilities.
4. To assess the adoption of modern banking technologies and their impact on financial inclusion and operational efficiency within the Ukrainian banking system.
5. To conduct empirical research using advanced economic-mathematical models, such as stress testing and vector autoregression (VAR), to evaluate the resilience of Ukraine's banking sector against macroeconomic shocks.
6. Use PRJSC "ABINBEV EPHESS UKRAINE" as a benchmark to provide a detailed financial stability and operational planning case study.
7. To develop strategic recommendations to improve corporate governance, risk management, and regulatory oversight within the banking system.

Together, these assignments cover the theoretical and practical aspects of banking sector reform and development, which advances the study's primary objective.

Object and Subject of Research. This study focuses on Ukraine's banking system, which is an essential component of financial stability, economic growth, and policy execution. Its operational processes, legal frameworks, and structural elements are highlighted, especially in promoting growth and resilience in a changing economic climate.

In contrast, this study focuses on the particular procedures, systems, and techniques that determine the stability and effectiveness of Ukraine's banking sector. This entails looking at the system's response to macroeconomic difficulties, the

contribution of financial inclusion to sectoral growth, and the effects of technological and regulatory changes. The connection between the study's topic and subject emphasizes the need for a thorough understanding of the banking sector's function in the larger economic system.

Research Methods. The study uses a multidisciplinary strategy integrating qualitative and quantitative research approaches to guarantee a comprehensive grasp of the subject. The regulatory frameworks and structural issues affecting Ukraine's banking system were investigated through theoretical generalization and synthesis. The stability and resilience of the industry under various macroeconomic conditions were evaluated using economic-mathematical models, such as vector autoregression (VAR) and stress testing. Through case studies, especially examining PRJSC "ABINBEV EPHESS UKRAINE," operational planning and financial forecasting were seen from a pragmatic perspective. A thorough assessment of the sector's economic health was made possible by statistical analysis of important performance indicators, such as capital adequacy and non-performing loans. Furthermore, a methodical methodology was used to develop strategic recommendations, guaranteeing that data pertinent to the situation support the suggested fixes.

Information Support. The study is supported by a strong body of data, including laws and regulations pertaining to the banking industry in Ukraine. The Law on Banks and Banking Activity, National Bank of Ukraine (NBU) regulations, and international standards like Basel III are important sources of information. Theoretical and empirical insights were provided by renowned economists' and financial analysts' works and academic publications. Financial statements of Ukrainian banks and businesses, reports from the National Bank of Ukraine, and reports from global financial organizations such as the World Bank and the International Monetary Fund (IMF) were among the data sources. This thorough information support guaranteed the research's methodological soundness and relevance.

Scientific Novelty. This study advances science by providing fresh viewpoints and approaches to comprehending and resolving the issues affecting Ukraine's

banking sector. Among the main contributions is the creation of a new framework that combines digital transformation tactics with macroprudential regulation to improve sectoral efficiency and stability. Deeper understanding of the systemic vulnerabilities and resilience of the banking industry is provided by the study, which improves the application of agent-based modeling and stress testing approaches to the Ukrainian environment. Along with addressing particular regional issues like geopolitical unpredictability and economic volatility, it offers doable suggestions for bringing Ukraine's banking operations into compliance with global norms. These contributions improve our theoretical and practical knowledge of banking sector change and how it contributes to economic growth.

Practical Significance of the Obtained Results. The study's conclusions have important ramifications for a number of stakeholders, including financial institutions, regulatory bodies, and legislators. The suggested solutions offer doable tactics to promote financial inclusion, strengthen governance, and increase financial stability. The findings of this study can be used by regulatory organizations, such the National Bank of Ukraine, to improve their oversight procedures and carry out changes that increase the banking system's resistance to outside shocks. The recommended approaches can be implemented by financial institutions to maximize operational effectiveness and risk management. Furthermore, the focus on digital transformation provides a road map for utilizing technology to increase financial accessibility and enhance service quality. The potential for this research to support the long-term growth of Ukraine's financial sector highlights its practical significance.

CHAPTER 1.

THEORETICAL FRAMEWORK AND LITERATURE REVIEW ON THE ROLE OF THE BANKING SYSTEM IN UKRAINE'S ECONOMIC DEVELOPMENT

1.1. Theoretical Perspectives and Literature on Banking Systems and Economic Development

Classical Perspectives on the Role of Banking Systems in Economic Growth.

According to economists like David Ricardo and Adam Smith, banking systems are crucial to economic growth in classical economic theory. According to these beliefs, banks are essential for resource mobilization, encouraging profitable investments, and facilitating sustained economic growth. In order to pool savers' resources and direct them toward businesses with significant economic potential, banks play a crucial role as mediators in the capital formation process, Ricardo underlined. In emerging or transitional economies, where individual savers might not have the resources or motivation to make direct investments in lucrative possibilities, this capacity to mobilize scattered funds is especially crucial [34]. Smith also emphasized how crucial a healthy financial system is to increasing the wealth of society by making sure that funds are distributed effectively to businesses that can provide long-term profits.

These traditional viewpoints are particularly pertinent to Ukraine because of the country's past and present economic reconstruction and modernization needs. It was anticipated that Ukraine's banking sector would evolve from a simple conduit for centrally planned directives to a vibrant engine of economic expansion after the fall of the Soviet Union. There have been many obstacles to the banks' traditional duty of lending money to businesses and encouraging industrial growth. Undercapitalization, poor financial governance, and a lack of long-term financial instruments are some of the problems that have prevented Ukraine's banking industry from reaching its full potential. This is demonstrated by the nation's

difficulty funding innovative businesses and vital infrastructure projects, both of which are necessary for long-term economic growth [72].

However, applying classical theory to Ukraine's situation also highlights its shortcomings. Stable institutional and economic environments are often assumed by classical models, but Ukraine has seen ongoing political unrest, frequent regulatory framework changes, and high currency volatility. The banking industry's capacity to act as a dependable conduit for economic growth has been limited by these forces. Recurrent banking crises and the devaluation of the hryvnia, for example, have reduced public confidence in financial institutions, which further restricts investment and savings mobilization [8]. Classical theory's fundamental findings are therefore still useful, but they need to be modified to take into account the weaknesses and complexity of contemporary transitional economies like Ukraine.

Modern Perspectives: Financial Intermediation and Economic Growth. Current economic theories provide a sophisticated knowledge of how banking institutions support long-term economic growth, especially those related to endogenous growth models. The importance of financial intermediation in lowering transaction costs, maximizing capital allocation, and stimulating innovation is emphasized by these frameworks. According to this perspective, banks are active change agents that propel technical development and information sharing, two things that are essential for attaining sustained economic growth [29].

In the case of Ukraine, the applicability of these contemporary viewpoints is especially clear. The necessity for a strong financial intermediation system has grown as the nation moves toward a market economy. A strong banking industry can finance technological innovation, encourage entrepreneurship, and aid in the growth of small and medium-sized businesses (SMEs). These components are necessary to build a knowledge-driven, competitive economy. But in carrying out these responsibilities, Ukraine's financial system has encountered numerous obstacles. SMEs, which are frequently the foundation of economic diversification and job growth, have had limited access to financing due to high interest rates and strict lending requirements. Furthermore, the flow of finance to innovative industries

like technology and renewable energy has been further restricted by risk-averse lending practices that are motivated by past experiences of financial instability [60].

Structural problems like inadequate institutional frameworks, currency instability, and inflationary pressures make these problems worse. Periods of high inflation, for example, have reduced enterprises' and consumers' purchasing power, which has affected their ability to invest and save. The risks involved in cross-border finance have also increased due to currency volatility, which have discouraged foreign investment and restricted access to long-term borrowing. In order for the banking industry to better conform to the tenets of endogenous growth theory, major financial and regulatory reforms are desperately needed. Because of their capacity to effectively distribute resources and promote innovation, nations with sound financial systems have continuously shown stronger rates of economic growth [29]. For Ukraine, achieving similar outcomes will require substantial investments in institutional capacity and regulatory oversight.

Neo-Institutional Perspectives: The Role of Institutional and Regulatory Frameworks. The importance of regulatory frameworks and institutional quality in influencing banking systems' performance is critically highlighted by the neo-institutional theory. According to this viewpoint, efficient institutions lower transaction costs, establish a stable business climate, and increase market participants' trust. The effectiveness of the banking system is largely determined by the caliber of institutions and regulatory control in the context of Ukraine, where the country's transition from a centrally planned to a market-based economy has been difficult [31].

Strong institutional frameworks have a transformative effect on the functioning of the banking sector and economic stability, according to research on post-Soviet economies. For instance, nations with autonomous central banks, transparent legal frameworks, and regular enforcement of laws have seen greater rates of economic expansion and financial stability. Unfortunately, flaws like political meddling, corruption, and inconsistent regulations have plagued Ukraine's institutional environment. These problems have reduced the banking industry's

capacity to draw in long-term investment and damaged public trust in it. For example, poor governance and regulatory capture exacerbated economic instability during the 2014 banking crisis by causing the downfall of multiple financial institutions [9].

Neo-institutional theory highlights how crucial it is to match regulatory procedures with global norms, as those specified in the Basel III framework. This alignment can improve financial institutions' resilience to external shocks, lower systemic risks, and boost transparency. Although Ukraine has made strides toward implementing these standards, there are still large gaps. For instance, the impact of these initiatives has been restricted by the sluggish pace of judicial reforms and the uneven execution of anti-money laundering (AML) legislation. Research indicates that bolstering institutional frameworks not only enhances the performance of the financial sector but also draws in more foreign direct investment (FDI) and promotes economic expansion [4].

Unresolved Issues and Context-Specific Challenges in Ukraine's Banking Sector. Despite the useful insights provided by modern, classical, and neo-institutional theories, Ukraine's banking industry faces particular difficulties that call for customized solutions. The lasting effects of the post-Soviet era, which have made the financial system highly dependent on short-term finance and susceptible to external shocks, are among the biggest challenges. These vulnerabilities have been made worse by geopolitical conflicts, economic volatility, and restricted access to international capital markets. For example, trade and investment flows have been hampered by the prolonged war with Russia, which has put further strain on the banking industry [8].

The absence of economic models that appropriately capture the intricacies of Ukraine's transitional economy is another significant problem. The complex interactions between political risk, corruption, and capital flight that define the nation's financial environment are frequently missed by traditional econometric methods. Because of this, policymakers have found it difficult to create strategies that effectively improve sectoral performance. According to recent studies, other

approaches like system dynamics and agent-based modeling have the ability to overcome these drawbacks and offer more complex insights into the dynamics of the industry [61].

Another controversial issue is the involvement of international banks in Ukraine. On the one hand, international financial institutions have given the system much-needed money, enhanced corporate governance, and adopted contemporary techniques. However, their existence has increased the economy's vulnerability to outside shocks. For instance, multinational banks frequently lessen their exposure to emerging economies during times of global financial turmoil by taking assets out of circulation and causing liquidity shortages. This dynamic emphasizes the necessity of a well-rounded strategy that maximizes the advantages of international participation while reducing related dangers [52].

In summary, whereas theoretical viewpoints offer a basis for comprehending the function of banking institutions in economic growth, Ukraine's distinct political and economic environment necessitates a more sophisticated and flexible strategy. Building a strong banking industry that can propel long-term economic growth requires addressing institutional flaws, encouraging financial intermediation, and reducing external risks. Developing successful strategies for the sector's growth will need combining theoretical understanding with empirical research and creative approaches.

1.2. Assessment of Regulatory Framework: Laws, Resolutions, and Administrative Documents Governing Ukraine's Banking Sector

Key Legislation and Regulatory Bodies Governing Ukraine's Banking System.

Ukraine's banking sector is governed by a complex regulatory framework that is based on both national laws and international best practices. The foundation of this framework is the Law on Banks and Banking Activity, which was first presented in 2001 and has since been amended. In an effort to bring Ukraine's banking processes into compliance with international standards, it defines basic guidelines for banking

operations, such as licensing, risk management, and oversight procedures. From macroeconomic instability to sector-specific vulnerabilities, every update to this statute has attempted to address new issues in the financial sector [33].

Alignment with the Basel III framework, a global norm that emphasizes capital adequacy, risk management, and liquidity buffers, is one of the law's most important features. Ukraine has improved the ability of its financial institutions to resist systemic risks and economic shocks by implementing Basel III principles. These clauses have played a key role in strengthening banks' resilience, particularly in the wake of the 2008 and 2014 crises, which revealed serious flaws in the frameworks for risk assessment and capital adequacy [26]. The effectiveness of these standards is being hampered by issues like inconsistent enforcement and capacity shortages, thus their full implementation is still a work in progress.

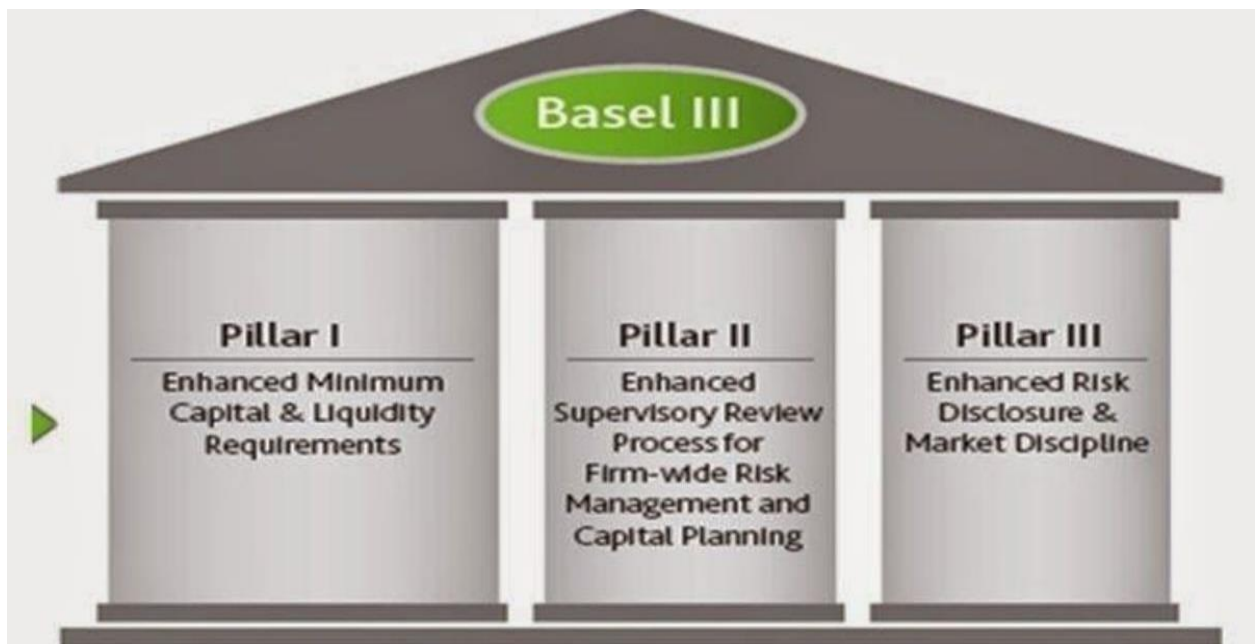


Figure 1.1. Basel III Framework Pillars

The Law on the National Bank of Ukraine, which outlines the NBU's duties and authority, is another essential piece of legislation. This law designates the NBU as the primary regulatory body and gives it responsibility for monitoring financial institutions, carrying out monetary policy, and maintaining the stability of the

hryvnia, Ukraine's currency. The NBU has been instrumental in resolving systemic flaws and preventing financial catastrophes over the years. For example, the NBU took strong action to stabilize the industry during the 2014 financial crisis, which included restructuring financial institutions to protect depositors' money and liquidating banks that were insolvent [27]. Despite their necessity, these measures also demonstrated how dependent the industry is on regulatory action to preserve stability, highlighting the necessity of long-term structural changes.

Another essential component of Ukraine's regulatory structure is deposit protection, which is overseen by the Deposit Guarantee Fund Law. By offering insurance for individual deposits, this law was passed in an effort to rebuild public confidence in the banking system. Its provisions reduce the possibility of bank runs and improve financial stability by guaranteeing that depositors receive compensation in the case of a bank's failure. Expanded coverage limits brought about by recent changes to this statute have further increased depositor trust in uncertain economic times. When systemic crisis occurs, like during the major bank closures in the mid-2010s when more than 80 banks were declared insolvent, the Deposit Guarantee Fund (DGF) has been very successful in preserving public confidence [30].

Although these laws have a strong legal foundation, their efficacy is largely dependent on the ability of regulatory agencies and their ability to implement the law consistently. These laws' effectiveness has been limited by institutional flaws, resource limitations, and political meddling, which have frequently hampered their implementation. To increase the efficacy of Ukraine's financial laws, regulatory institutions' independence and operational capability must be strengthened [9].

Recent Resolutions and Administrative Measures: Impact on Banking System Stability and Development. The NBU and other regulatory agencies have introduced a number of resolutions and administrative actions that have influenced Ukraine's banking industry in addition to the basic legislation. These actions are intended to address particular issues facing the industry and bring it closer to global norms.

The implementation of Basel III-aligned improved capital adequacy requirements has been one of the most significant measures. These regulations force

banks to keep larger capital reserves, guaranteeing their ability to withstand losses in times of economic recession. The NBU has attempted to address vulnerabilities revealed during previous crises, including the undercapitalization of numerous financial institutions, by implementing these rules. The 2014 crisis, for instance, showed that many banks lacked the capital necessary to survive liquidity shocks, which resulted in numerous bank failures. Since then, the industry has had some stability because to the introduction of stronger capital requirements, although smaller banks with fewer resources still have difficulties in maintaining compliance [36].

Recent regulatory initiatives have also placed a strong emphasis on counter-terrorism financing (CTF) and anti-money laundering (AML) procedures. In accordance with the Financial Action Task Force's (FATF) recommendations, the NBU has implemented strict AML regulations. These actions are intended to improve Ukraine's financial standing internationally, decrease corruption, and increase transparency. Recent AML requirements, for example, mandate that financial institutions report suspicious activity immediately and perform extra due diligence for high-risk transactions. Although adherence to international standards has improved as a result of these measures, domestic banks—especially smaller ones that find it difficult to achieve the stricter requirements—now face greater operating constraints [32].

Another crucial area of regulatory attention is the banking industry's encouragement of digital transformation. In order to increase access to financial services and improve operational efficiency, the NBU published a resolution in 2022 setting rules for e-banking. This effort seeks to solve persistent problems of financial exclusion, especially in poor and rural areas, by utilizing digital technologies. For instance, communities without physical bank branches can now access financial services through mobile banking networks. However, there have been other obstacles to the implementation of e-banking standards, such as cybersecurity threats and infrastructural shortcomings. Coordination of investments in digital infrastructure, regulatory monitoring, and capacity building will be necessary to

overcome these challenges [44].

Liquidity management is the subject of another noteworthy resolution, which mandates that banks keep sufficient amounts of liquid assets on hand to cover immediate liabilities. Preventing liquidity crises and guaranteeing the financial system's continuous operation during times of economic strain are the goals of this approach. In order to assist banks experiencing short-term liquidity problems, the NBU has also set up emergency liquidity assistance (ELA) procedures. Although these actions have made the industry more resilient, they have also brought attention to the need for stronger frameworks for crisis management and contingency planning [16].

All things considered, the stabilization and modernization of Ukraine's banking industry have been greatly aided by these resolutions and administrative actions. However, successful deployment and ongoing adjustment to changing circumstances are necessary for their success. Maintaining these improvements and resolving the sector's remaining risks would require bolstering regulatory capacity and encouraging cooperation with foreign partners [9].

Evaluating the Necessity and Effectiveness of Current Regulations. The historical weaknesses of the banking industry and its vital role in promoting economic development highlight the need for Ukraine's banking rules. In order to manage systemic risks, improve financial stability, and increase public trust in the banking sector, the regulatory framework has been crucial. A more stable financial climate has resulted from the implementation of capital adequacy regulations and deposit insurance programs, for instance, which have reduced the danger of bank failures and safeguarded depositor funds. In order to mobilize domestic capital and foster long-term economic growth, these policies have also aided in the establishment of a savings culture [32].

However, difficulties in putting these policies into practice frequently compromise their efficacy. Regulatory agencies' ability to accomplish their goals has been hampered by institutional flaws such political meddling and a lack of enforcement authority. For example, despite the fact that AML legislation have

made it easier to adhere to international norms, enforcement is still uneven because of a lack of resources and conflicting political agendas. As a result, these policies' ability to lower financial crimes and increase openness has been hampered [24].

The drive for digital transformation is a prime example of the conflict between ambitious regulations and real-world application. Although the creation of e-banking standards is a positive step in enhancing financial inclusion, it has revealed serious weaknesses in Ukraine's cybersecurity readiness and technology infrastructure. These problems underscore the necessity of an all-encompassing strategy that combines investments in digital infrastructure and capacity building with regulatory reforms. Partnerships with global institutions and tech companies, for instance, may be able to close these gaps and hasten the use of digital banking solutions [23].

Ukraine's regulatory framework's long-term viability will rely on its capacity to harness global best practices and adjust to new difficulties. The sector's resilience to systemic risks has been improved, for example, by harmonizing regulatory standards with the Basel III framework. However, further work is required to close compliance gaps and guarantee consistent application across all financial institutions. To overcome these obstacles and maintain the sector's growth, it will be crucial to increase institutional autonomy, improve resource allocation, and promote closer cooperation with foreign partners [9].

1.3. Economic-Mathematical Methods and Models Applied in Analyzing Ukraine's Banking Sector

Understanding the dynamics of the banking industry in Ukraine requires the use of economic-mathematical models. These models give researchers, policymakers, and business professionals the opportunity to evaluate financial stability, estimate the sector's performance under different economic scenarios, and identify systemic hazards. These models offer crucial insights for developing evidence-based regulatory and policy responses, given the difficulties that Ukraine's

transitional economy presents, which range from geopolitical tensions to currency volatility and structural inefficiencies.

Commonly Applied Economic-Mathematical Models in Banking Sector. Analysis Econometric Models. Since econometric models can quantify the links between important economic indicators and the functioning of the financial system, they are frequently used in banking sector studies. Regression analysis is especially useful for assessing how interest rates, bank lending, and GDP growth interact. These models provide a data-driven foundation for policy decisions by assisting in identifying the ways in which macroeconomic factors impact the banking industry and vice versa [29]. To illustrate how sensitive bank lending is to changes in monetary policy, econometric studies have been employed in Ukraine to quantify the effect of interest rate changes on credit issuance.

	2019A	2020A	2021A	2022F	2023F	2024F	2025F	2026F
<i>All figures in USD thousands unless stated</i>								
Revenue	51,585	53,494	55,749	58,570	59,748	60,949	61,866	62,486
COGS	27,697	28,429	29,200	30,356	31,337	32,350	33,197	34,066
Gross Profit	23,888	25,065	26,550	28,215	28,411	28,599	28,669	28,420
SG&A	5,877	6,006	6,144	6,359	6,550	6,746	6,915	7,088
Other	1,764	1,931	2,026	2,097	2,160	2,225	2,280	2,337
EBITDA	16,247	17,128	18,380	19,759	19,701	19,628	19,474	18,995
Depreciation	2,960	3,196	3,452	4,177	4,408	4,647	4,893	5,147
EBIT	13,287	13,932	14,928	15,582	15,293	14,980	14,581	13,849
Interest	1,488	2,580	2,448	2,520	2,520	2,520	2,520	2,520
EBT	11,799	11,352	12,480	13,062	12,773	12,460	12,061	11,329
Current Tax	-	-	-	-	-	2,348	2,821	2,724
Deferred Tax	3,155	2,861	3,012	3,265	3,193	767	194	108
Total Tax	3,155	2,861	3,012	3,265	3,193	3,115	3,015	2,832
Net Income	8,644	8,491	9,468	9,796	9,580	9,345	9,045	8,497

Figure 1.2. Econometric Banking Model

Econometric models also assist in identifying patterns that guide future developments by examining past data. They have been used to investigate how inflation and currency depreciation affect non-performing loans (NPLs) in Ukraine's banking industry. The findings frequently highlight how susceptible Ukrainian

banks are to macroeconomic shocks, which are made worse by structural flaws including poor governance and undercapitalization [28].

Nevertheless, econometric models frequently make the assumption that things are stable, which restricts their use in situations that are extremely unstable, such as Ukraine. They continue to be a fundamental tool for macroeconomic analysis and the evaluation of the banking industry in spite of these drawbacks.

Vector Autoregression (VAR) Model. Another essential tool for examining the dynamic interactions between several economic factors is the Vector Autoregression (VAR) model. In contrast to conventional econometric models, VAR permits variables to affect one another over time rather than imposing a rigid causal structure. Because of this, it is especially helpful for analyzing the relationship between the performance of the banking sector and macroeconomic variables like inflation, currency rates, and regulatory policies [35].

The screenshot shows a software interface for configuring a Vector Autoregression (VAR) model. The interface is divided into several sections:

- Analysis tree:** Located on the left, it shows a hierarchy of options: 'Series list', 'Time chart', 'Vector autoregression', 'Report', and 'Time chart'. 'Vector autoregression' is currently selected.
- Estimation sample range:** Set to '2008' with an 'End range' of '+30'.
- Configuration:**
 - VECM
 - Automatic cointegration tests
 - Configuration options:**
 - Johansen
 - Ahn-Reinsel-Saikkonen
 - Include intercept
 - Include linear trend
 - Rank test options:**
 - Confidence level: 0.05
 - Trace
 - Maximum eigenvalue
 - Output residuals
 - Output the endogenous series
 - Output the exogenous series
 - Calculate impulse response
 - Confidence band. Probability: 95% Include parameter uncertainty
 - Autocorrelation test lags: 5
 - Find best initial symmetric VAR model based on max endogenous lags for information criteria: Schwarz
 - Max endogenous lags: 3 | Max exogenous lags: 1
- VECM lag settings for endogenous variables in equations:** A table with columns: Series, Type, Restrict to CE, Equation name, and Variable name.

Series	Type	Restrict to CE	Equation name	Variable name
Intercept	Exogenous	<input type="checkbox"/>		
Sweden, 10Y	Endogenous	<input type="checkbox"/>		
Sweden, 5Y	Endogenous	<input type="checkbox"/>		
Denmark, 10Y	Endogenous	<input type="checkbox"/>		
Denmark, 5Y	Endogenous	<input type="checkbox"/>		
Euro Area, 10Y	Endogenous	<input type="checkbox"/>		
Euro Area, 5Y	Endogenous	<input type="checkbox"/>		

Figure 1.3. Vector Autoregression (VAR) Model

VAR models have been useful in examining how regulatory changes affect

bank lending and economic growth in Ukraine, where the economy is prone to periodic shocks. For example, VAR has been used by researchers to examine the effects of changes in the value of the hryvnia on interest rates and loan availability. The results frequently show a strong relationship between currency volatility and the stability of the banking industry, underscoring the significance of sound foreign exchange policies [25].

It is necessary to recognize the limitations of VAR models, though. Long-term structural changes, like the shift from a centrally planned to a market-based economy, are frequently difficult for them to account for, despite their effectiveness in capturing short-term dynamics. Because of this drawback, they are less appropriate for evaluating the wider effects of systemic improvements, which call for a more sophisticated analytical methodology. VAR models continue to be an effective tool for comprehending the immediate consequences of economic shocks and policy actions in spite of these limitations.

Stress Testing Model. Analysis of the banking industry now relies heavily on stress testing, especially when determining how resilient financial institutions are to unfavorable economic conditions. The National Bank of Ukraine (NBU) regularly uses stress testing to assess banks' resilience to crises such as severe currency devaluations, large GDP contractions, or inflation spikes. To ascertain if banks have enough capital and liquidity to withstand possible losses, these tests replicate a variety of adverse circumstances [30].

Finding weaknesses in Ukraine's banking industry has been made possible in large part by the outcomes of stress testing. For instance, the NBU imposed stronger capital requirements and liquidity controls during the 2014 crisis when stress testing showed large disparities in capital adequacy among numerous banks. Although there are still issues in guaranteeing uniform compliance across all institutions, these actions have since increased the sector's overall stability [32].

Scenario Handler
Start-up Financial Model - Active Scenario: High Case
[Go to Table of Contents](#)
 ↑ ← → ☒ 📄

Select Scenario:

Capture Scenario

	Base	Low Case	Conservative	Target	High Case
Sensitivities					
Volume					
Client Number Sensitivity	90.0%	90.0%	90.0%	90.0%	90.0%
Average Order Size	90.0%	90.0%	90.0%	90.0%	90.0%
Customers orders that use the Other Service	100.0%	100.0%	100.0%	100.0%	100.0%
Customers Orders that use One-Off Service	100.0%	100.0%	100.0%	100.0%	100.0%
Market Traction	Disrupted	Disrupted	Disrupted	Disrupted	Disrupted
Pricing					
Service Fee	100.0%	100.0%	100.0%	100.0%	100.0%
Trade Finance Origination Fee	120.0%	120.0%	120.0%	120.0%	120.0%
Logistics Service Fee	120.0%	120.0%	120.0%	120.0%	120.0%
Costs					
Wage Costs	90.0%	90.0%	90.0%	90.0%	90.0%
Other Operating Costs	90.0%	90.0%	90.0%	90.0%	90.0%
Capital Expenditure	90.0%	90.0%	90.0%	90.0%	90.0%

Figure 1.4. Stress Testing model

Stress testing also helps policymakers create interventions by pointing out areas that require regulatory changes. To lessen the effects of currency volatility, for example, recent stress tests have highlighted the significance of increasing foreign exchange reserves. Through proactive efforts to improve financial stability, stress testing assists regulators and policymakers by offering a forward-looking evaluation of systemic vulnerabilities.

The models discussed above offer insightful information, but they have drawbacks. For example, econometric models frequently make the assumption that the economy is steady, which may cause them to miss the intricacies of Ukraine's transitional economy. These models are usually developed for more stable situations, but their application is complicated by the frequent occurrence of exogenous shocks, such as geopolitical tensions, global financial crises, and changes in commodity prices [16].

Likewise, VAR models have limitations when it comes to taking long-term policy effects and structural changes into consideration. Although they are useful for examining short-term trends, they can miss the more significant, systemic

adjustments needed to bring Ukraine's banking industry into compliance with global norms. Given the nation's continuous efforts to modernize its financial institutions and regulatory frameworks, this is especially pertinent [36].

Although stress testing is quite good at finding vulnerabilities, it requires a lot of resources and depends on reliable data. Stress test findings may not be as reliable in Ukraine due to uneven data availability and quality. Furthermore, stress testing frequently concentrate on the worst-case scenarios, which could not accurately represent the daily difficulties faced by the industry. In order to overcome these constraints, alternative approaches that offer a more thorough understanding of the dynamics of the banking industry must be incorporated.

Alternative Economic-Mathematical Approaches: A Case for System Dynamics and Agent-Based Modeling. *System Dynamics (SD) modeling.* System Dynamics (SD) modeling provides a comprehensive method for examining the intricate relationships found in Ukraine's banking industry. SD is especially helpful for researching policy consequences over long periods of time because, in contrast to standard models, it captures feedback loops, time delays, and non-linear interactions. An SD model, for example, might model the effects of incremental capital adequacy adjustments and other progressive regulatory changes on the sector's stability and economic growth [40].

Understanding the long-term impact of reforms meant to address systemic problems including non-performing loans (NPLs), liquidity constraints, and governance flaws is particularly pertinent when using SD modeling. SD models offer a dynamic framework for assessing policy options by combining a number of variables, including bank activities, economic situations, and regulatory rules. Policymakers can use this method to find unforeseen repercussions and maximize regulatory actions to get the results they want.

Agent-Based Modeling (ABM). Agent-Based Modeling (ABM) is another cutting-edge approach with a lot of potential for studying Ukraine's banking industry. The variability and adaptive behaviors that traditional models frequently ignore are captured by ABM, which simulates interactions among individual agents,

including banks, regulators, and consumers. As a result, ABM is especially useful for examining how the banking industry reacts to altered regulations, market conditions, and economic shocks [37].

ABM, for instance, can be used to research how lending practices are affected by more stringent capital requirements. ABM may show how these regulations impact loan availability and financial stability by modeling the behavior of various bank types, from big state-owned institutions to smaller commercial enterprises. Similar to this, ABM can record how customers react to modifications in deposit insurance regulations, offering valuable information on how these actions affect public trust and saving habits.

In Ukraine's unstable economic climate, where traditional models might not take into consideration the wide range of responses from market participants, the application of ABM is very beneficial. ABM provides a more detailed understanding of the intricacies of the industry by integrating behavioral dynamics and feedback mechanisms, which makes it possible to create focused and successful regulatory measures.

Integrating Alternative Approaches with Traditional Models. Although SD and ABM provide insightful information, their effectiveness is greatest when combined with conventional models. For instance, whereas SD and ABM can capture the complex dynamics of policy actions and market behaviors, econometric and VAR models can offer a quantitative basis for comprehending macroeconomic linkages. A more thorough examination of Ukraine's banking industry is made possible by this integrated approach, which tackles both immediate issues and long-term structural changes.

Conclusion. The use of economic-mathematical models is essential for examining and resolving the intricacies of the banking industry in Ukraine. While alternative techniques like System Dynamics and Agent-Based Modeling offer a deeper understanding of the sector's behavioral and structural dynamics, traditional models like econometric analysis, VAR, and stress testing offer crucial insights into macroeconomic relationships and systemic risks.

However, how well these models fit Ukraine's particular economic situation determines how effective they are. Their application is severely hampered by frequent shocks, data shortages, and institutional flaws, which calls for the use of creative ways and integrated strategies. Policymakers and regulators can develop evidence-based solutions to improve financial stability and spur economic growth by combining the advantages of both standard and alternative models to obtain a more comprehensive understanding of the dynamics of the industry.

Navigating the intricacies of Ukraine's transitional economy and guaranteeing the banking sector's resilience in the face of recurring opportunities and difficulties require such an approach. These models have the potential to be effective instruments for promoting sustainable development and bringing Ukraine's financial system into line with international best practices if they are continuously improved and adjusted.

CHAPTER 2.

ANALYSIS OF THE BANKING SECTOR IN UKRAINE

2.1. Financial Condition of Ukraine's Banking Sector

The state of Ukraine's banking industry's finances reflects the country's continuous development in the face of economic changes and difficulties. State-owned banks, commercial banks, and foreign banks make up this sector, and each has a unique function in the financial system. In order to give a thorough picture of these institutions' influence on the national economy, this subsection looks at their contributions, operating difficulties, and financial standing.

State-Owned Banks. With a large share of all banking assets under management, state-owned banks dominate the Ukrainian banking industry. The biggest state-owned bank in Ukraine, PrivatBank, is a prime example of this power.

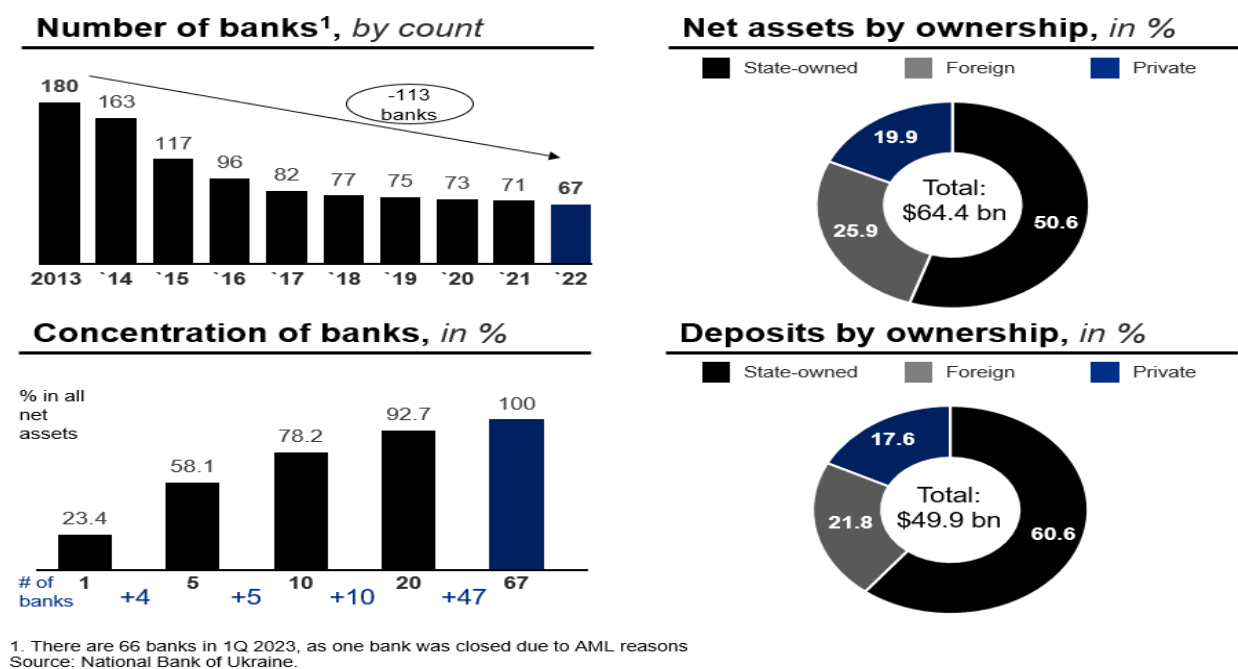


Figure 2.1. Asset distribution across state-owned, commercial, and foreign banks

PrivatBank has played a crucial role in preserving sector stability since it was nationalized in 2016 on suspicion of financial wrongdoing. State-controlled banks

play a crucial role in the financial sector; as of 2020, they possessed more than half of Ukraine's banking assets [32].

State-owned banks confront major operational and financial issues despite having a sizable asset base. The high rate of non-performing loans (NPLs), which has continuously weakened capital adequacy and profitability, is a major problem. State-owned banks' non-performing loan (NPL) ratio was more than twice as high as private banks' by 2021, highlighting ongoing inefficiencies in debt recovery and management. The inability of these institutions to function independently and efficiently is made worse by governance flaws, such as political meddling and insufficient oversight procedures [39].

The National Bank of Ukraine (NBU) has taken a number of actions to address these problems, such as stepping up regulatory oversight, reforming governance, and providing capital infusions. These initiatives attempt to increase the financial stability and operational efficiency of state-owned banks. For instance, the NBU has made the decrease of politically influenced credit issuance and the advancement of transparent lending processes its top priorities. Progress has been sluggish, though, and state-owned banks are still beset by historical problems that restrict their capacity to extend credit and spur economic expansion. To turn these institutions into catalysts for economic growth, governance frameworks must be strengthened and worldwide best practices must be adopted.

Commercial Banks. Commercial banks are essential for lending money to people and companies, which promotes financial inclusion and economic activity. Nonetheless, during the previous ten years, Ukraine's commercial bank count has drastically decreased. The industry saw substantial consolidation between 2014 and 2020, as the overall number of banks decreased from more than 180 to less than 100. The NBU's post-crisis regulatory crackdown, which sought to dismantle weak and dishonest institutions, was a major factor in this decline [30].

Although the industry as a whole has benefited from this consolidation, smaller banks now face difficulties competing with bigger, more established firms. Commercial banks frequently struggle to access global financial markets and create

capital buffers, which restricts their ability to grow and aid in economic recovery. Their competitiveness is further hampered by high borrowing costs and insufficient liquidity, especially in a high-risk climate like Ukraine's.

Year	Real GDP growth rate, %	Inflation rate, % (CPI)	M3 growth rate, %	Lending, growth rate, %	Key interest rate of the NBU, %	State budget deficit to GDP, %	External public debt to GDP, %	Domestic public debt to GDP, %
2000	5.9	25.8	45.2	27.4	30.6	0.41	20.2	25.1
2001	9.2	6.1	42.1	36.0	19.7	-0.33	16.8	19.8
2002	5.2	-0.6	42.8	45.5	9.5	0.50	15.6	18.0
2003	9.6	8.2	46.4	57.2	7.0	-0.39	13.1	15.9
2004	12.1	12.3	31.9	32.4	7.5	-2.96	11.2	13.5
2005	2.7	10.3	54.4	60.9	9.2	-1.80	7.8	9.9
2006	7.3	11.6	34.5	72.4	9.0	-0.69	9.8	5.0
2007	7.9	16.6	51.7	80.0	8.0	-1.40	7.9	4.4
2008	2.3	22.3	30.2	63.2	11.3	-1.32	12.8	7.2
2009	-14.5	12.3	-5.5	-5.7	11.3	-3.89	11.5	23.2
2010	4.1	9.1	22.7	1.0	9.1	-5.94	14.4	25.5
2011	5.5	4.6	14.7	9.3	7.8	-1.79	13.2	22.7
2012	0.2	-0.2	12.8	-1.2	7.6	-3.79	14.7	21.9
2013	0.0	0.5	17.6	11.8	7.1	-4.45	19.5	20.6
2014	-6.8	24.9	5.2	10.4	10.2	-4.98	31.2	39.0
2015	-10.5	43.3	3.9	0.3	26.1	-2.28	26.7	52.7
2016	2.3	12.4	10.9	-0.4	17.5	-2.94	29.0	52.0
2017	2.5	13.7	7.3	3.7	13.1	-1.60	25.7	46.1

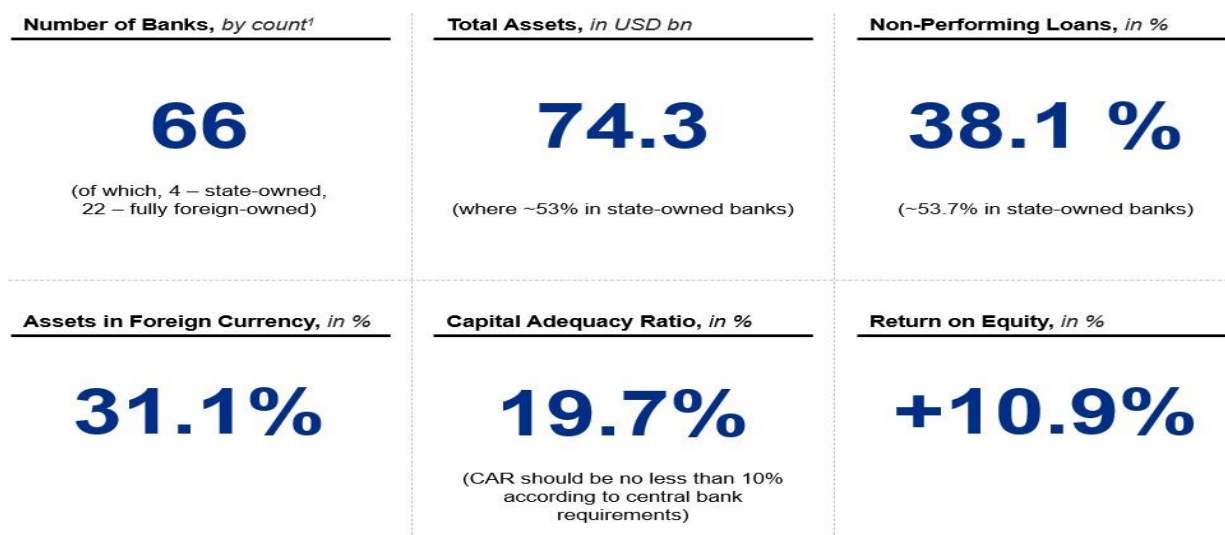
Figure 2.2. Commercial banks from 2014 to 2021 contraction trend post-crisis

State-owned and foreign banks, which frequently have access to bigger resource pools and more advantageous regulatory conditions, also pose a serious threat to private banks. Many commercial banks have resorted to digital transformation in order to stay competitive, using technology to enhance customer service, save operating expenses, and reach a wider audience. However, smaller institutions might not be able to afford the significant expenditure required for these programs. For commercial banks to get above these obstacles and make a more meaningful contribution to Ukraine's economic growth, ongoing regulatory support and focused financial aid will be essential.

Foreign Banks. As of 2021, foreign banks accounted for around 30% of all banking assets in Ukraine, making up a sizeable share of the country's banking industry. Organizations like OTP Bank and Raiffeisen Bank have been instrumental in modernizing banking operations in Ukraine, enhancing corporate governance, and bringing in international best practices [26]. The sector's overall efficiency and

conformity to international standards have improved as a result of these contributions.

Foreign banks have historically capitalized on Ukraine's sizable and expanding market by concentrating on corporate and retail lending. Their participation has enabled the creation of cutting-edge financial goods and services by bringing in a much-needed infusion of capital and experience. However, there are particular difficulties in doing business in Ukraine, such as political unpredictability, unstable economic conditions, and inconsistent regulations. In order to reduce possible losses, these variables have caused international banks to adopt conservative strategies, with many concentrating on low-risk, high-return market niches [44].



1. As of mid-March 2023
Source: National Bank of Ukraine. Data presented as of January 01, 2023, or for the entire 2022.

Figure 2.3. Total assets held by foreign banks from 2017 to 2021, showcasing foreign banks' market share

Foreign banks' long-term commitment to the Ukrainian market is further tempered by geopolitical risks. For example, several international institutions have reduced their investments due to operational concerns brought forth by conflicts and sanctions. Furthermore, regulatory obstacles have discouraged new players from entering the sector, including intricate licensing procedures and uneven application

of banking regulations. In order to promote competition and innovation in the banking industry, it will be imperative to address these problems in order to draw in and keep foreign investment.

2.2. Dynamics and Key Indicators of Ukraine’s Banking Sector

A thorough grasp of Ukraine's banking industry's operational effectiveness, financial stability, and contributions to economic growth may be gained from its dynamics and important indicators. The industry has had many difficulties over the years, including as high non-performing loan (NPL) levels, erratic capital adequacy ratios, and liquidity limitations. In addition to showing the sector's current situation, these indicators also point out areas that need focused measures to guarantee its long-term stability and expansion.

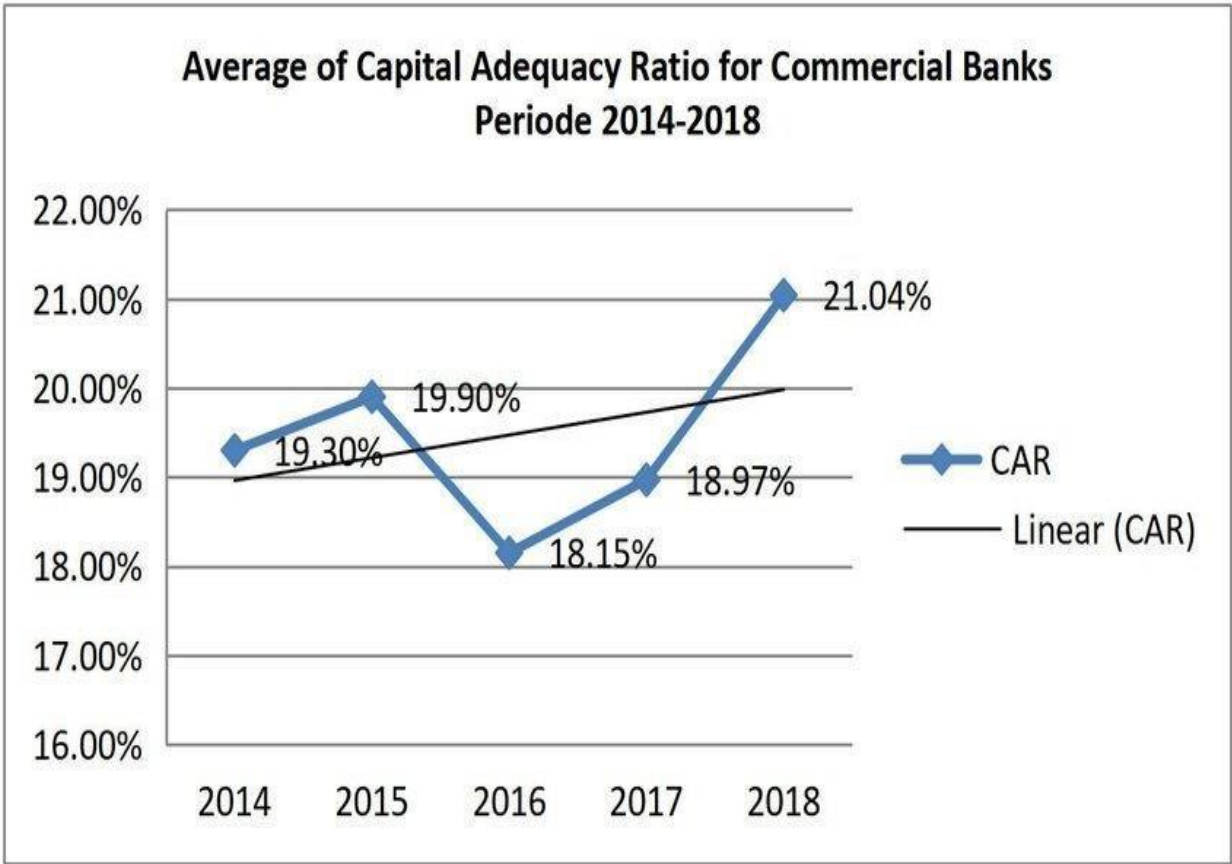


Figure 2.4. Capital Adequacy Ratio for Ukrainian Banks 2014-2018

Capital Adequacy Ratios. One important indicator of a bank's capacity to resist economic shocks and absorb losses is the capital adequacy ratio, or CAR. The Basel III criteria, which place an emphasis on keeping adequate capital reserves to reduce systemic risks, are in line with CAR regulations in Ukraine. The average CAR for Ukrainian banks increased from 14% to over 21% between 2015 and 2018. The NBU's efforts to bolster regulatory monitoring and impose greater capital requirements in the wake of the preceding ten years' financial crisis are reflected in this increase [32].

In Ukraine's unstable economic climate, where banks are subject to exchange rate swings, inflationary pressures, and geopolitical threats, higher CAR levels are especially important. Ukrainian banks have improved their financial stability by strengthening their capital buffers, which have made them more resistant to these outside shocks. For example, banks with strong CARs were better able to handle liquidity constraints and continue lending during the COVID-19 pandemic, which helped the economy recover. Disparities between the various bank types still exist, though. Due to issues with governance and high non-performing loan ratios, state-owned banks – which possess a sizable portion of the sector's assets – frequently fail to meet CAR standards [30].

The application of CAR requirements is nevertheless uneven despite the advancements, especially when it comes to smaller, regional banks with fewer resources. These organizations frequently lack the funding necessary to satisfy strict capital standards, which reduces their ability to compete and raises systemic risks. The NBU has taken steps to address these issues, including targeted capital injections and recurring stress testing, with the goal of enhancing the sector's overall resilience. To guarantee consistent compliance across all banks, further work is necessary, though, including increased oversight and programs to strengthen smaller institutions' capacity [36].

Non-Performing Loans (NPLs). The banking industry in Ukraine has long struggled with high non-performing loan (NPL) levels, which have hampered its ability to make new loans and remain profitable. NPLs made up almost half of all

loans in the industry as of 2021, underscoring the pervasiveness of borrower financial hardship. Political meddling and poor risk assessment procedures have led to increased default rates in state-owned banks, making this problem more severe there. For example, politically driven loan choices frequently put immediate goals ahead of long-term financial viability, which exacerbates the NPL issue [30].

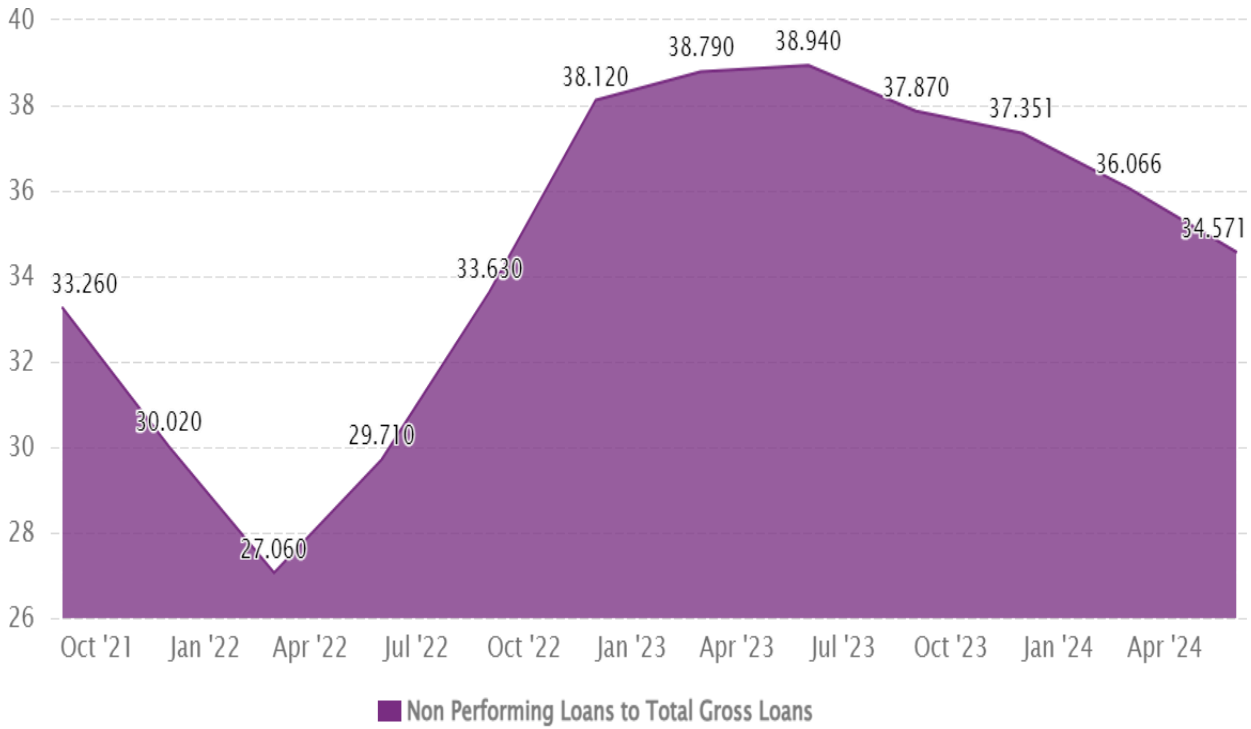


Figure 2.5. Non-Performing Loans Trends for 2021-2024

The stability and economic growth of the sector are significantly impacted by the proportion of non-performing loans (NPLs). Banks' capacity to make money is hampered by high non-performing loan (NPL) ratios because resources are diverted from funding profitable ventures to servicing past-due loans. Furthermore, the public's trust in the financial system is damaged by the growth of bad debt, which deters investment and savings. In order to address the NPL problem, the NBU has implemented a number of measures in recognition of these concerns, such as tighter lending guidelines, improved loan recovery procedures, and the creation of consolidated asset management systems. By taking these steps, the sector's credit

quality will be improved and the stock of bad loans will be decreased [39].

Despite these initiatives, institutional and structural obstacles have caused development to be sluggish. For instance, Ukraine's debt recovery laws continue to be onerous and ineffective, with drawn-out court proceedings and little ability to enforce the law. Furthermore, the COVID-19 pandemic and the economic consequences from geopolitical tensions have made things worse for borrowers, which has increased the number of non-performing loans. A more thorough strategy that includes legal reforms, better governance in state-owned banks, and increased transparency in loan classification and provisioning is needed to make significant headway [26].

Liquidity Ratios. One of the most important measures of a bank's capacity to fulfill its immediate obligations and preserve business continuity is its liquidity ratio. Banks in Ukraine are now required to maintain larger amounts of liquid assets due to regulatory reforms that have highlighted the need of liquidity management. Because of this, Ukrainian banks' average liquidity coverage ratio (LCR) has continuously surpassed the NBU's basic standards in recent years, indicating better liquidity conditions throughout the industry [32].

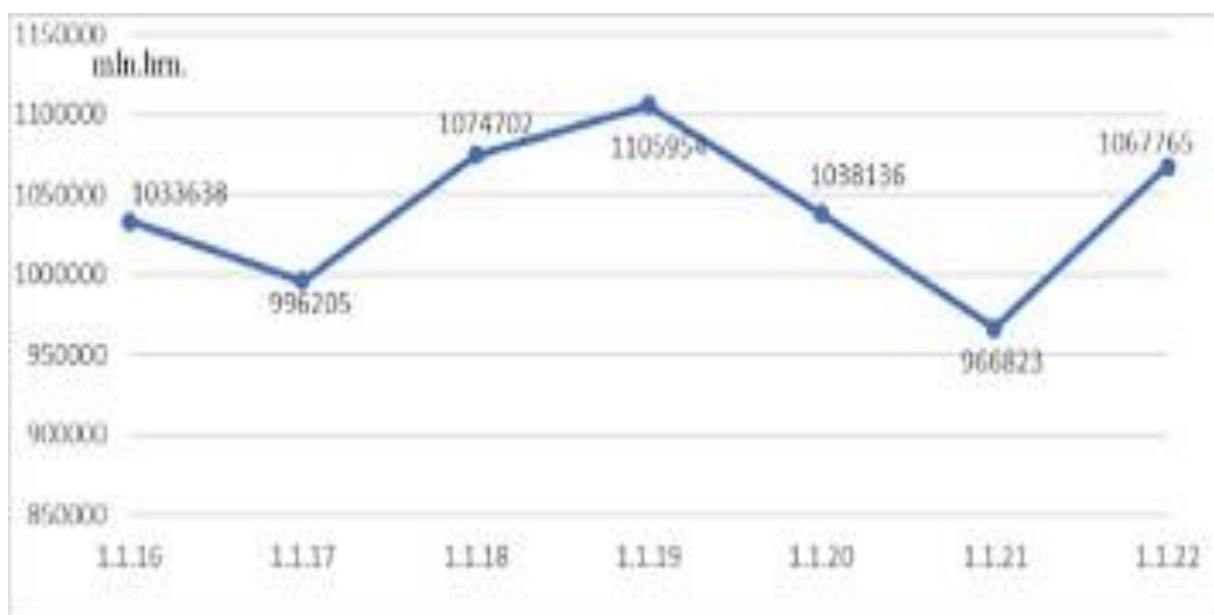


Figure 2.6. Liquidity Ratio (2019-2022)

It is impossible to overestimate the significance of sound liquidity management, especially in a high-risk situation like Ukraine's. Strong liquidity buffers are necessary to stop bank runs and maintain financial stability in the face of frequent economic upheavals, currency volatility, and depositor fear. For example, the availability of liquid assets allowed banks to withstand abrupt deposit outflows and preserve public trust at times of increased geopolitical tensions, such as the annexation of Crimea in 2014 [36].

Nonetheless, there are still obstacles in the way of all banks meeting consistent liquidity requirements. Meeting LCR criteria is more difficult for smaller banks, which frequently operate in regional markets with limited access to capital. Furthermore, systemic vulnerabilities are increased by reliance on short-term funding sources like interbank loans, especially during times of market stress. The NBU has implemented specific liquidity support measures, such as emergency liquidity assistance (ELA) initiatives and the creation of a lender-of-last-resort facility, to address these problems. These programs seek to support sustainable liquidity management techniques while offering short-term respite to financially troubled banks [44].

Profitability and Operational Efficiency. Another important metric for assessing the state of the Ukrainian banking industry is profitability. The industry's profitability has fluctuated significantly during the last ten years as a result of operational inefficiencies, regulatory changes, and external shocks. High NPL ratios, currency depreciation, and dwindling credit demand were the main causes of the significant losses reported by numerous banks in the wake of the 2014 financial crisis. However, there has been a slow rebound in recent years, with increased profitability levels being a result of regulatory reforms and better governance [26].

The competitiveness of the industry is also greatly influenced by operational efficiency, which is gauged by metrics like cost-to-income ratios. Through process optimization and digital transformation, Ukrainian banks have achieved significant strides in cutting operating expenses. For example, banks have been able to increase their clientele while cutting costs by implementing automated procedures and online

banking platforms. By targeting marginalized communities, these technologies have been especially helpful in improving financial inclusion [22].

However, there are still notable differences between the various bank classifications. Due to legacy problems and governance constraints, state-owned banks frequently perform less efficiently than their private and international counterparts. Furthermore, non-bank financial institutions and fintech businesses, which provide cutting-edge goods and services at reduced prices, are putting pressure on the industry as a whole. Ukrainian banks must keep making investments in technology, improve their client interactions, and diversify their sources of income if they want to stay competitive.

Sectoral Contributions to Economic Growth. Another crucial aspect of the banking industry's performance is its contribution to economic expansion. Banks are essential for promoting investment, consumption, and production because they mobilize funds, make loan distribution easier, and offer financial services. The industry has played a significant role in funding vital sectors for Ukraine's economic growth, including manufacturing, energy, and agriculture [26].

However, several problems, such as the restricted availability of finance for small and medium-sized businesses (SMEs), essential for job creation and economic diversity, have hindered the sector's ability to contribute to economic growth. The growth potential of SMEs has been hampered by the lack of accessible, reasonably priced financing due to high interest rates, strict lending requirements, and insufficient risk assessment frameworks. Targeted policy measures, such as loan guarantee programs, bank capacity-building initiatives, and increased assistance for SME financing, will be necessary to remove these obstacles [44].

Conclusion. The banking industry's dynamics and important metrics in Ukraine offer important insights into its advantages and disadvantages. There are still obstacles in resolving enduring problems including high non-performing loan percentages, restricted credit availability, and systemic vulnerabilities, despite notable advancements in areas like capital adequacy, liquidity management, and operational efficiency. Policymakers and industry stakeholders can create focused

actions to improve the sector's competitiveness, resilience, and economic growth contribution by utilizing these data. Ukraine's banking industry may overcome its obstacles and realize its full potential as a catalyst for sustainable growth with perseverance and teamwork.

2.3. Experimental Research and Economic-Mathematical Modeling of Ukraine's Banking Sector

Extensive experimental research and economic-mathematical modeling provide important insights into the stability, resilience, and possible hazards in Ukraine's banking industry. Understanding how macroeconomic shocks and bank performance interact with models like stress testing and vector autoregression (VAR) can help policymakers fine-tune regulatory responses as the industry negotiates an unpredictable economic environment. This section examines the use of these models and their results, including an evaluation of the results of stress tests, VAR analysis, and Agent-Based Modeling (ABM).

Group of banks	State-owned	Ukraine	Foreign							Total by banking system of Ukraine
			Russia	Western Europe	Southern Europe	Eastern Europe and Central Asia*	West Asia and Southern Europe	USA	Cyprus offshore	
Index										
# of banks	5	51	3	7	2	4	2	1	2	77

Figure 2.7. Indexes of stress testing in the banking system Ukraine for 01.10.2018

Stress Testing and Resilience Analysis. When assessing how Ukraine's banking industry will react to economic shocks such as abrupt currency devaluations,

recessions, or geopolitical upheavals, stress testing is an essential instrument. The National Bank of Ukraine (NBU) conducts stress tests every year to find possible weaknesses in the industry and make sure banks have enough capital to weather difficult times. Even if capital adequacy has greatly improved, many banks are still vulnerable to liquidity shortages in the case of a large economic downturn, according to recent stress tests that simulated scenarios with varying degrees of economic distress [26].

For state-owned banks, which exhibit some of the highest ratios of non-performing loans (NPLs) and have relatively low liquidity buffers, the stress testing results underscore the necessity for further policy interventions. These banks often demonstrate more vulnerability under stress scenarios compared to private and foreign banks, largely due to their high exposure to politically influenced lending practices. The NBU has responded by introducing tighter capital requirements and liquidity controls, particularly for banks with high levels of distressed assets. These measures, however, need consistent monitoring to ensure they effectively mitigate the risks highlighted by stress tests.

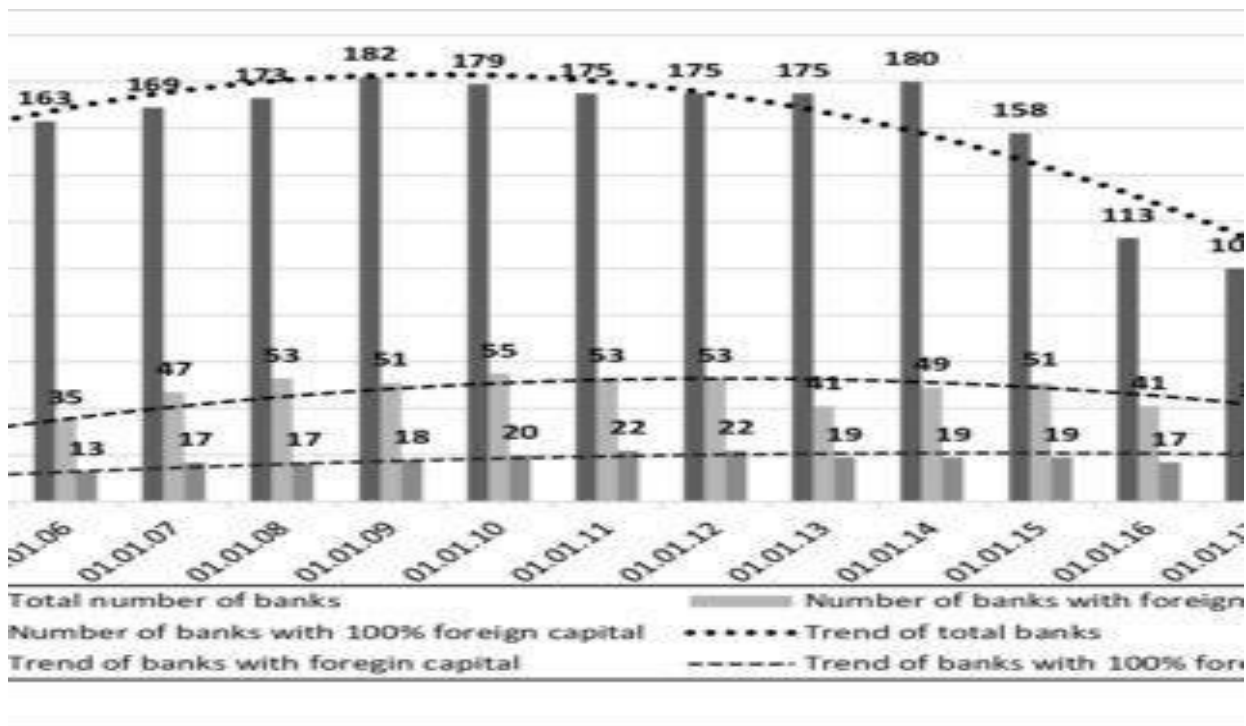


Figure 2.8. Stress testing the banking systems: Approach of Ukraine

By modeling the effects of negative scenarios, policymakers can identify potential weak points within banks and take a proactive approach to risk management. For instance, based on the results of stress tests, the NBU has recommended that banks increase their holdings of liquid, risk-free government securities and decrease their reliance on volatile assets. These measures are intended to protect banks from abrupt market fluctuations, especially in the context of Ukraine's vulnerable economy, where external shocks, currency instability, and fluctuating commodity prices can destabilize the banking system. The use of stress tests has also informed the NBU's regulatory changes to strengthen bank capital bases and improve resilience against shocks.

Vector Autoregression (VAR) Analysis of Macroeconomic Impacts. Another crucial technique for examining the dynamic interactions between important macroeconomic variables and the performance of Ukraine's banking industry is VAR modeling. VAR models look at how interdependent factors like GDP growth, inflation, and exchange rates affect bank lending practices, credit quality, and general stability. Policymakers can prioritize policies that help protect the banking industry from systemic risks by using VAR analysis to determine which macroeconomic factors have the biggest effects on banking indicators [35].

Model	GDP	D(INF,1)
GDP (-1)	0.312554	4.063733
	(0.19985)	(1.33546)
	[1.56395]	[3.04295]
D (INF (-1),1)	-0.024716	-0.474747
	(0.02666)	(0.17813)
	[-0.92721]	[-2.66522]
C	4.337979	-25.99263
	(1.28749)	(8.60344)
	[3.36933]	[-3.02119]

Figure 2.9. AR model at the selected optimum lag (1) -Vector
Autoregression Estimates

Recent VAR modeling applications to Ukraine's banking industry have shown that inflation and currency depreciation have a major impact on bank capital ratios and credit quality [25]. Banks with significant exposure to foreign-denominated loans see an increase in non-performing loans (NPLs) when the hryvnia weakens relative to major foreign currencies because it becomes harder for borrowers to service their debt. The interdependence of exchange rates and credit risk is highlighted by VAR models, which show how these currency-related shocks can set off a downward spiral of deteriorating asset quality, less lending, and greater capital erosion.

The impact of inflation on credit risk is further highlighted by VAR research. High inflationary pressures can lower enterprises' purchasing power and households' disposable income, which can affect their ability to repay loans. During inflationary times, banks with high consumer and small company credit exposure see a rise in loan defaults, which emphasizes the necessity of coordinating monetary policy with the soundness of the banking industry. In order to reduce these risks, the NBU has tightened monetary policy during periods of inflation, raising interest rates to support the hryvnia and stop excessive inflation. The results of VAR modeling support the significance of such policies since they reduce credit risk brought on by inflation and improve sectoral stability.

Agent-Based Modeling (ABM) for Regulatory Impact Analysis. A relatively new but increasingly useful method for analyzing how multiple banking stakeholders – banks, regulators, and customers – interact under various regulatory situations is agent-based modeling, or ABM. ABM captures the variety of behavior and adaptive reactions to regulatory changes by simulating interactions among individual agents, in contrast to standard econometric models. ABM aids in the analysis of how tightening laws, including higher capital adequacy requirements or more stringent liquidity thresholds, affect bank operations and lending practices in Ukraine's banking industry [37].

When applying ABM to the banking system in Ukraine, researchers have shown that while raising capital requirements tends to make banks more resilient, it

can also restrict lending, especially for smaller commercial banks that find it difficult to fulfill the higher criteria. According to ABM simulations, banks with smaller capital buffers may cut back on lending in order to adhere to more stringent laws. This might impede the expansion of credit in vital industries like industry and agriculture, where there is a strong need for funding [40]. The NBU must therefore strike a balance between enforcing capital requirements that enhance stability and not unduly restricting the availability of credit for industries vital to Ukraine's economic recovery.

Customer behaviors and their reactions to shifts in bank stability are also captured by ABM. As demonstrated by ABM models, which show an increase in deposit levels during periods of strengthened liquidity management, consumer confidence tends to rise when the NBU implements actions to enhance liquidity. This realization emphasizes how regulatory actions and consumer behavior are intertwined, offering a more complex perspective on the effects of policies than just financial indicators. Thus, ABM becomes a useful instrument for adjusting policy interventions, guaranteeing that regulatory actions accomplish stability objectives without jeopardizing economic expansion.

Conclusion. The NBU's regulatory reforms have significantly improved the capital adequacy and liquidity management of the Ukrainian banking industry. Given Ukraine's vulnerability to external risks like inflation and currency volatility, banks with larger capital buffers are better equipped to withstand economic shocks [32]. State-owned banks still hold a sizable portion of the assets, despite inefficiencies brought on by high non-performing loan ratios and governance problems. In contrast, foreign banks have helped modernize the industry by bringing sophisticated governance processes and capital access.

But even with these advancements, there are still a lot of threats facing Ukraine's financial industry. The sector's capacity to create new credit is nevertheless hampered by high NPL levels, especially for state-owned banks where political meddling makes credit quality problems worse. Furthermore, as demonstrated by the outcomes of VAR and stress testing, macroeconomic pressures

like inflation and currency fluctuations present continuous hazards. During times of economic uncertainty, these pressures pose a threat to capital strain, bank profitability, and asset quality [30].

CHAPTER 3.

RECOMMENDATIONS FOR IMPROVING THE BANKING SECTOR IN UKRAINE

3.1. Strengthening Non-Performing Loan (NPL) Management and Recovery Processes

This chapter provides detailed suggestions for resolving important problems in the banking industry in Ukraine. These recommendations, which are based on the research and analysis presented in earlier chapters, center on boosting liquidity measures, encouraging digital transformation, strengthening corporate governance, and optimizing the management of non-performing loans (NPLs). Identifying unresolved concerns, stating the need for improvement, summarizing proposed actions, laying out implementation methods, and presenting the anticipated results are the first phases in each recommendation's structured sequence.

Preamble and Unresolved Issues. One of the biggest issues threatening the stability and expansion of Ukraine's banking industry is the high number of non-performing loans (NPLs). NPLs are a recurring burden on financial institutions, making up over half of the sector's total loan portfolio. In addition to impeding banks' capacity to provide loans, this high percentage erodes public confidence and reduces the financial system's overall resilience [30].

In state-owned banks, where political meddling and inefficient lending procedures increase default rates, the issue is especially severe. For example, politically motivated lending decisions have led to unsustainable loan portfolios since they are frequently motivated by short-term goals rather than good financial analysis. NPL ratios in the industry have not significantly decreased despite actions made by the National Bank of Ukraine (NBU), such as tighter lending regulations and more scrutiny. The necessity for a more thorough and organized method of resolving troubled loans is highlighted by this standstill [32].

Macroeconomic variables like currency volatility, geopolitical instability, and

Ukraine's transitional economy all contribute to the accumulation of non-performing loans. Because of volatile markets and fluctuating exchange rates, borrowers – especially companies that depend on export earnings – frequently find it difficult to fulfill their repayment commitments. Delays in resolving bad debts are also a result of an ineffective legal framework for loan recovery, which permits non-performing loans to grow out of control.

Formulation of the Need for Improvement. Stabilizing Ukraine's banking industry and maximizing its potential to spur economic growth depend heavily on resolving the non-performing loan (NPL) problem. Bank balance sheets are nevertheless burdened by high NPL levels, which take funds away from worthwhile lending operations. This restricts the banking industry's ability to assist important economic sectors that are essential to Ukraine's development, such manufacturing, technology, and agriculture.

The ongoing NPL issue not only has economic ramifications but also undermines public trust in financial institutions. Investors and depositors are less inclined to interact with the financial system when they believe institutions are incapable of adequately managing risks. This further erodes the stability of the industry by lowering savings, investment, and liquidity.

Ukraine requires a strong and all-encompassing NPL management framework in order to overcome these obstacles. Innovative strategies for debt recovery, asset management, and risk mitigation must be incorporated into such a framework, going beyond conventional procedures. The banking industry can lessen its NPL burden, win back the trust of investors and depositors, and reallocate funds to support sustainable economic growth by enacting certain reforms [26].

Proposed Recommendations for NPL Management. For the NPL problem to be successfully addressed, a good strategy is needed. The following suggestions provide important tactics for enhancing NPL recovery and management procedures:

1. Create a Centralized NPL Resolution Agency. A tried-and-true method for dealing with systemic bad debt problems is the creation of a centralized organization tasked with overseeing and resolving NPLs. Such an organization

would enforce uniform procedures for loan restructuring or liquidation, accelerate recovery procedures, and combine distressed loans from several banks. A similar strategy has been successfully applied in Nigeria, where the Asset Management Corporation of Nigeria (AMCON) has been instrumental in stabilizing the banking industry and lowering non-performing loan (NPL) percentages. A centralized NPL resolution agency in Ukraine would speed up the recovery of distressed assets, reduce political meddling, and improve transparency.

2. **Implement Regular Asset Quality Reviews and Write-Down Mechanisms.** Under the NBU's supervision, banks would be able to systematically identify, categorize, and handle non-performing loans (NPLs) through periodic asset quality reviews (AQRs). Early intervention for troublesome loans would be made possible by these reviews, which would guarantee that banks have accurate and current records of their loan portfolios. Mandatory write-downs should be implemented for debts that are judged unrecoverable in order to clean balance sheets. This would free up capital and lower long-term risks, enabling banks to concentrate on lending activities that are sustainable and lucrative [32].

3. **Establish Incentive-Based Loan Restructuring Programs.** Borrowers would be encouraged to settle past-due loans if restructuring programs were introduced with built-in incentives, including tax breaks or regulatory forbearance. Banks might, for instance, provide borrowers with longer repayment terms, lower interest rates, or even partial debt forgiveness in return for adhering to restructuring arrangements. This strategy has proven effective in a number of emerging markets, where comparable initiatives have aided in the recovery of large amounts of distressed assets. Such programs would lower non-performing loan (NPL) levels and increase borrower solvency in Ukraine, which would benefit both banks and borrowers [30].

4. **Enhance Legal and Institutional Frameworks for Loan Recovery.** Simplifying the legal framework for debt collection is necessary to address the inefficiencies and delays in resolving non-performing loans. Simplified legal processes, alternative dispute resolution processes, and specialized corporate courts

could significantly speed up loan recovery activities. Enforcement measures like asset seizure and auctioning should be reinforced in order to further deter defaults and boost recovery rates. Together, the NBU, judicial authorities, and international financial institutions (IFIs) would provide the funding and technical expertise needed to carry out these reforms [26].

Implementation Methodology. Policymakers, regulators, financial institutions, and foreign partners must work together to implement these proposals. By establishing a legal framework outlining its organization, power, and governance, the NBU should take the lead in the establishment of a centralized NPL resolution agency. Clear rules for asset management procedures, recovery procedures, and loan classification should all be part of this framework.

The NBU might create specialized audit teams and provide uniform loan evaluation templates to assist asset quality reviews. To guarantee accuracy and consistency in the evaluation process, these teams would collaborate closely with banks. The NBU should impose explicit deadlines and sanctions for non-compliance with mandated write-downs to make sure banks give bad debt resolution top priority.

Programs for incentive-based restructuring ought to be formally established by regulatory regulations that outline the requirements for eligibility, advantages, and assessment criteria. To increase knowledge of restructuring possibilities, banks should be encouraged to create borrower outreach programs. Working together with IFIs like the World Bank and IMF would also help these efforts by offering financial support, technical assistance, and advice.

The main goals of legal reforms should be to improve enforcement and streamline debt recovery procedures. This entails creating specialist commercial courts, encouraging arbitration and mediation, and educating attorneys on how to resolve financial disputes. To guarantee that these reforms are implemented successfully, the NBU should collaborate closely with judicial authorities and other interested parties.

Effect of Implementation. The banking industry and the whole economy of Ukraine would greatly benefit from the effective application of these suggestions.

Banks would increase liquidity, free up capital, and boost profitability by lowering NPL ratios. They would thus be able to increase their lending activities, especially to important economic sectors including infrastructure, SMEs, and agriculture.

Additionally, better NPL management would boost public trust in the banking sector, which would promote more investment and savings. More easily accessible restructuring options would also help borrowers, allowing them to restore their financial stability and support the revival of the economy. By addressing governance and operational inefficiencies, these reforms will help state-owned banks—which are disproportionately impacted by non-performing loans—become more potent growth engines.

A centralized NPL resolution body would also guarantee more openness, standardize recovery procedures, and lessen political meddling. By bringing Ukraine's banking industry into line with global best practices, it would attract more foreign investors and promote deeper integration into the world's financial markets. These steps would eventually create a stronger financial system that could sustain Ukraine's long-term economic growth [26].

3.2. Enhancing Liquidity Management and Contingency Planning

Preamble and Unresolved Issues. Digital transformation has emerged as a key force behind innovation, efficiency, and competitiveness in the banking industry in the current global financial landscape. Nevertheless, despite the enormous potential advantages, Ukraine's banking sector faces a number of obstacles in adopting digital transformation. Many financial institutions, especially smaller and regional banks, are still lagging behind in implementing contemporary technologies, even if other banks have made significant progress toward digitalization. The rate of digital adoption has been hampered by problems such as insufficient digital infrastructure, cybersecurity threats, regulatory obstacles, and internal banking sector resistance to change [44].

However, there is a ton of unrealized potential for digital growth in Ukraine's

banking industry. A favorable environment for digital banking solutions is created by the nation's youthful, tech-savvy populace, rising mobile phone usage, and comparatively high internet penetration rate. Notwithstanding these benefits, banks still have trouble implementing all-encompassing digital strategies that follow worldwide trends in digital banking, including mobile banking, online account opening, artificial intelligence (AI) for customer support, and blockchain technology integration [26]. Furthermore, there are currently no standardized standards that would enable smooth digital integration amongst financial institutions, and the regulatory framework for digital banking is still being developed. The sector's capacity to modernize and meet the changing demands of businesses and customers is seriously hampered by these issues [32].

Formulation of the Need for Improvement. The banking industry in Ukraine must go digital in order to increase productivity, improve client satisfaction, and promote financial inclusion. Ukraine's traditional banks must embrace digital technologies to be competitive and relevant as fintech firms and digital-only banks become more prevalent worldwide. The banking industry runs the risk of lagging behind in a financial ecosystem that is evolving quickly if digital transformation is not implemented.

Banks may lower operating costs, speed up transactions, enhance risk management, and expand their services to previously underserved areas of the nation with the use of digital technology. Additionally, they make it easier to create new financial services and products including digital loans, electronic payments, and mobile wallets. For those living in rural areas who might not have access to traditional banking infrastructure, this would help improve financial inclusion [23].

Addressing the obstacles to digital adoption, such as antiquated legacy systems, insufficient cybersecurity standards, and a lack of regulatory guidance, is essential if Ukraine is to fully reap the potential benefits of digital transformation. Promoting technology investment, establishing precise rules for digital banking, and building the infrastructure needed to facilitate this transition all require a concerted and planned effort [44].

Proposed Recommendations for Promoting Digital Transformation.

1. Establish a National Digital Banking Strategy. A well-thought-out, long-term digital banking strategy is essential for directing the industry's change. The National Bank of Ukraine (NBU) should work with government departments, financial regulators, and business partners to establish this strategy. Clear objectives for cybersecurity, digital infrastructure, and regulatory frameworks should all be part of the plan. In order to encourage businesses and consumers to embrace digital financial services, it should also support financial literacy efforts. Ukraine can benefit from the effective national initiatives that nations like Singapore and Estonia have put in place to encourage innovation in digital banking [26].

2. Enhance Cybersecurity Frameworks and Data Protection Regulations. The risk of data breaches and cyberattacks rises with the growth of digital banking solutions. To guarantee the security and integrity of online banking platforms, cybersecurity measures must be strengthened. The NBU should create and implement cybersecurity guidelines for financial institutions that follow global best practices, like those outlined in the General Data Protection Regulation (GDPR) of the European Union. In order to defend against advanced cyberattacks, Ukraine should also think about creating a national cyber security strategy tailored to the banking industry. The implementation of these guidelines will increase consumer trust and protect private financial information, making online banking a more appealing and safe choice [32].

3. Support Digital Financial Inclusion Initiatives. One of the main objectives of digital transformation is financial inclusion. Providing financial services to underserved communities, especially those in rural or distant areas, should be the top priority of Ukraine's digital banking strategy. The NBU should support the creation of fintech companies, digital wallets, and mobile banking apps that use smartphones and other easily accessible devices to offer standard banking services including loans, deposits, and payments. In rural places, where traditional banking infrastructure is frequently scarce or nonexistent, this would remove obstacles to banking. Ukraine may greatly expand access to vital financial services,

particularly for individuals in lower income categories who are now shut out of the formal banking system, by providing incentives for banks to invest in financial inclusion initiatives [44].

4. Foster a Collaborative Environment for Innovation. Given the speed at which technology is developing in the global banking industry, Ukraine must create an atmosphere that allows banks, fintech firms, and regulators to work together productively. In order to give financial institutions a regulated setting in which to test innovative digital products and services, the NBU ought to establish regulatory sandboxes. Prior to wider adoption, this strategy would assist in identifying and reducing potential hazards. Furthermore, fostering collaborations between fintech firms and traditional banks can spur innovation and make it possible to create more effective, customer-focused services. These collaborations may contribute to the development of a more dynamic and competitive market by bridging the gap between the operational infrastructure of traditional banks and the technological prowess of fintech companies [22].

5. Implement Digital Banking Regulatory Reforms. Clear regulatory frameworks that address new issues like digital currencies, blockchain technology, and cross-border payments are crucial as digital banking develops further. The financial regulatory structure in Ukraine must keep up with these advancements while preserving protections against money laundering, fraud, and other illegal activity. To ensure that Ukraine continues to be a desirable location for foreign investment in digital financial services, the NBU should collaborate extensively with international regulatory organizations to align its rules with international norms. Furthermore, by creating an atmosphere that supports both conventional and digital-first banking models, the regulatory framework ought to promote competition among banks [44].

Implementation Methodology. A multi-step strategy including government agencies, regulators, financial institutions, and fintech companies is necessary for the successful implementation of these ideas. The Ministry of Finance, the State Service for Special Communications, and private sector actors should all contribute

to the development of the national digital banking strategy, which should be spearheaded by the NBU. A thorough evaluation of the banking industry's current digital infrastructure should be the first step in the implementation process, which should then be followed by the development of a clear adoption plan.

The NBU should provide the required legislative frameworks and compliance standards for digital banking in order to handle the cybersecurity and regulatory elements, working with global cybersecurity experts and regulatory authorities. Additionally, banks will need targeted financial assistance to invest in mobile banking technologies and rural banking infrastructure in order to develop financial inclusion initiatives.

Innovation hubs and fintech incubators, which offer a venue for testing new technologies and business models, can help traditional banks and fintech companies collaborate. To promote cooperative initiatives that spur innovation in digital banking, the NBU might also act as a mediator between banks and fintech entrepreneurs.

Effect of Implementation. The banking industry and economy of Ukraine would be significantly impacted by the effective use of digital transformation initiatives. Greater financial inclusion, easier access to financial services, and lower operating costs are all benefits of building a strong digital banking environment. Ukraine would be more competitive in the global market if it modernized its banking infrastructure and attracted more international investment.

A more accessible financial system would result from digital banking's increased convenience, better services, and reduced costs for customers. Additionally, improved cybersecurity and data protection would foster trust and promote the wider use of digital financial services.

Incorporating cutting-edge technologies like artificial intelligence (AI), big data analytics, and blockchain into the banking industry would enhance risk management, fraud detection, and operational effectiveness while facilitating the development of novel financial products. These developments would also make it possible for banks to support SMEs more effectively by giving them easier access

to financing choices and encouraging entrepreneurship.

Long-term, digital transformation would result in a more robust and competitive banking industry that might aid in Ukraine's economic expansion. Ukraine might establish itself as a leader in financial innovation in the area and promote better economic stability and prosperity by adopting digitalization [26].

3.3. Promoting Digital Transformation and Financial Inclusion

Preamble and Unresolved Issues. Even with worldwide developments in digital banking, Ukraine's banking industry still has difficulties reaching financial inclusion and broad digital adoption, particularly in rural areas. Underserved communities have less access to financial services due to regulatory restrictions, inadequate infrastructure, and technical gaps that have impeded growth in this field (44). Banks find it difficult to increase operational efficiency and service reach in the absence of sufficient digital infrastructure.

Formulation of the Need for Digital Transformation. Ukraine's banking industry must embrace digital transformation in order to promote financial inclusion and establish a competitive banking environment. Digital banking can accommodate a larger customer base, enhance service accessibility, and drastically lower operating expenses. Customers in metropolitan areas would gain from improved digital services, but rural communities, who now have few banking options, would also profit from financial services [26].

Proposed Recommendations for Digital Transformation. To promote digital transformation, the following initiatives are recommended:

1. **Subsidize Digital Infrastructure Development:** Collaborate with government agencies to subsidize banks' investment in digital infrastructure, particularly in rural and underserved regions. This subsidy would incentivize banks to establish digital service channels, including mobile banking and e-payment solutions, thereby improving access to financial services for marginalized communities [32].

2. **Establish a Regulatory Sandbox for FinTech Innovations:** A regulatory sandbox would allow banks and FinTech firms to test new digital products and services under controlled regulatory oversight. This initiative would encourage innovation while ensuring compliance with industry standards. The sandbox environment would also facilitate collaboration between traditional banks and technology companies, fostering the development of services tailored to Ukraine's financial landscape [44].

3. **Incentivize Digital Banking Adoption:** Banks should introduce reward programs to incentivize customers to adopt digital banking solutions. Offering benefits like reduced transaction fees or cashback for using online services could accelerate the shift toward digital banking. This approach would help banks reduce reliance on costly branch infrastructure and provide greater convenience to customers [30].

Implementation Methodology. To encourage infrastructure investment, government organizations and the NBU should create and finance subsidy schemes. Drafting operating standards, evaluation metrics, and eligibility criteria for digital innovations would be necessary to create the regulatory sandbox. In order to promote the use of digital banking, banks would then have to create incentive programs and modify reward structures in response to user behavior and engagement levels [26].

Effect of Implementation. By promoting digital transformation, these suggestions would increase the affordability and accessibility of financial services. Increasing digital banking would increase financial inclusion, reduce operating costs, and enhance client convenience, particularly in rural areas. Additionally, digital services would improve consumer involvement, making the banking industry more inventive and competitive [41].

CONCLUSIONS

Recap of Key Findings. The analysis of Ukraine's banking sector reveals a complex interplay between regulatory reforms, financial stability, external challenges, and the role of international institutions. Over the past decade, Ukraine's banking sector has undergone significant transformation, marked by the following key developments:

Banking Sector Reforms. The National Bank of Ukraine (NBU) has implemented a series of crucial reforms aimed at stabilizing and modernizing the banking sector. These include improvements in regulatory oversight, the enforcement of stricter capital requirements, efforts to reduce non-performing loans (NPLs), and measures to enhance transparency and corporate governance [42]. The NBU's focus on aligning Ukraine's banking regulations with international standards, particularly through the adoption of Basel III principles, has been instrumental in improving the sector's resilience to economic shocks and its attractiveness to foreign investors [43].

Challenges and Risks. Despite these reforms, Ukraine's banking system continues to face several critical challenges. The persistently high level of NPLs, financial instability caused by the ongoing conflict with Russia, and the country's exposure to external economic pressures, such as global commodity price fluctuations, remain significant obstacles [44]. Furthermore, political interference in state-owned banks and the slow pace of judicial reforms related to loan recovery mechanisms have hindered the sector's full recovery. These challenges highlight the need for continued reform efforts, as well as the importance of addressing structural weaknesses in the banking system.

Role of International Financial Institutions. International financial institutions (IFIs), including the International Monetary Fund (IMF), the World Bank, and the European Bank for Reconstruction and Development (EBRD), have played a pivotal role in supporting the development of Ukraine's banking sector. Through financial assistance, technical expertise, and policy guidance, these

institutions have helped stabilize the sector and promote reforms [46]. The IMF's Extended Fund Facility (EFF), for example, has been critical in ensuring macroeconomic stability and supporting the NBU's regulatory initiatives. Similarly, the EBRD's investments in both state-owned and private banks have strengthened their capital bases and facilitated the adoption of international best practices in governance and risk management [47].

Financial Inclusion. One of the central findings of this analysis is the need to enhance financial inclusion in Ukraine, particularly in rural areas and underserved populations. While significant progress has been made in expanding access to financial services through digital banking and fintech solutions, much remains to be done. Expanding financial inclusion will not only support economic growth by enabling more individuals and businesses to access credit and other financial services, but it will also foster greater social equity and reduce poverty in marginalized communities [48].

Banking Sector's Role in Economic Growth. The banking sector's role in promoting economic growth cannot be overstated. By providing access to credit, mobilizing savings, and facilitating investments, banks serve as engines of economic development [49]. A well-functioning banking sector enables businesses to expand, innovate, and create jobs, thereby driving GDP growth and improving living standards. In Ukraine, where the economy remains fragile and heavily dependent on external financing, the banking system must be further strengthened to support domestic economic activities and reduce the country's reliance on foreign aid [50].

Implications for Future Economic Growth. A stable and well-functioning banking system is essential for Ukraine's future economic growth. The stability of the banking sector is directly linked to the broader macroeconomic environment, as financial institutions play a key role in transmitting monetary policy, managing risks, and allocating capital to productive sectors of the economy [51]. The following are the primary implications of a stable banking system for Ukraine's long-term economic prospects:

1. **Catalyst for Sustainable Growth.** A strong and resilient banking sector

is a critical enabler of sustainable economic growth. Banks provide the capital that businesses need to invest in new projects, expand operations, and improve productivity. In Ukraine, where many industries are still recovering from the economic disruptions caused by the 2014 financial crisis and the ongoing conflict with Russia, access to credit is crucial for supporting recovery and fostering innovation. Moreover, as Ukraine seeks to diversify its economy and reduce its dependence on primary commodities, a well-developed banking sector will be essential for financing investments in high-value-added industries, such as technology, manufacturing, and renewable energy [9].

— Support for Small and Medium-Sized Enterprises (SMEs). SMEs are often the backbone of post-transition economies like Ukraine, serving as key drivers of job creation and economic diversification. A stable banking system that extends credit to SMEs will promote entrepreneurship, stimulate local economic development, and enhance Ukraine's overall competitiveness. In this regard, ensuring that financial institutions are capable of providing affordable and accessible financing to SMEs is crucial for unlocking the country's economic potential [53].

— Infrastructure Development. Ukraine's infrastructure needs significant investment, particularly in transportation, energy, and digital infrastructure. A strong banking system can support infrastructure development by providing long-term financing for public-private partnerships (PPPs) and other large-scale projects. Improved infrastructure, in turn, will enhance Ukraine's attractiveness to foreign investors, lower transaction costs, and boost the country's connectivity to global markets [54].

2. Promotion of Investment and Capital Formation. A well-functioning banking sector plays a critical role in promoting investment by mobilizing savings and allocating them to productive uses. In Ukraine, where domestic savings rates are relatively low, attracting both local and foreign investment is essential for boosting capital formation [55]. Banks can serve as intermediaries between savers and investors, ensuring that available capital is directed towards sectors with the highest potential for economic growth. Attracting Foreign Direct Investment (FDI):

— A stable banking system is a key factor in attracting foreign direct investment (FDI), which is vital for Ukraine's economic development. Investors are more likely to commit capital to a country where the financial sector is well-regulated, transparent, and capable of mitigating risks [56]. By continuing to reform its banking sector and aligning it with international standards, Ukraine can improve its investment climate and increase its attractiveness to foreign investors. FDI not only brings in much-needed capital but also transfers technology and managerial expertise, which are essential for modernizing Ukraine's industries and enhancing productivity [57].

3. **Resilience to External Shocks and Economic Stability.** Ukraine's economy is vulnerable to a range of external shocks, including fluctuations in global commodity prices, changes in international trade dynamics, and geopolitical risks stemming from its proximity to Russia [58]. A stable banking system can serve as a buffer against these shocks by maintaining liquidity, ensuring the continuity of credit flows, and managing financial risks. The NBU's efforts to build up foreign exchange reserves and strengthen banks' capital positions will enhance the sector's ability to withstand external pressures, thereby contributing to overall economic stability [59].

Monetary Policy Transmission. The effectiveness of monetary policy in Ukraine is closely tied to the health of the banking system [60]. A well-functioning banking sector improves the transmission of monetary policy by ensuring that changes in interest rates are reflected in lending and borrowing activities. This, in turn, helps the NBU achieve its macroeconomic objectives, such as controlling inflation, stabilizing the currency, and promoting sustainable economic growth. For example, when the NBU lowers interest rates to stimulate economic activity, a stable banking system will ensure that banks pass on these lower rates to borrowers, thereby encouraging investment and consumption [61].

Fostering Public Trust and Financial Inclusion. Public trust in financial institutions is a critical determinant of the stability and effectiveness of the banking sector. In the aftermath of the 2014 crisis, Ukraine's banking system faced a crisis of confidence, with many depositors withdrawing their funds due to concerns about

bank solvency and transparency. Restoring public trust in the banking system is essential for encouraging savings, boosting financial inclusion, and promoting economic growth [62].

Increasing Depositor Confidence. A stable and transparent banking system will encourage individuals and businesses to deposit their savings in banks, thereby increasing the pool of capital available for lending [63]. Deposit insurance schemes, improved corporate governance, and enhanced regulatory oversight are key to increasing depositor confidence and preventing bank runs. By demonstrating that the banking sector is stable and well-regulated, Ukraine can foster a culture of savings that supports long-term capital formation [64].

Expanding Financial Inclusion. Financial inclusion is not only a social objective but also an economic imperative. Expanding access to financial services will enable more Ukrainians to participate in the formal economy, access credit, and invest in their future. The expansion of digital banking platforms, microfinance, and mobile payment systems offers significant opportunities to enhance financial inclusion, particularly in rural areas and among underserved populations. A well-functioning banking system that prioritizes financial inclusion will contribute to more equitable economic development and reduce poverty [66].

Integration into Global Markets. Ukraine's integration into the global economy is closely linked to the health of its banking sector. A stable and modernized banking system will facilitate closer ties with international financial markets, enabling Ukraine to attract foreign investment, access global capital, and participate more fully in international trade. The following points highlight the implications of a well-functioning banking system for Ukraine's global integration:

— **Alignment with International Standards.** As Ukraine continues to align its banking regulations with international standards – particularly those set by Basel III, the European Union, and the Financial Action Task Force (FATF) – it will improve its standing in the global financial community. Compliance with these standards will enhance the transparency, governance, and risk management practices of Ukrainian banks, making them more attractive to foreign investors and

multinational corporations [67].

Facilitation of Cross-Border Trade and Investment. A strong banking sector will also facilitate Ukraine's participation in cross-border trade and investment. By providing the necessary financing for export-oriented businesses, banks will help Ukrainian companies expand into new markets, diversify their customer base, and increase their competitiveness. Additionally, a stable banking system will make it easier for Ukrainian companies to access foreign capital markets, issue bonds, and engage in international mergers and acquisitions [68].

Support for Ukraine's European Integration Goals. Ukraine's long-term goal of joining the European Union (EU) requires a banking system that meets EU standards in terms of regulation, governance, and transparency. By continuing to reform its banking sector and align it with EU norms, Ukraine can accelerate its progress toward EU accession, which would provide a significant boost to its economic prospects. A modernized banking sector will not only facilitate Ukraine's integration into the EU's single market but also attract greater levels of European investment and trade [70].

In conclusion, the health of Ukraine's banking system will be a key determinant of the country's future economic success. While significant progress has been made in reforming and stabilizing the sector, much work remains to be done to address the persistent challenges of NPLs, financial instability, and corruption. The implementation of further reforms, combined with continued support from international financial institutions, will be essential for ensuring that Ukraine's banking sector can effectively contribute to long-term economic growth and global integration.

A stable and well-functioning banking system will not only promote domestic economic development but also enhance Ukraine's standing in the global financial community, positioning the country as a more attractive destination for investment and trade. In this way, Ukraine's banking sector can serve as a powerful engine for economic prosperity, social equity, and geopolitical stability in the years to come.

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Онлайн сервіс створення та перевірки кваліфікованого та удосконаленого електронного підпису

ПРОТОКОЛ

створення та перевірки кваліфікованого та удосконаленого електронного підпису

Дата та час: 22:32:20 16.12.2024

Назва файлу з підписом: КМР_Дін_Сяоянь.docx[1].p7s.p7s

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Підписувач - 1: АЗАРЕНКОВА ГАЛИНА МИХАЙЛІВНА

П.І.Б.: АЗАРЕНКОВА ГАЛИНА МИХАЙЛІВНА

Країна: Україна

РНОКПП: 2571514226

Організація (установа): ФІЗИЧНА ОСОБА

Час підпису (підтверджено кваліфікованою позначкою часу для підпису від Надавача): 12:45:50 09.12.2024

Сертифікат виданий: КНЕДП АЦСК АТ КБ "ПРИВАТБАНК"

Серійний номер: 5E984D526F82F38F04000000E4DA710112DF3D05

Тип носія особистого ключа: Незахищений

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Підписувач - 2: Омеляненко Денис Олегович

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Країна: Україна

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Сертифікат виданий: "Дія". Кваліфікований надавач електронних довірчих послуг

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Алгоритм підпису: ДСТУ 4145

Тип підпису: Кваліфікований

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Сертифікат: Кваліфікований

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