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ABSTRACT

of the dissertation for the degree of Doctor of Philosophy

**IMPROVEMENT DIRECTIONS FOR BANKS'
OPERATIONS IN THE MODERN CREDIT MARKET**

Speciality: 5301.01 – Domestic Fiscal Policy and Public Finance

Field of science: 53 – Economic sciences

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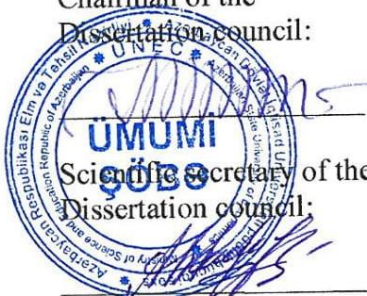
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GENERAL CHARACTERISTICS OF THE WORK

Relevance and degree of elaboration of the topic. Ensuring economic stability and sustainable development depends on a competitive and efficient banking sector. The credit market, as a vital part of the economy, operates as a system that manages the relationships between creditors and borrowers. In today's world, developing this market not only boosts the efficiency of the banking sector but also secures the sustainability of economic growth and optimal resource allocation. Increasing liquidity in the banking system, expanding operations, and implementing innovative solutions are essential for achieving the strategic goals of the national economy. The Strategic Roadmap for the Development of Financial Services, approved by the President of Azerbaijan in 2016, prioritized the development of the banking sector and credit market. Several measures have been introduced within this framework to enhance the efficiency of the financial system, improve access to financial resources, and foster better bank–customer relations. Specifically, new mechanisms for credit market growth, operational security, and advanced risk management technologies remain crucial. Improving banks' functioning in the credit market supports not only economic progress but also broadens the population's access to financial services. Global economic shifts and rapidly evolving financial markets have increased the need to analyze the credit market and develop new approaches. In this context, the experiences of Azerbaijani banks, changes in the credit market, and their economic impacts have become important research topics. Analyzing Azerbaijan's banking sector's unique features and addressing challenges in the credit market are relevant both academically and practically. Current research indicates that categorizing banking operations, identifying and assessing influencing economic factors, and managing credit risks and related issues are well-covered areas. Scholars from Azerbaijan, including A.A.Alakbarov, E.M.Sadigov, Z.F.Mammadov, M.M.Baghirov, S.M.Mammadov, C.N.Ismayilov, İ.N.Mammadov, C.Q.Abbasov, A.A.Babayev, Z.H.Ibrahimov, Z.H.Zeynalov, A.E.Karimov, and A.M.Maharramov have conducted valuable research on the characteristics and future prospects of the banking system. These studies are crucial for classifying operations, understanding the development features of the financial–banking system, and analyzing its

relationship with the economy. International economists such as Q.N.Beloglazova, V.V.Beloborodov, N.E.Egorova, A.M.Smulov, E.Altman, Alfred Hannig, Stefan Jansen, D.Ricardo, A.Smith, R.M.Solow, H.P.Minsky, J.M.Keynes, A.Marshall, D.Besar, P.Booth, K.K.Chan, A.K.L.Milne, J.Pickles, Hasan Candan, Alper Özün, and Evren Bölğün have extensively discussed credit market operations, financing mechanisms, and market evaluations through their research and theories. These works help deepen both theoretical and practical understanding of modern banking activities. In Azerbaijan, expanding research on credit market development and tailoring international experiences to local contexts is essential. Concurrently, efforts to analyze the banking sector's growth and its economic effects, along with introducing innovative financing mechanisms, are vital for ensuring economic stability and sustainable progress. The significance of this research area clearly shows that improving banks' activities in the credit market demands a comprehensive study from both theoretical and practical viewpoints.

Research Object: The research object is the modern banking sector of the Republic of Azerbaijan. **Research Subject:** The research subject comprises the economic relations arising between creditors and borrowers in the credit market within the contemporary banking system.

The purpose of the research. The main purpose of the dissertation is to ensure the development of banks' activities in the credit market under modern economic conditions, to study the theoretical–methodological and practical aspects in this field, and to elaborate scientifically substantiated proposals and recommendations for the improvement of the credit market.

In line with this purpose, the following objectives have been identified:

- To examine the theoretical and methodological foundations of banks' activities in the credit market;
- To assess the impact of borrowed funds on the economy within the credit market;
- To analyze international experience regarding banks' operations in the credit market;
- To evaluate the current state of banks' operations in the credit market;
- To explore ways of improving settlement forms in the credit market;

- To study the integration of digital technologies into banks' credit market operations;
- To develop proposals ensuring the sustainable participation of banks in the credit market;
- To design mechanisms that support operations in the credit market through the application of modern technologies;
- To elaborate recommendations on strategic directions aimed at enhancing the competitiveness of banks in the credit market;

Research Methods. In the course of the research, comparative analysis, regression analysis, systematization and generalization, as well as statistical and econometric methods, together with analysis and synthesis, were applied alongside other research techniques.

Main provisions put forward for defense. Taking into account the scientific novelties obtained from the research of the dissertation, the following main theses are submitted for defense:

- To analyze the structural elements of banks' activities in the credit market;
- To identify the main sources of creating borrowed funds in the credit market;
- To study successful practices of regulating and developing the credit market applied in developed countries;
- To explore ways of improving banks' operations in the credit market in order to enhance efficiency;
- To determine the factors influencing banks' activities in the credit market, including the role of monetary policy, and to propose strategies for managing these factors;
- To apply effective models for improving settlement forms in the credit market;
- To identify the prospects of applying digital technologies with the aim of increasing efficiency in the credit market;
- To define priority directions for ensuring the sustainable development of banks in the credit market;
- To ensure the automation of operations in the credit market through the integration of innovative technologies and the application of digital solutions;
- To determine strategic directions for enhancing the competitiveness of banks in the credit market.

Scientific novelty of the dissertation includes:

- Identification of the specific features of the theoretical and methodological foundations of banks' activities in the credit market and assessment of the impact of borrowed funds created in the credit market on the economy;
- Conducting a “CAMELS” analysis to characterize the activities of all banks operating in Azerbaijan between 2018 and 2023, with evaluation and examination of the values of each component included in the “CAMELS” framework.
- Developing a panel data regression model linking the indicators of the CAMELS components that characterize the activities of banks in Azerbaijan's credit market with GDP and inflation, using econometric and statistical models.
- Calculating the level of concentration of credit allocations across sectors of the Azerbaijani economy during 2014–2023 by means of the Herfindahl–Hirschman Index (HHI), and determining contemporary development trends based on its analysis and evaluation.
- Examining the conceptual features of the identified priority directions for the development of banks in Azerbaijan's credit market.

Theoretical and practical importance of the research. The establishment and evolution of specific principles in the credit market are of great importance for the expansion and improvement of the priorities and prospective activities of bank lending. In the research, the requirements of objective economic elements in the field of credit services, as well as in the organization of credit relations, are reflected in the principles of lending. The principles of lending constitute the foundation of the credit process, which covers the issuance, utilization, and repayment of loans. The essential requirements for the approval of bank loans are determined by these principles, which define the term and purpose of the credit, as well as its degree of conformity with the overall monetary circulation system. Among the key concepts in the credit market are the stages of the credit process—documentation, disbursement and repayment of funds—where the regularity and targeted nature of payments determine the value of credit activity. The requirement that the borrower repays the loan to the lender according to the schedule after utilizing it best describes the principle of repayment of credit.

Approbation of the dissertation. On the topic of the dissertation, the applicant has published 12 scientific works in total, including 4 abroad. These comprise 6 articles, 4 conference papers, and 2 theses.

The dissertation was completed at. The dissertation was completed at the Department of "Finance and Auditing" of the Azerbaijan State University of Economics

Volume and structure of the dissertation. The dissertation consists of an introduction, three chapters with nine paragraphs, a conclusion, and a list of references. The introduction comprises 7,897 characters; Chapter I – 66,664 characters; Chapter II – 103,912 characters; Chapter III – 73,508 characters; the conclusion and recommendations – 6,131 characters. The list of references includes 113 sources. With appendices, the total volume of the dissertation amounts to 161 pages. Excluding tables, graphs, and references, the total number of characters is 234,775.

CONTENT

Introduction

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MAIN CONTENT OF THE RESEARCH

1. Analysis of the theoretical and methodological foundations of banks' activities in the credit market

The activities of banks in the credit market have historically developed and, in the modern era, have become a key element of the multifaceted financial system. Bank loans, which have a paramount place in the credit market, have a leading role in the provision of economic development of any country and its continuation.¹ The existence of the earliest forms of credit in Babylonian and Egyptian civilizations, their more systematic application during the Roman Empire, and the emergence of banking in medieval European cities, particularly Florence and Genoa, demonstrate the antiquity and dynamic nature of this field. At the present stage, banks are not limited to financial intermediation; they also play a vital role in ensuring economic stability and social welfare through foreign exchange trading and interest-based borrowing relations. In this process, banks occupy a central position in directing financial flows. Research has revealed that banks not only perform the function of financing but also act as key intermediaries in securing economic growth. It should also be noted that without credit relations, it would be impossible to carry out modern economic processes in a stable and efficient manner. In forming approaches in this field, the theoretical and analytical perspectives of economists have been taken into account. The views of both local and foreign researchers have made it possible to gain a deeper understanding of the mechanisms of interaction between the credit market and economic development.

Between 2017 and 2024, a decline in the number of banks and bank sub-branches was observed, while the number of ATMs and POS terminals increased. In the credit market, this in turn indicates that over the years, banking services have developed more towards digitalization and improved accessibility.

¹ Eyvazli H.M. Main Directions of Bank Loans in the Credit Market // Visnyk Khmelnytskyi National University, 2023, №6, s. 23–26 <https://doi.org/10.31891/2307-5740-2023-324-6-3>

Table 1. Key indicators of the banking sector of Azerbaijan²

	2017	2018	2019	2020	2021	2022	2023	2024
Number of banks	30	30	30	26	26	25	23	22
Number of newly licensed banks	0	0	0	0	0	0	0	0
Number of banks whose licenses were revoked	2	0	0	4	0	1	2	1
Number of state-owned banks	2	2	2	2	2	2	2	2
Number of private banks	28	28	28	24	24	23	21	20
Number of banks with foreign capital	15	15	14	12	12	11	9	9
Banks with more than 50% foreign capital in charter capital	8	8	7	7	7	6	5	5
– of which local branches of foreign banks	2	2	2	2	2	1	1	1
Banks with up to 50% foreign capital in charter capital	7	7	7	5	5	5	3	3
Banking Service Network								
Number of bank branches	509	508	509	455	479	487	475	485
Number of banks sub-branches	142	130	133	109	97	91	96	88
Number of ATMs	2431	2502	2647	2715	2907	2997	3040	3230
Number of POS terminals	-	66110	67468	57120	60936	79100	86383	119540

At the same time, the types of loans, interest rates, whether loans are secured or unsecured, credit history, and the maturity of credit agreements have been analyzed from the perspective of the structure of the credit system.

2. Methodological approaches to the formation of bank resources and the sources of borrowed funds.

The availability of resources is a key condition for banks to operate in the credit market. The sources from which these resources are formed include deposits, securities, resources obtained from the Central Bank, international loans, and interbank borrowing. These sources have been

² Compiled by the author based on the data of the Central Bank of the Republic of Azerbaijan (CBAR).

analyzed by considering the structure of banks' debt capital. As a result, it has been shown that the deposit portfolio of banks plays a central role in their liquidity and lending capacity. Within the structure of deposits, the shares of time and demand deposits, as well as deposit models formed by monthly and end-of-term interest payments, have been analyzed together, and their impact on the deposit portfolio has been assessed. Data covering the years 2019–2024 on the formation of the deposit portfolio have been studied. The changes presented in Table 2 have been linked to economic and market conditions. At the same time, the level of banks' participation in the securities market and the use of bank bonds have been thoroughly examined. Furthermore, it has been observed that banks increasingly tend to use various market instruments to maintain liquidity levels and diversify their resource portfolios. These approaches have enabled banks to adopt a more flexible position in reducing risks and ensuring financial stability.

Table 2. Deposit portfolio of Azerbaijani banks, 2019–2024 (million manats)³

№	Name of the banks	Deposit Portfolio					
		2019	2020	2021	2022	2023	2024
1	ABB ASC	5635.1	5549.6	8261.7	10622.4	9396.2	10006.5
2	PAŞA Bank ASC	3585.5	4014.8	5029.4	7004.3	6935.2	6410.1
3	Kapital Bank ASC	3236.0	3805.6	5192.4	6098.6	6321.6	8978.3
4	Xalq Bank ASC	1714.9	1590.5	1543.3	1855.3	2221.0	1905.4
5	Bank Respublika ASC	1099.8	689.6	801.6	965.9	1443.8	1348.1
6	Yelo Bank ASC	314.2	235.2	352.6	572.3	1292.0	928.8
7	Unibank KB ASC	550.2	522.4	703.5	989.7	1215.9	1204.7
8	AccessBank QSC	661.0	627.6	689.8	860.1	1051.6	1026.5
9	Rabitabank ASC	500.9	546.2	724.7	607.0	753.8	677.2
10	Bank of Baku ASC	183.2	193.5	247.2	365.5	515.8	592.5
11	Azər Türk Bank ASC	180.3	179.9	207.5	385.0	484.6	1460.0
12	TuranBank ASC	249.9	280.2	417.5	429.3	458.9	461.5
13	Azərbaycan Sənaye Bankı ASC	715.1	639.9	514.4	449.7	458.6	465.9
14	Premium Bank ASC	470.8	431.1	518.4	466.5	426.8	377.7
15	Ziraat Bank Azərbaycan ASC	85.6	151.9	210.2	317.8	411.4	565.7
16	Yapı Kredi Bank Azərbaycan QSC	320.8	266.4	285.1	363.9	366.7	534.8
17	Expressbank ASC	174.2	118.7	156.1	193.1	230.4	262.1
18	AFB Bank ASC	379.4	110.6	114.6	116.2	168.3	133.0
19	Bank BTB ASC	133.3	139.3	147.4	159.2	152.9	145.2
20	Bank VTB (Azərbaycan) ASC	59.0	75.3	88.8	94.4	89.4	114.2
21	Naxçıvanbank ASC	95.6	142.2	180.3	155.4	63.4	-
22	Bank Avrasiya ASC	53.8	44.0	50.1	79.7	48.5	63.0
23	Bank Melli İran Bakı filiali	11.9	10.7	10.7	8.9	44.0	35.6

³ Compiled by the author based on the data of the Central Bank of the Republic of Azerbaijan (CBAR).

The evaluation has revealed that depositors' behavior and level of confidence are decisive factors in deposit dynamics. In addition, changes in interest rates and macroeconomic expectations have significantly influenced the maturity structure and placement models of deposits. To adapt to these changes, banks have employed models that forecast depositors' behavior in order to shape appropriate product portfolios.

Table 3. Key indicators of government securities in the credit market ⁴

Year	Volume in Circulation at Nominal Value (mln AZN)			Maturity Period (days)			Share in GS Market, %	
	Total	T-bills	CBAR Notes	Total	T-bills	CBAR Notes	T-bills	CBAR Notes
2014	227.3	200.3	27.0	644.0	728.0	21.0	88.1	11.9
2015	122.6	122.6	0.0	1021.5	1021.5	-	100.0	0.0
2016	387.1	277.4	109.6	289.8	398.3	15.0	71.7	28.3
2017	1665.4	739.8	925.6	184.4	398.8	13.0	44.4	55.6
2018	1989.2	980.9	1008.3	308.1	613.9	10.5	49.3	50.7
2019	1841.3	1141.3	700.0	443.8	706.7	15.2	62.0	38.0
2020	2362.2	1712.2	650.0	521.8	713.4	17.1	72.5	27.5
2021	2700.0	2500.2	200.0	840.4	906.7	12.0	92.6	7.4
2022	5500.1	4161.5	1338.6	679.8	857.4	127.4	75.7	24.3
2023	7697.5	6377.4	1320.1	728.8	855.1	119.0	82.8	17.2
2024	9561.4	9353.2	208.2	808.2	826.2	-	97.8	2.2

Funds obtained from the Central Bank and their role in the structure have been identified, and the role of monetary policy in liquidity management has been separately analyzed. The impact of cooperation with international financial institutions on credit resources has also been assessed. The results have shown that diversified financial sources increase the resilience of banks.

International approaches to credit risk assessment and the application of the CAMELS analysis.

The CAMELS analysis is an analytical tool widely used internationally to assess the financial condition and risk level of banks. This methodology covers evaluation across key components such as capital adequacy, asset quality, management efficiency, profitability, liquidity, and sensitivity to market risks. In the analysis of the nature and

⁴ Compiled by the author based on the data of the Central Bank of the Republic of Azerbaijan (CBAR).

management of credit risks, both international practices and the specific features of the Azerbaijani banking sector have been taken into account. The application of the CAMELS methodology has made it possible to systematically measure the main factors influencing the financial stability of banks—such as capital structure, asset quality, and management efficiency. This, in turn, has ensured the early identification of risks and the adoption of appropriate decisions. In Table 4, a panel data model with 132 observations was constructed based on the CAMELS analysis, and statistical estimation was carried out using the EVIEWS software.

Table 4. Indicators of CAMELS components of banks operating in Azerbaijan ⁵

Components	Relation	Years and Values					
		2018	2019	2020	2021	2022	2023
Capital							
C1	+	0,15	0,16	0,17	0,18	0,13	0,14
C2	+	0,32	0,31	0,33	0,30	0,29	0,26
C3	+	0,93	0,93	0,93	0,93	0,93	0,92
C4	-	0,87	0,89	0,68	0,70	0,41	0,29
C5	+	0,01	0,02	0,02	0,02	0,02	0,03
C6	+	0,14	0,16	0,16	0,14	0,14	0,15
Assets							
A1	+	0,42	0,45	0,44	0,43	0,41	0,47
A2	+	0,12	0,10	0,08	0,07	0,06	0,06
A3	+	0,14	0,11	0,14	0,14	0,19	0,15
Management							
M1	+	0,12	0,10	0,08	0,07	0,06	0,06
M2	-	0,03	0,04	0,04	0,04	0,01	0,04
M3	+	0,53	0,61	0,54	0,58	2,42	0,68
Profitability							
P1	+	0,01	0,02	0,02	0,02	0,02	0,03
P2	+	0,08	0,13	0,12	0,13	0,17	0,22
P3	+	0,53	0,61	0,54	0,58	2,42	0,68
P4	+	0,43	0,53	0,41	0,40	0,31	0,47
Liquidity							
L1	-	4,85	4,89	4,45	5,51	6,07	5,73
L2	+	0,26	0,23	0,28	0,37	0,36	0,31
L3	+	0,30	0,27	0,33	0,51	0,41	0,36
Sensitivity to Market Risk							
S1	-	2,71	3,22	3,54	4,16	2,26	1,68
S2	+	0,30	0,33	0,30	0,32	0,38	0,47
S3		0,87	0,89	0,68	0,70	0,41	0,29

The analysis revealed that banks with higher management efficiency and capital adequacy operate in a more stable manner.

⁵ Calculated by the author based on the annual reports of banks.

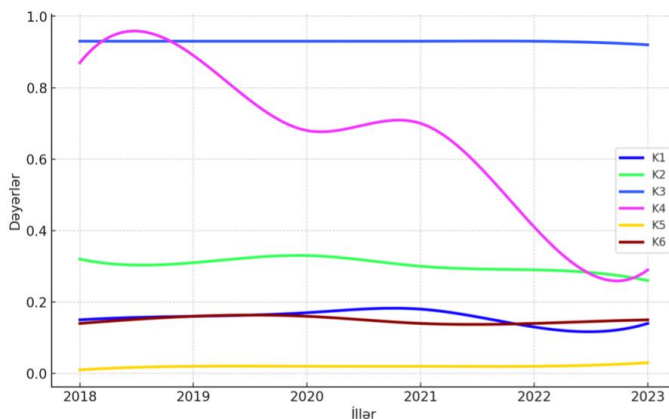


Figure 1. Dynamics of capital indicators by years ⁶

The analysis of capital indicators shows that a decline has been observed in certain measures. In particular, indicators related to foreign currency have weakened, although the share of shareholders' equity in total capital has remained stable. The K1 indicator decreased from 0.15 to 0.14 during 2018–2023, indicating a weakening of banks' capital resilience against liabilities. The K2 indicator also declined from 0.32 to 0.26, revealing a reduced role of capital in financing loans. The K3 indicator remained stable at the level of 0.93, ensuring the continued participation of shareholders in capital. The sharpest change was recorded in the K4 indicator, which dropped from 0.87 to 0.29, signaling an increase in foreign currency risks. On the other hand, the K5 and K6 indicators remained relatively stable with slight increases, emphasizing the need for additional capital policies to safeguard financial stability (figure 1).

Between 2018 and 2023, certain changes were observed in asset quality indicators. The A1 component increased from 0.42 to 0.47, indicating a rise in the share of the loan portfolio within total assets. The high value of this indicator in 2023 can be interpreted as a strengthening of banks' credit exposure.

⁶ Calculated by the author based on the annual reports of banks.

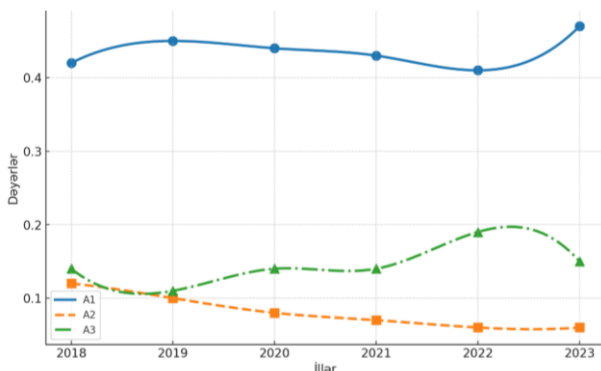


Figure 2. Dynamics of asset indicators by years ⁷

The A2 component, on the other hand, declined from 0.12 to 0.06, reflecting a reduction in reserves to cover credit risks. Although such a trend may point to a potential increase in credit risks, it requires attention in terms of maintaining credit quality. The A3 component rose from 0.14 to 0.15, signifying an improvement in transparency and efficiency in banks' investment activities. Overall, the changes in asset quality have been among the key factors influencing the financial stability of banks. (figure 2)

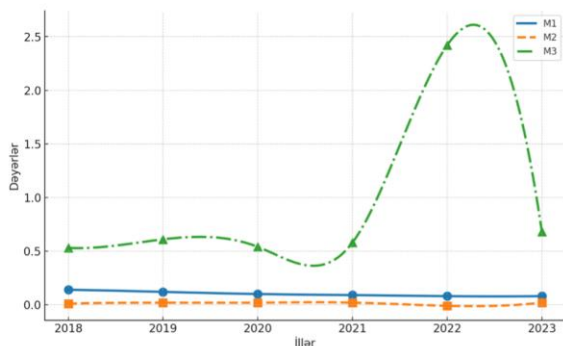


Figure 3. Dynamics of management indicators by years ⁸

The analysis of management indicators for the period 2018–2023 provides important insights into the quality of governance in the banking sector. The M1 indicator decreased from 0.12 to 0.06, which may indicate

⁷ Calculated by the author based on the annual reports of banks.

⁸ Calculated by the author based on the annual reports of banks.

a more cautious approach to managing credit risks and an improvement in credit quality. The M2 indicator declined from 0.03 to 0.01, but rose to 0.04 in 2023, reflecting a certain increase in banks' operating expenses. The M3 indicator, which stood at 0.53 in 2018, reached an unusually high level of 2.42 in 2022, before declining to 0.68 in 2023. This dynamic illustrates the variability in the balance between banks' non-interest income and expenses. Overall, the changes in management indicators reflect key trends in banks' risk management, operational efficiency, and profitability structure. (figure 3)

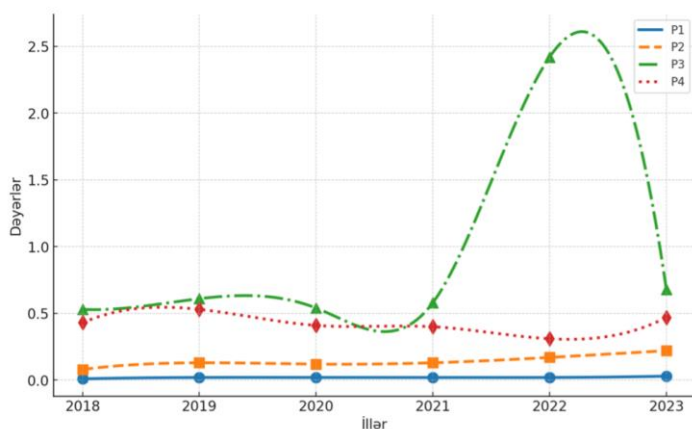


Figure 4. Dynamics of profitability indicators by years ⁹

The analysis of profitability indicators for the period 2018–2023 is of great importance in assessing the financial performance and efficiency of banks. The P1 indicator increased from 0.01 to 0.03, showing that banks generated higher profits from their assets. The P2 indicator rose from 0.08 to 0.22, emphasizing more efficient use of capital in profit generation. The P3 indicator, although it sharply increased to 2.42 in 2022, fell to 0.68 in 2023, reflecting the stabilization of the balance related to non-interest income. The P4 indicator increased from 0.43 to 0.47, demonstrating a positive trend in interest income. Overall, these changes indicate a rise in the profitability level of banks, while also

⁹ Calculated by the author based on the annual reports of banks.

showing that the variability in non-interest income should be closely monitored. (figure 4)

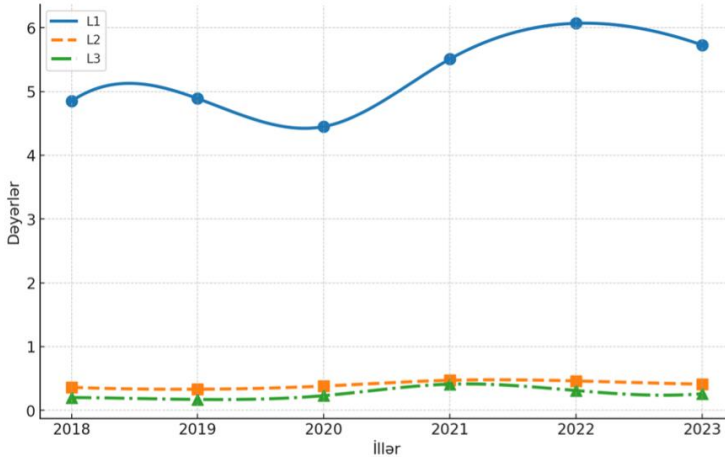


Figure 5. Dynamics of liquidity indicators by years¹⁰

The analysis of liquidity indicators for the period 2018–2023 provides important insights into banks’ ability to meet obligations and manage liquid assets. The L1 indicator increased from 4.85 to 6.07, but then declined to 5.73 in 2023, indicating an expansion of deposit-based financing, while also reflecting certain changes resulting from a reduction in reserves or an increase in capital. The L2 indicator rose from 0.26 to 0.37, before falling to 0.31, highlighting fluctuations in the liquidity level of bank assets. This suggests that liquidity strengthened in 2021 but weakened in 2023. The L3 indicator increased from 0.30 to 0.41, but fell to 0.36 in 2023, reflecting a relative weakening in the ability to cover obligations with liquid assets. Overall, the changes in liquidity indicators show that banks have maintained stable financing opportunities, although certain areas in reserve management require closer attention. (figure 5)

¹⁰ Calculated by the author based on the annual reports of banks.

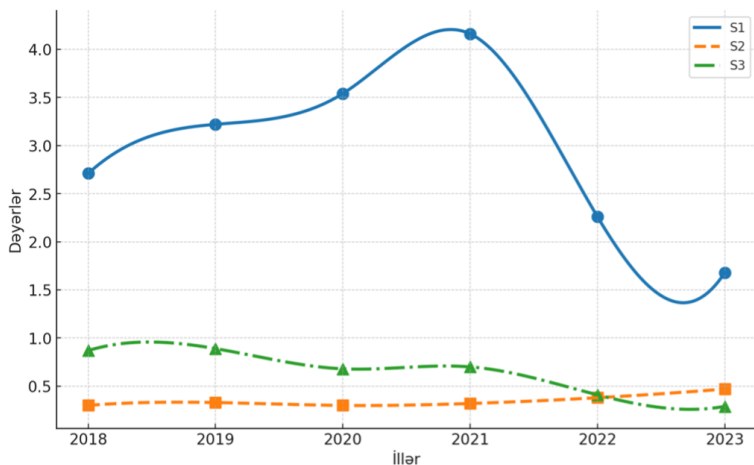


Figure 6. Dynamics of sensitivity to market risk indicators by years¹¹

The analysis of sensitivity-to-market-risk indicators for the period 2018–2023 has revealed significant changes in the management of banks’ foreign exchange positions. The S1 indicator increased from 2.71 to 3.54 in 2020 but declined to 1.68 in 2023, indicating a weakening of the ratio of foreign currency assets to liabilities and an increase in currency risks. The S2 indicator rose from 0.30 to 0.47, reflecting an improvement in the ratio of interest income to capital. The S3 indicator declined from 0.87 to 0.29, which signifies a weakening of the ratio of net foreign currency assets to capital, resulting in heightened risks. (figure 6)

This dynamic shows that banks’ sensitivity to market risks has remained high. Overall, the indicators highlight that balancing foreign exchange positions is a priority for maintaining stability in the banking sector. An increase in foreign exchange risks relative to capital and weak stability in non-interest income have been observed, emphasizing the need for diversification of banks’ income base. At the same time, the stability of operating income and the share of non-interest income components in the income structure have been evaluated as strategically important directions. This approach is considered essential for reducing dependence

¹¹ Calculated by the author based on the annual reports of banks.

on specific income sources and ensuring sustainable financial stability. These factors have been assessed as the main determinants influencing financial resilience and the sustainability of profitability indicators. Furthermore, maintaining balance in the structure of income sources has played a crucial role in strengthening banks' resistance to economic shocks. Table 5 presents the results of the regression analysis conducted on the basis of panel data. *** denotes a 10% significance level, and the figures in parentheses indicate T-statistics.

Table 5. Results of regression analysis based on panel data¹²

Variables	Coefficients		Std. Errors
Constant	4.267802***	(7.6395)	0.617838
Inflation	-0.060387***	(6.1873)	0.011821
GDP	-0.096926	(0.1592)	0.065276

The analysis shows that the coefficient of the inflation variable is negative and statistically significant. This result proves that inflation has a negative impact on the performance of the banking sector. At the same time, the coefficient of GDP was found to be statistically insignificant, which indicates that its effect is uncertain and weak. The standard errors in the models confirm the stability of the estimations and enhance the reliability of the results. These findings demonstrate that, in measuring the impact of macroeconomic fluctuations on the banking sector, inflation is a more important and influential factor. Based on the regression analysis, the results of the Hausman test indicate that the fixed effects model was chosen. A comparison of the coefficients for the inflation and GDP variables shows that the random effects model provides more stable and consistent results than the fixed effects model. These findings confirm that using the random effects model is more appropriate for evaluating the sensitivity of the banking sector to macroeconomic factors. Table 6 presents the differences observed between the coefficients obtained under the fixed and random effects models for inflation and GDP.

¹² Calculated by the author based on the annual reports of banks.

Table 6. Results of the Hausmann test¹³

Hausmann Test		
Variable	Fixed effects	Random Effects
Inflation	-0.06050	-0.06180
GDP	-0.00360	-0.08980

The values obtained for inflation were estimated at -0.06050 and -0.06180, while for GDP they were -0.00360 and -0.08980, respectively. The analysis of the table shows that, based on the results of the Hausman test, the random effects model is the more appropriate choice for panel data. The comparison of coefficients for the inflation and GDP variables indicates that the random effects model provides more stable and consistent results than the fixed effects model. These findings confirm that the use of the random effects model is more appropriate for assessing the sensitivity of the banking sector to macroeconomic factors.

4. Analysis of the concentration level in the loan portfolio and its management.

The analysis of the concentration level in the loan portfolio has revealed that large volumes of loans directed to the same sector pose risks for commercial banks. Based on the data covering the years 2014–2024, Table 7 shows that credit concentration was observed in the trade, construction, and agriculture sectors, which has been evaluated as an important factor in terms of portfolio diversification.

To mitigate these risks, it has been considered necessary to implement a balanced lending policy across sectors, introduce early warning systems, and strengthen human resource capacity. In addition, structural changes in the loan portfolio over the years and the growth rates of loans by sector have been evaluated on the basis of statistical analysis.

¹³ Calculated by the author based on the annual reports of banks.

Table 7. Level of credit concentration by economic sectors in the credit market (HHH) ¹

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Trade and Services Sector	209.0	211.2	225.1	309.7	334.0	265.2	321.9	305.5	267.8	217.9	201
Mining and Utilities Sector (Electricity, Gas, Steam, and Water Supply)	1.1	2.1	13.1	7.2	10.4	16.4	13.0	3.2	1.8	9.9	7
Agriculture, Forestry, and Fisheries Sector	20.9	5.5	7.2	13.3	13.0	12.6	15.2	0.0	0.0	4.9	4
Construction Sector	189.9	198.7	134.7	21.6	8.9	9.7	11.5	27.8	29.6	22.4	40.3
Industry and Manufacturing Sector	119.6	80.4	59.2	27.9	29.5	32.5	74.0	32.2	27.6	25.5	29.8
Transport and Communications Sector	15.8	45.5	59.7	91.8	110.8	62.0	34.1	18.5	15.4	35.4	40.3
Households	1937.3	1488.4	1269.3	1534.9	1669.2	2081.0	2132.0	2527.7	3119.4	3411.8	3381.4
Real Estate Transactions (including Mortgage Loans)	43.2	50.4	107.3	218.3	201.4	161.3	207.6	210.4	222.8	229.3	212.9

¹ Compiled by the author based on the data of the Central Bank of the Republic of Azerbaijan (CBAR).

5. Directions of bank lending and strategic priorities

The real allocation of bank loans is of particular importance for supporting the priority sectors of the economy and ensuring the efficient use of resources. In Azerbaijan, the main focus in the credit market has been on financing micro, small, and medium-sized enterprises (MSMEs), expanding consumer lending, and increasing access to credit in the regions. The assessment has shown that loans provided to MSMEs have made a significant contribution to enhancing economic activity. In 2023, the total volume of loans issued to MSME entities reached 6.4 billion manats. In consumer lending, the volume of non-performing loans amounted to 197 million manats, with a non-performing loan ratio of 2.8 percent. These indicators demonstrate growth in both the volume and quality of the loan portfolio.

6. Digitalization of the credit market and international experience

According to the research of several scholars, in the context of Vietnam, the entry of foreign banks into the agricultural credit market has ensured the expansion of financial services in areas where traditional banking systems have been insufficient.¹⁴

Based on Balyuk's research, the application of FinTech lending has enabled bank customers to obtain credit more quickly and conveniently.¹⁵

Research conducted by Frederic Mishkin has shown that for monetary policy to be effectively transmitted, the banking system must be stable and liquid.¹⁶

The study conducted by Cecchetti and Schoenholtz noted that effective credit mechanisms strengthen the intermediary function of banks in the economy.¹⁷

¹⁴ Linh, T. N., Long, H. T., Chi, L. V., Tam, L. T., & Lebailly, P. Access to rural credit markets in developing countries, the case of Vietnam: A literature review. *Sustainability*, 11(5), 2019., s 1468.

¹⁵ Balyuk, T.-FinTech lending and bank credit access for consumers. *Management Science*, 69(1), 2023 / 555-575 s.

¹⁶ Frederik S.Mişkin-Pul, bank və maliyyə bazarlarının iqtisadiyyatı, Pearson-2016, 700 s.

¹⁷ Cecchetti, S. G., & Schoenholtz, K. L. (2017). *Money, banking, and financial markets*. McGraw-Hill.

According to the research of Taghizadeh-Hesary and his colleagues, green financing instruments enhance the sustainability of banks' loan portfolios.¹⁸

The study conducted by Kaya demonstrated that digitalization plays an effective role in credit risk assessment.¹⁹

Puschmann notes that the impact of digital technologies on banking activities is steadily increasing, leading to the reshaping of banking models.²⁰

The study conducted by Yazdanfar and Öhman has shown that there is a significant relationship between debt financing and firms' financial performance.²¹

Based on international experience, foreign examples influencing the development of the credit market have been analyzed. The regulatory mechanisms and credit risk assessment models applied in the United States, EU countries, China, India, Singapore, and Japan have been examined. The evaluation shows that in developed countries, regulatory frameworks are stricter, which has had a positive impact on credit stability.

The impact of digitalization on the credit market is also noteworthy in the Azerbaijani context. Trends related to money supply in manats, the increase of cash in circulation, and interbank settlement forms in 2023 have been analyzed. For example, in 2023 the M0 indicator rose to 15.9 billion manats, while M2 reached 35.4 billion manats. The analysis revealed that digital operations have strengthened liquidity management.

7. Prospects for the application of digital technologies in the credit market

In recent years, the digitalization of banking services in the credit market has accelerated. This includes enhancing the role of digital technologies in loan evaluation, customer risk analysis, personalized product offerings, and automated decision-making mechanisms.

¹⁸ Taghizadeh-Hesary, F., Yoshino, N., & Phoumin, H.-Analyzing the characteristics of green bond markets to facilitate green finance in the post-COVID-19 world. *Sustainability*, 13(10),2021. s. 5719.

¹⁹ Kaya F. – Bankacılık, BETA n. / 2022, 576 s.

²⁰ Puschmann, T. *Fintech. Business & Information Systems Engineering*, 59, 2017., s 69-76.

²¹ Yazdanfar, D., & Öhman, P. (2015). Debt financing and firm performance: an empirical study based on Swedish data. *The Journal of Risk Finance*, 16(1), 102-118.

Analyses of the credit market have shown that artificial intelligence and big data analytics have led to more accurate assessments of credit risks and a reduction in default cases. By analyzing customer behavior, incorporating social data into assessments, and modeling online activities, it has become possible to make more objective decisions. The evaluation has revealed that these technologies are essential both for reducing operational costs and for increasing the repayment rate of loans.

The introduction of digital credit products, the integration of mobile applications, and the use of blockchain technology to enhance transparency have demonstrated that the credit market has entered a new stage. Reducing costs, expanding geographical coverage, and improving operational efficiency are necessary for ensuring that credit services reach a wider audience.

As a result of the dissertation, proposals and recommendations of scientific and practical significance have been summarized:

1. It is recommended to balance the loan portfolio across sectors. Analyses have shown that a high level of concentration in the loan portfolio is directed mainly toward trade and services. This increases the overall risk profile of banks. Therefore, portfolio diversification should be implemented, and credit limits should be determined in accordance with risks across different sectors.
2. Early warning systems should be established for banks, and real-time monitoring systems based on CAMELS analysis should be applied. For the early identification of risks, it would be appropriate to use automated models based on statistical indicators and macroeconomic fluctuations
3. To mitigate the negative impact of inflation on the credit market, the Central Bank should regulate interest rate policy and money supply in a more flexible manner. Since banks' profitability indicators weaken during periods of inflation, the use of monetary instruments would be effective in softening this impact
4. Expanding banks' regional branch networks would be advisable in order to increase access to credit resources for the population and businesses. Alongside digital technologies, the development of

physical banking infrastructure will strengthen financial inclusion in the regions.

5. Government support programs should be established for the application of digital technologies in the credit market, and the development of innovative credit platforms should be encouraged. Preferential financing mechanisms and tax incentives for banks' technological modernization would yield effective results.
6. The personalization of credit market products will allow for the preparation of offers tailored to various customer segments. This will both improve service quality and enable the formation of credit models aligned with borrowers' repayment capacity.
7. Compliance with capital adequacy standards should be strictly monitored for the financial stability of banks, and additional requirements should be introduced where necessary. Based on CAMELS indicators, the capital positions of banks should be periodically evaluated as a key factor.
8. The coverage of the deposit insurance system in banks should be expanded, and institutional mechanisms should be improved to preserve depositors' confidence. Protecting deposits would be more effective as one of the key factors ensuring trust in the credit market and the stability of the resource base.

The main findings of the thesis, the obtained conclusion and recommendations are reflected in the following published scientific works:

1. Kredit bazarının formalaşmasının nəzəri əsasları // – Bakı: Azərbaycan aqrar elmi beynəlxalq elmi-praktiki jurnalı , – 2021. № 1, – s. 106-110.
2. Kredit bazarlarında bank risklərinin yaranma səbəbləri və həlli yolları // – Bakı: Geostrategiya jurnalı, – 2022. № 6, Cild 72 – s. 125-128.
3. Müasir dövrdə kredit bazarında ödəniş üsulları // – Bakı: Azərbaycan əmək və sosial münasibətlər akademiyası. Əmək və sosial münasibətlər Elmi-praktik jurnal– 2023. № 2, Cild 20, – s. 140-147.
4. Principal sources of creation of debt funds in the credit market Multidisciplinary journal Pantei proceedings of Azerbaijan high technical educational institutions, Tallinn jurnal– 2023. № 2, Cild 25, – s. 112-122.
5. Main directions of bank loans in credit market //Науковий журнал Вісник. Хмельницького національного університету. Економічні науки, Хмельницький журнал– 2023. № 6, – s. 23-26.
6. Bank kredit sistemində prioritet istiqamətlərin ümumiləşdirilməsi // – Bakı:Beynəlxalq ictimai-siyasi, elmi-nəzəri jurnal Geostrategiya, – 2024. № 1, Cild 79, – s. 161-165.
7. Pandemiya dövründə Azərbaycanda kredit bazarı fəaliyyətinin prioritet istiqamətləri // – Mingəçevir , Davamlı inkişaf strategiyası: qlobal trendlər, milli təcrübələr və yeni hədəflər. I Beynəlxalq elmi konfransın materialları,– 2021. № 2, – s. 303-305.
8. Online banking and improvement of development directions of banks in Azerbaijan in modern world // Электронный сборник статей V Международной научнопрактической конференции Устойчивое развитие экономики: международные и национальные аспекты, Полоцкий государствен-ный университет, Ново-полоцк, – 2022. – s. 43-47.
9. Maliyyə sisteminin fəaliyyəti və bu sistemdə bankların funksiyası // – Bakı: Qədim diyar Beynəlxalq onlayn elmi jurnal. I Respublika elmi konfransının materialları, – 2022. № 1, – s. 118-121.

10. The main sources of creation of debt funds in the credit market// – Izmir: 3RD International "Artemis" congress on humanities and social sciences, – 2023. – s. 283-284.
11. Methodological Assessment of the Economic Basis of the Credit Market // – Bakı: "İqtisadiyyat və idarəetmə" sahəsində magistr və doktorantların beynəlxalq elmi konfransı. – 2021. – s. 247.
12. Bankların kredit bazarında rəqəmsal texnologiyaların tətbiqi və onun inkişafı // – Gəncə : Beynəlxalq konfrans Gənc alimlərin "Şuşa ili"nə həsr olunub. Gənc alimlərin Beynəlxalq elmi konfransı,– 2022. – s. 9-11.



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