

## METHODS OF IMPROVING CREDIT RISK MANAGEMENT IN COMMERCIAL BANKS

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**Abstract:** This scientific article is dedicated to exploring effective methods for managing credit risks in Uzbekistan's commercial banks, as loans constitute the primary share of bank assets, and their quality is crucial for ensuring liquidity and financial stability. The study highlights opportunities to reduce the share of non-performing loans and strengthen the stability of the banking system through diversification of the credit portfolio, stress testing, and the implementation of digital monitoring systems. The article provides practical recommendations aimed at enhancing global competitiveness and ensuring economic reliability.

**Keywords:** Credit risk, non-performing loans, liquidity coverage ratio, capital adequacy ratio, risk appetite, risk profile, Basel III, IFRS 9, artificial intelligence, big data, financial stability.

### INTRODUCTION

The issue of credit risk management in commercial banks occupies an important place in ensuring the sustainability of global financial systems and supporting economic development. Banks, as the heart of the economy, face serious risks in meeting the financial needs of society due to the consequences of credit risks. According to international financial organizations, in 2023, credit losses in the global banking sector reached US\$ 1.2 trillion, which underscores the importance of risk management systems [1]. However, this process is inextricably linked to credit risks, and these risks directly affect the financial stability, liquidity and profits of banks. According to the International Finance Corporation (IFC), in 2024, about 5-7% of the loan portfolio in the global banking sector faced risks associated with loss of solvency [2]. However, this process is inextricably linked to credit risks, and these risks directly affect the financial stability, liquidity and profits of banks. According to the International Finance Corporation (IFC), in 2024, about 5-7% of the loan portfolio in the global banking sector faced risks associated with loss of solvency [2]. According to World Bank reports, effective credit risk management can increase banks' profitability by 20-30% and ensure financial stability during economic crises [3]. The digital transformation and expansion of financial services in the Uzbek economy require new approaches to credit risk management. For example, risk assessment models based on the analysis of artificial intelligence (AI) and big data (big data) are widely used in internationally developed banks [4].

Commercial banks in Uzbekistan function as the financial backbone of the economy. Although the quality of loan portfolios in Uzbekistan improved by 15% in 2018-2023, the need to adapt international standards such as Basel III and IFRS 9 to local conditions remains an urgent problem [5]. Commercial banks in Uzbekistan function as the financial basis of the economy. Although the quality of loan portfolios in Uzbekistan improved by 15% in 2018-2023, the need to adapt international standards such as Basel III and IFRS 9 to local conditions remains an

urgent problem [5]. The growth of the loan portfolio in Uzbekistan is associated with the expansion of economic activity, especially noticeable is the growth in financing of small and medium-sized businesses (SMEs) and individual entrepreneurship. According to the Central Bank of Uzbekistan, the total amount of loans allocated to the economy in 2024 increased by 14.3% compared to 2023 and amounted to 287 trillion soums [6]. Although this growth is a positive indicator of economic development, the share of unpaid loans (4-6%) affects the financial stability of banks [7]. According to the National Bank of Uzbekistan, the total amount of loans allocated to the economy in 2024 increased by 14.3% compared to 2023 and amounted to 287 trillion soums [6]. Although this growth is a positive indicator of economic development, the share of unpaid loans (4-6%) affects the financial stability of banks [7]. The Basel Standards I, II and III, developed by the Basel Committee on Credit Risk Management, are important [8].

In the Decree of the President of the Republic of Uzbekistan "On the Strategy for reforming the banking system of the Republic of Uzbekistan for 2020-2025", approved by Decree of the President of the Republic of Uzbekistan dated May 12, 2020 No. PF-5992, improvement of the quality of the loan portfolio and risk management, following a moderate increase in lending volumes are identified as priority areas for reforming the banking system of the republic [9]. Decree of the President of the Republic of Uzbekistan "On the Strategy of reforming the banking system of the Republic of Uzbekistan

#### LITERATURE REVIEW

There has been extensive research into credit risk management in the scientific research of international economists. The Basel III (2010) standards provide a global approach to reducing credit risks by strengthening banks' capital adequacy and liquidity cover standards [10]. These standards are important in reducing the share of troubled loans and ensuring financial stability. IFRS 9 (2014) offers advanced approaches to early credit loss detection and forecasting as international accounting standards for financial instruments, improving banks' risk management systems [11].

The analysis of this literature was compiled in order to study the theoretical and practical aspects of credit risk management in commercial banks, to synthesize international and domestic research and to identify research gaps for the banking system of Uzbekistan. The essence, types, international standards (Basel rules), theoretical models (PD, LGD, EAD) and supporting theories (portfolio, agency, structural model, asymmetric information) of credit risks are analyzed in depth. The Z-score model proposed by Altman (1968) analyzes utility, liquidity, and leverage ratios to predict enterprise bankruptcy [12]. This model has been proven to be effective in US and European banks [13], but has limitations in Uzbekistan due to the uncertainty of Enterprise reports [14]. Joel Bessis (2015) in his work "Risk Management in Banking" proposes integrative management of credit risks with other types of risk (market, operational, liquidity) [15]. His approach emphasizes AI (AI) and Big Data (big data) Based risk Assessment Systems. For example, JPMorgan Chase (2023) reduced credit risks by 15% using AI [16]. In Uzbekistan, however, data quality and infrastructure constraints make this approach difficult to Apply [17]. Stuart I. Greenbaum and Anjan V. Thakor's work "Banking and Financial Institutions: a Risk Management Perspective"

treats credit risk as a central element of banking, offering tools such as Expected Loss, Unexpected Loss, and Value-at-Risk [18]. They highlight problems such as information imbalance, incorrect assessment of the borrower's financial situation, and portfolio concentration. In the banks of Uzbekistan, these problems are noticeable, in particular, in COB loans [19]. John C. Hull (2018) in his work "Risk Management and Financial Institutions" highlights credit portfolio diversification, modern rating systems and stress-testing [20]. They highlight problems such as information imbalance, incorrect assessment of the borrower's financial situation, and portfolio concentration. In the banks of Uzbekistan, these problems are noticeable, in particular, in COB loans [19]. John C. Hull (2018) in his work "Risk Management and Financial Institutions" highlights credit portfolio diversification, modern rating systems and stress-testing [20]. Although these methods are successfully used in international banks, data transparency and technological infrastructure restrictions in Uzbekistan make them difficult to introduce [21].

International Studies confirm the positive impact of credit risk management on bank stability. Berger and Humphrey (1997) showed that diversification in U.S. banks reduces risks by 15-20% [22]. According to a McKinsey (2023) report, AI-based systems have reduced NPL stake in global banks to 25% [23]. Studies confirm the positive impact of credit risk management on bank stability. and Humphrey (1997) showed that diversification in U.S. banks reduces risks by 15-20% [22]. According to a McKinsey (2023) report, AI-based systems have reduced NPL stake in global banks to 25% [23]. Claessens and Laeven (2004) found that the LCR indicator in European banks provides stability during times of crisis [24].

Research by Uzbek scientists Khasanov and Ismailov on credit risk management (2020) suggest that the NPL share in COB and consumer loans is 4-6%, with low data transparency increasing risks [25]. Research by Uzbek scientists Khasanov and Ismailov on credit risk management (2020) suggest that the NPL share in COB and consumer loans is 4-6%, with low data transparency increasing risks [25]. Karimov (2021) indicates the impact of stress-testing on macroeconomic factors, and Rustamov (2022) indicates the NPL reduction potential of AI and big data Systems by 10-15%, but notes technological and legislative limitations as a problem [26, 27]. Research conducted in Pakistan's banking system (Frontiers, 2022) shows that Basel standards and hard credit analysis reduce the share of NPL [28]. For example, Habib Bank Limited has downgraded NPL to below 5% through strict monitoring. For Uzbekistan, this experience may be useful in COB lending, but reports transparency and digital infrastructure problems make it difficult to introduce [29]. Vietnamese Studies (Hanh et al., 2021) confirm the negative impact of NPL share on ROA and ROE [30]. Vietnamese banks are introducing digital technologies and stress-testing, but reliance on traditional methods increases risks. Uzbek banks can take advantage of Vietnamese experience, but infrastructure and macroeconomic factors (inflation, exchange rate) create restrictions [31]. Brown and Smith (2019) found that UK banks reduced operating costs by 15% using AI and Big Data. This experience may be useful for Uzbekistan, but the digital infrastructure of local banks is limited.

## RESEARCH METHODOLOGY

In this research methodology, methods of quantitative and empirical, statistical and comparative analysis were used. Analysis was also carried out through the data of the annual data of the Central Bank, The Financial Statements of the ATB “Agrobank”, credit risk management practices of international banks.

## ANALYSIS AND RESULTS

Commercial banks are the main institutions that provide financial stability and growth in the modern economy. According to the Central Bank of the Republic of Uzbekistan (MB), as of October 1, 2024, the total assets of the country's banking system amounted to 595.4 trillion soums, which increased by 76.8% from the figure of 336.7 trillion soums in 2020 [21]. Commercial banks are the main institutions that provide financial stability and growth in the modern economy. According to the Central Bank of the Republic of Uzbekistan (MB), as of October 1, 2024, the total assets of the country's banking system amounted to 595.4 trillion soums, which increased by 76.8% from the figure of 336.7 trillion soums in 2020 [21]. However, credit operations are the central direction of banking activity, and credit risks – the possibility of non – fulfillment of the obligations of borrowers – pose a serious threat to the financial stability of banks. According to the Fitch Ratings forecast for 2025, the share of problem loans (NPL) in banks of Uzbekistan can reach 9-10% in 2025-2026, which means a significant increase from 8% in 2023 [8]. According to the Fitch Ratings forecast for 2025, the share of problem loans (NPL) in banks of Uzbekistan can reach 9-10% in 2025-2026, which means a significant increase from 8% in 2023 [8]. As of 1 January 2024, NPL covers 3.8% of the total loan portfolio with a volume of 16.6 trillion soums, while a 0.1% decrease from 2023, deferred loans in private banks exceeded 2 trillion soums [17].

Credit risks affect the liquidity, profitability and capital adequacy of banks. The 2008 global financial crisis caused a US \$ 10 trillion loss to the global economy as a result of credit risk misjudgment, prompting the introduction of Basel III standards, which require a capital adequacy ratio (CAR) of at least 8% [1]. Credit risks affect the liquidity, profitability and capital adequacy of banks. The 2008 global financial crisis caused a US \$ 10 trillion loss to the global economy as a result of credit risk misjudgment, prompting the introduction of Basel III standards, which require a capital adequacy ratio (CAR) of at least 8% [1]. In Uzbekistan, the average car rate of banks in 2024 was 24.3%, although it is higher than international requirements, the problems of the quality of the loan portfolio remain [39].

Law No. 580 of the Republic of Uzbekistan “on banks and banking activities” of November 5, 2019 prohibits the intervention of state bodies, while ensuring the independence of banks in the formation of a credit portfolio [40]. Law No. 580 of the Republic of Uzbekistan “on banks and banking activities” of November 5, 2019 prohibits the intervention of state bodies, while ensuring the independence of banks in the formation of a credit portfolio [40]. At the same time

Table 1

Non-performing loans (NPL) of commercial banks of the Republic of Uzbekistan (by year as of January 1)

№	Specification	2020	2021	2022	2023	2024	2025
1.	Loans, billion soums	211580,5	276974,8	326385,6	390048,9	471405,5	533121,2



2.	Problem loans (NPL), billion soums	3169,1	5784,8	16974,0	13992,4	16621,4	21185,1
3.	Share of problem loans in total loans, in percentage	1,5	2,1	5,2	3,6	3,5	4

Source: prepared by the author on the basis of information from the central bank.

According to Table 1, the total credit portfolio of commercial banks of Uzbekistan shows a growth trend in 2020-2025. The loan volume of 21.6 trillion soums in 2020 has grown by 2.5 times, reaching 533.1 trillion soums by 2025. According to Table 1, the total credit portfolio of commercial banks of Uzbekistan shows a growth trend in 2020-2025. The loan volume of 21.6 trillion soums in 2020 has grown by 2.5 times, reaching 533.1 trillion soums by 2025. This increase is due to an increase in lending activity in the economy of Uzbekistan, economic growth rates of banking system systems for 2020-2025 (GDP growth of 6% in 2024). The rapid growth of the loan portfolio requires an additional burden in managing credit risks, as higher lending volumes can make more purchases of troubled loans. The volume of troubled loans increased from 3.2 trillion in 2020 to 21.2 trillion in 2025, representing a 6.7-fold increase. The rapid growth of the loan portfolio requires an additional burden in managing credit risks, as higher lending volumes can make more purchases of troubled loans. The volume of troubled loans increased from 3.2 trillion in 2020 to 21.2 trillion in 2025, representing a 6.7-fold increase. The peak in this regard was observed in 2022 (16.9 trillion soums), which is explained by economic uncertainties, global supply chain disruptions and the COVID-19 pandemic. In 2023, the size of NPL was reduced by 14.0 trillion soums, which is estimated as the central bank's debt burden regulation fee (e.g., owned by debtors). However, the re-growth in NPL size in 2024 and 2025 (16.6 and 21.2 trillion soums) is associated with growth in unsecured consumer loans (9% in 2024) and economic uncertainties. In 2023, the size of NPL was reduced by 14.0 trillion soums, which is estimated as the central bank's debt burden regulation fee (e.g., owned by debtors). However, the re-growth in NPL size in 2024 and 2025 (16.6 and 21.2 trillion soums) is associated with growth in unsecured consumer loans (9% in 2024) and economic uncertainties. The dynamics of problem loans (NPL) the share of loans in total loans was 1.5% in 2020 and reached 5.2% in 2022, seeing a sharp increase in credit risks in the banking system. The share reduction (3.6% and 3.5%) in 2023 and 2024 are the result of accepted plans for improving the credit quality of banks, integration of credit bureaus with tax and utility systems. but, the increase in NPL share to 4.0% in 2025 is in line with Fitch Ratings forecasts (9-10% in 2025-2026) and underlines that it continues to manage its loans. The share reduction (3.6% and 3.5%) in 2023 and 2024 are the result of accepted plans for improving the credit quality of banks, integration of credit bureaus with tax and utility

Table 2

Loans allocated by commercial banks of the Republic of Uzbekistan (by sector)

№	Specification	Years					
		2019	2020	2021	2022	2023	2024
1.	Sanoat	30,8	32,7	30,9	29,6	26,6	26,1

2.	Qishloq xo'jaligi	10,0	14,8	12,7	7,9	5,8	7,1
3.	Qurilish	3,9	3,9	4,1	3,9	2,7	2,8
4	Savdo va umumiy ovqatlanish	9,3	14,4	16,2	14,9	12,1	13,4
5	Transport va kommunikatsiya	6,9	3,4	3,8	3,6	3,8	2,5
6	Jismoniy shaxslar	18,8	22,4	24,4	32,1	39,9	36,4
7	Boshqalar	20,2	8,5	8,0	8,0	9,1	11,4

Source: Prepared by the author based on data from the Central Bank.

According to Table 2, changes in the distribution of commercial banks of Uzbekistan by credit networks are considered important. The share of loans allocated to individuals increased from 18.8% in 2019 to 36.4% in 2024, rising to 17.6 percentage points. This view peaked in 2023 with 39.9%. According to Table 2, changes in the distribution of commercial banks of Uzbekistan by credit networks are considered important. The share of loans allocated to individuals increased from 18.8% in 2019 to 36.4% in 2024, rising to 17.6 percentage points. This view peaked in 2023 with 39.9%. The increase is due to increased demand for consumer loans, especially with non-collateral loans accounting for 9% of the total portfolio in 2024. However, the trend is to consider risks such as an increase in the share of troubled loans (NPL) by 3.5% in 2024 and 4.0% in 2025 (Fitch Ratings forecast: 9-10%). The share of lending in other industries is falling. However, the trend is to consider risks such as an increase in the share of troubled loans (NPL) by 3.5% in 2024 and 4.0% in 2025 (Fitch Ratings forecast: 9-10%). The share of lending in other industries is falling. Loans to the industrial sector will remain from 30.8% in 2019 to 26.1% (-4.7 percentage points) in 2024, and from 10.0% to 7.1% (-2.9 percentage points) in agriculture. The construction (-1.1 percent point) and transport and communication (-4.4 percent Point) areas were also reduced. This is explained by the restriction of corporate lending and the reallocation of state subsidies. Trade and catering sector loans reached 16.2% in 2021 and fell to 13.4% in 2024, reflecting pandemic-related demand growth and subsequent recovery. This dynamic is to show a reduction in demand for banking services and corporate lending. Trade and catering sector loans reached 16.2% in 2021 and fell to 13.4% in 2024, reflecting pandemic-related demand growth and subsequent recovery. This dynamic is to show a reduction in demand for banking services and corporate lending. While the credit activity ratio (KAFK) is 55% in 2024, denoting a balanced policy, NPL growth emphasizes the need to improve credit quality and produce production analysis.

Relatively strict monetary conditions were ensured in the first quarter of 2025, in order to ensure inflation is in the forecast corridor, as well as to curb inflationary expectations. The real level of the main rate of the central bank, calculated on the basis of the forecast of inflation for the coming period (after 6 months)

In Q1 2025, there was a slight acceleration in the growth of the balance of credit investments allocated to the population, and the downward trend, which continued until the end of 2024, changed to a growing trend. As of the end of March 2025, the population's loan investment growth was 21.1 percent, accelerating to 1.7 percent per year. In Q1 2025, there was a slight acceleration in the growth of the balance of credit investments allocated to the population, and

the downward trend, which continued until the end of 2024, changed to a growing trend. As of the end of March 2025, the population's loan investment growth was 21.1 percent, accelerating to 1.7 percent per year. The main growth in the structure of loans coincided with the contribution of microcarriers, microcredit and mortgage loans. Also, the decrease in the balance of auto loans accelerated to 2.4 percent.

In January-March 2025, the population was allocated a total of 34.9 trillion soums, or 74% more loans than in the corresponding period of 2024. The relative acceleration of their loans allocated to the population can be explained by the increase in their demand for mortgage loans, microcarriers and microloans against the background of population income growth. In January-March 2025, the population was allocated a total of 34.9 trillion soums, or 74% more loans than in the corresponding period of 2024. The relative acceleration of their loans allocated to the population can be explained by the increase in their demand for mortgage loans, microcarriers and microloans against the background of population income growth. In Q1 2025, 53.6% of total population loans were credited to microcarriers, 15.6% to microloans, 12.8% to mortgages, 10% to auto loans, and the remaining 8% to other loans. In addition, in the i quarter of 2025, compared with the corresponding period of the previous year, microcars and microloans decreased by 2.3 and 1.9 times, funds allocated through credit cards by 3.3 times, while mortgages increased by up to 26.3 percent, and auto loans decreased by up to 17.6 percent.

Against the background of high formation of demand for general loans, high inflationary expectations and tight external financial conditions, and an increase in demand for internal financial resources, the percentage of term deposits was formed on average around 19.2 percent with imperceptible fluctuations during the i quarter of 2025. Against the background of high formation of demand for general loans, high inflationary expectations and tight external financial conditions, and an increase in demand for internal financial resources, the percentage of term deposits was formed on average around 19.2 percent with imperceptible fluctuations during the i quarter of 2025. Also, in March, the average nominal interest rate on the term deposits of individuals was 22.1 percent, and the real interest rate calculated taking into account inflationary expectations was 6.9 percent. In particular, in the first quarter of 2025, the population's term deposits in the national currency increased by 12.1% (62.3% in the annual account) to 60 trillion soums. The annual growth of total deposits was 34.5 percent, of which the annual growth rate of deposits in the national currency accelerated to 4.3 percent bandages and was 44.7 percent. In particular, in the first quarter of 2025, the population's term deposits in the national currency increased by 12.1% (62.3% in the annual account) to 60 trillion soums. The annual growth of total deposits was 34.5 percent, of which the annual growth rate of deposits in the national currency accelerated to 4.3 percent bandages and was 44.7 percent. A downward trend in the level of dollarization in the banking system continued as a result of the relatively rapid growth rate of loans and deposits in the national currency. In particular, as of April 1, 2025, the dollarization rate of loans was 40.2 percent (41.1 percent at the beginning of the year), as well as the dollarization rate of deposits was 24.5 percent (25.5 percent at the beginning of the year). In particular, as of April 1, 2025, the dollarization rate of loans was 40.2 percent (41.1 percent at the beginning of the year), as well as the dollarization rate of deposits was 24.5 percent (25.5 percent at the beginning of the year). At the end of the 1st quarter of 2025, against the background of the occurrence of probable risks on inflation (mainly risks associated with gross supply factors), the central bank's basic rate was increased by 0.5 percent points, set at the level of 14 percent, and the level of rigor of monetary policy was increased.

"Agrobank" is one of the largest and most specialized banks in the Republic of ATB and is especially actively involved in financing agriculture, small business and territorial projects. The bank's activities in this regard are analyzed through the quality of the loan portfolio, the level of risk, the Reserve policy on risks and the monitoring system. ATB "Agrobank" conducted an in-depth analysis based on credit policies and risk management practices implemented during the period 2020-2024.

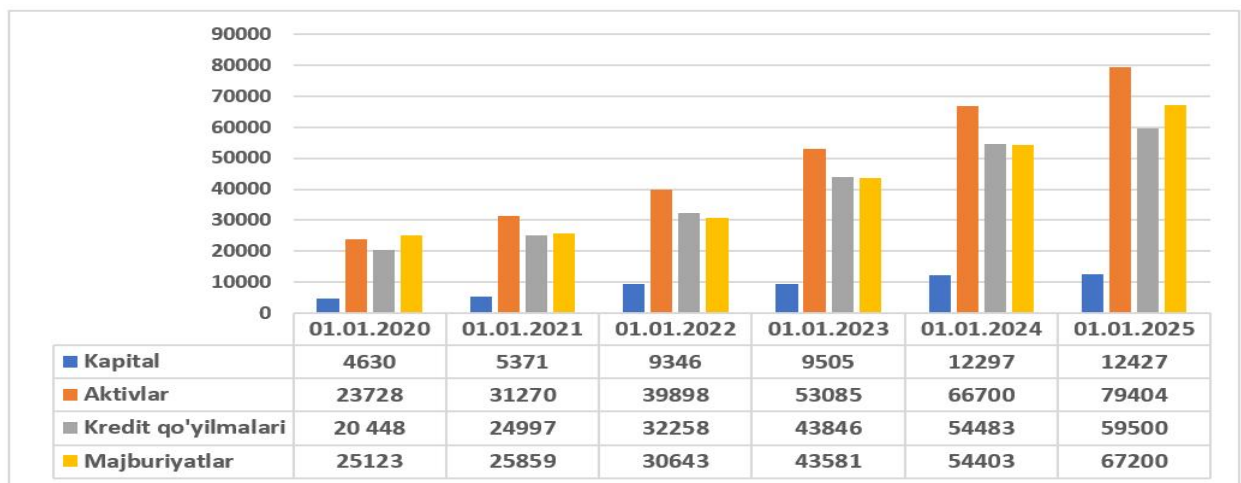


Figure 1: Activity coefficient for lending by Agrobank JSCB, billion soums. Source: Prepared by the author based on data from Agrobank JSCB.

"Agrobank" ATB's loan portfolio grew from Rs 18,688 crore on 1 April 2020 to Rs 64,633 crore (346% growth, annual average ~19.3%) as of 1 April 2025. The highest increase was from October 1, 2022 to April 1, 2023 (37.291 crore. "Agrobank" ATB's loan portfolio grew from Rs 18,688 crore on 1 April 2020 to Rs 64,633 crore (346% growth, annual average ~19.3%) as of 1 April 2025. The highest increase was from October 1, 2022 to April 1, 2023 (37.291 crore. from 47,866 crore. so far, 28.4%) were recorded.

The constant growth of the loan portfolio and the volatility of the share of circulation loans (NPL) (1.1–5.2% -4.5%) are more affected. The NPL share of legal entities (3.64% in 2021) is 2.3 times higher than that of individuals (1.56%) and is a major contributor to NPL growth. The constant growth of the loan portfolio and the volatility of the share of circulation loans (NPL) (1.1–5.2% -4.5%) are more affected. The NPL share of legal entities (3.64% in 2021) is 2.3 times higher than that



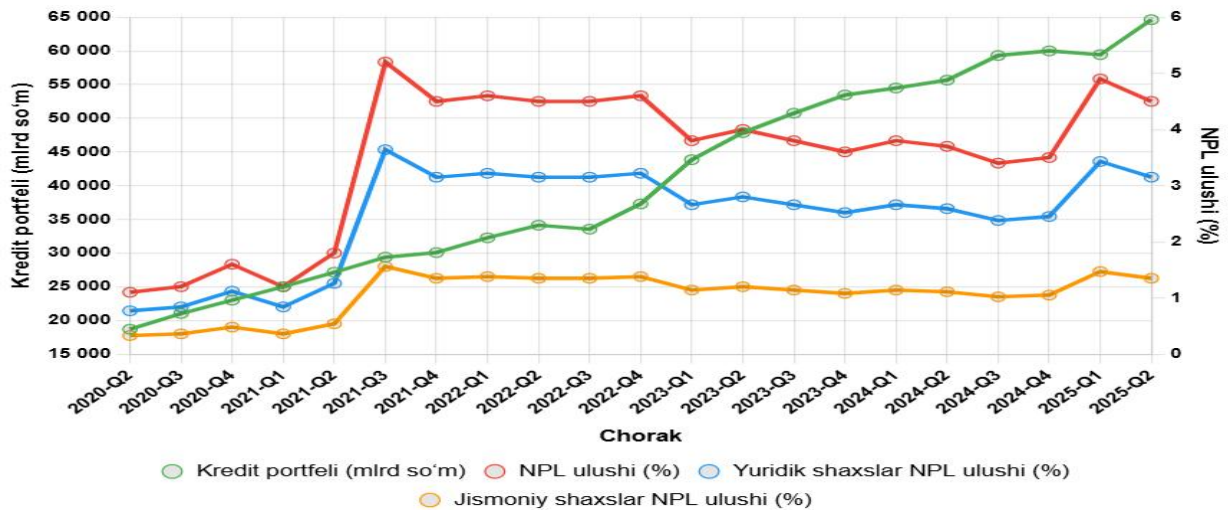


Figure 2. "Agrobank" ATB's credit portfolio, NPL, NPL share of legal and physical persons (2020-2025, quarterly).

Source: Prepared by the author based on data from Agrobank JSCB.

Muammoli loans (NPL) grew from Rs 214 crore in 2020 to Rs 2.9 crore in 2025 (13.5 times). The highest NPL is on January 1, 2025 (2,903 crore. SoC), the lowest on April 1, 2020 (214 crore. Som) was recorded. uummoli loans (NPL) grew from Rs 214 crore in 2020 to Rs 2.9 crore in 2025 (13.5 times). The highest NPL is on January 1, 2025 (2,903 crore. SoC), the lowest on April 1, 2020 (214 crore. Som) was recorded. NPL's share grew from 1.1% in 2020 to 5.2% in 2021, falling to 3.4% in 2024, but rising to 4.5% in 2025. The average NPL share is 3.61%. 60% of the loan portfolio allocated to legal entities and individuals falls under the contribution of legal entities-this is mainly due to the contribution of the (agricultural) direction, 40% was due to individuals (small business, consumer loans). The circulation of loans allocated to legal entities is higher than the share of NPL.0% of the loan portfolio allocated to legal entities and individuals falls under the contribution of legal entities-this is mainly due to the contribution of the (agricultural) direction, 40% was due to individualsthe loan portfolio allocated to legal entities and individuals falls under the contribution of legal entities-this is mainly due to the contribution of the (agricultural) direction, 40% was due to individuals (small business, consumer loans). The circulation of loans allocated to legal entities is higher than the share of NPL. In the case of 1 January 2020,the M2 cash mass grew from 95.166.9 bn on 1 January 2025 to 277.064. 6 bn (191% growth,annual average ~15.8%). The highest increase was in 2022 (145,254.6 crore.from 189,085.1 billion. up to 30.2%) was observed. Inflation, on the other hand, fell from 11.1% in 2020 to 8.7% in 2025 (. cbu.uz). the highest inflation was 12.3% in 2022 and the lowest was 8.1% in 2024. (Figure 4.4)

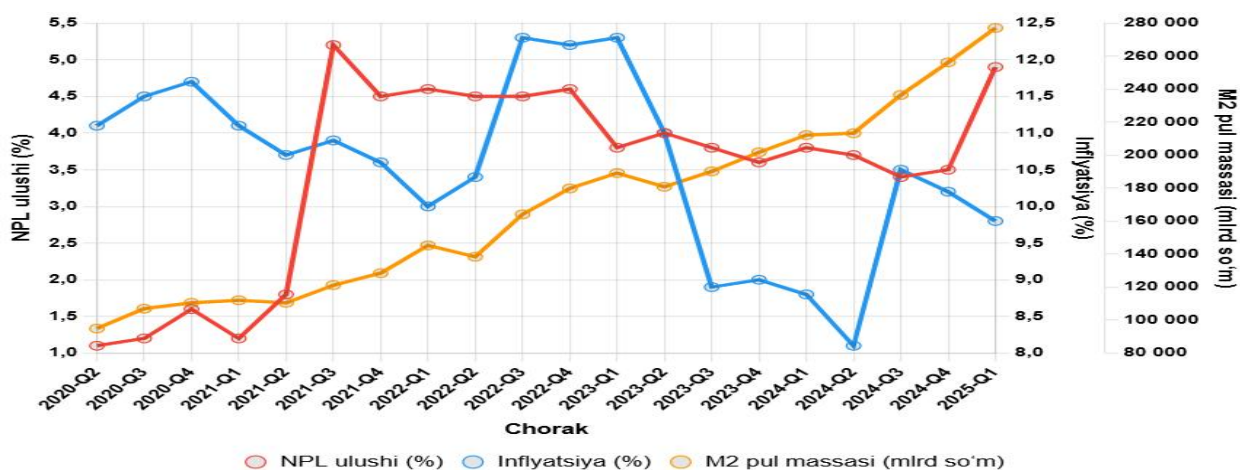


Figure 3: Inflation, M2 money supply growth and NPL share, (2020–2025, quarterly).

Source: Prepared by the author based on data from Agrobank JSCB).

Based on figure 4.4 analysis, one can see a specific correlation between inflation and NPL share ( $r=0.45$ ). The share of NPL grew to 5.2% when inflation reached 11.7% in 2021. M2 growth (16-17%) weakly affects NPL ( $R=0.25$ ) but contributes to credit portfolio growth (346%).d on figure 4.4 analysis, one can see a specific correlation between inflation and NPL share ( $r=0.45$ ). The share of NPL grew to 5.2% whold.

Table 3.

The qualitative composition of the Agrobank loan portfolio (as of December 31, 2024, billion. Soum).

No	Indicators	Total amount (billion)	Share of troubled loans (%)
1	StandardUnsatisfactory	260,3	2,0
2	Suspicious	90,1	0,9
3	Hopelessious	40,8	3,5
4	Hopeless	12,7	1,0
5	Indicators	10,1	0,8

Source: Central Bank of the Republic of Uzbekistan, Statistical Bulletin of 2024 (<https://cbu.uz/uz/statistics/>), Agrobank report and Fitch Ratings forecasts.

Total loan portfolio size Agrobank's total loan portfolio as of 31 December 2024 is 413.0 billion. This confirms that the bank specializing in the agricultural sector has a significant role in state programs (decree PF-5992) and economic growth. Standard loans (260.3 billion, 63.0%) make up the bulk of the loan portfolio, indicating stability. Substandard (90.1 billion soums, 21.8%), unsatisfactory (40.8 billion soums, 9.9%), suspicious (12.7 billion soums, 3.1%) and desperate (10.1 billion soums, 2.4%) make up the rest of the loans.

- Problem loans (NPL) in the total portfolio are 8.8 billion soums and 2.1%. Substandard (90.1 billion soums, 21.8%), unsatisfactory (40.8 billion soums, 9.9%), suspicious (12.7 billion soums, 3.1%) and desperate (10.1 billion soums, 2.4%) make up the rest of the loans.

- Problem loans (NPL) in the total portfolio are 8.8 billion soums and 2.1%. In 2024, this figure increased by 0.2 percentage points compared to 2023, which is due to weather conditions and the solvency of borrowers in agriculture.

- To reduce the level of NPL, it is necessary to take measures such as an in-depth analysis of the financial condition of borrowers, setting the maximum credit limits, demanding a high liquidity collateral, restructuring the debt (prolonging or reducing the repayment period) and the recovery of the debt through the court.

- There is a risk of accumulating more than 25% of the loan portfolio in one sector (agriculture), which is higher than international norms (10% in the US). Expanding the field of activity and increasing the range of products (from the Latin word “diversificatio”) reduces risks by balancing economic sectors. There is a risk of accumulating more than 25% of the loan portfolio in one sector (agriculture), which is higher than international norms (10% in the US). Expanding the field of activity and increasing the range of products (from the Latin word “diversificatio”) reduces risks by balancing economic sectors.

- Credit separation activity ratio (KAFK) was 58% in 2024, showing an aggressive-balanced approach. While unsatisfactory (3.5%) and questionable (1.0%) loans increase risks, Fitch Ratings predicts a 4-5% increase in NPL in 2025.

- Under Basel III, it is necessary that the capital adequacy ratio (CAR) be higher than 8%, in Agrobank in 2024 it was 22.5%. It is important to develop digital analysis tools and credit scoring to reduce credit risk. Agricultural loans use government support, but the growth of loans to individuals (36.4% in 2024) can increase NPL risks. Under Basel III, it is necessary that the capital adequacy ratio (CAR) be higher than 8%, in Agrobank in 2024 it was 22.5%. It is important to develop digital analysis tools and credit scoring to reduce credit risk. Agricultural loans use government support, but the growth of loans to individuals (36.4% in 2024) can increase NPL risks. The 2020-2025 reforms of the central bank will help to solve problems. 84.8% of Agrobank's loan portfolio is standard and substandard, providing stability, but the share of unsatisfactory and questionable loans raises risks. The 2.1% share of problem loans is positive, but the expected increase to 4-5% in 2025 requires caution. The introduction and diversification of digital technologies is important.

## CONCLUSIONS AND RECOMMENDATIONS

In the commercial banks of Uzbekistan, especially on the example of the Agrobank Joint-Stock Commercial Bank (ATB), the study of effective and modern methods of managing credit risks was focused. The purpose of risk management in a bank is defined as the creation of appropriate conditions for conscious acceptance of risks and elimination of risks arising during

banking activities, in accordance with the requirements of legislation, the expectations of bank shareholders and investors. The Bank sequentially carries out risk-appetite management measures in terms of risk - appetite indicators detection and discussion, risk profile indicators, risk reduction decision-making structure consisting of interrelated phases.



The process of determining risk appetite indicators involves assessing current risk, forecasting risk levels and types, and forecasting tolerance, as well as identifying external and internal constraints on the Bank's activities and selecting final risk indicators. When determining the indicators of bank risk-appetite, the bank determines its ability to take risks in current and future periods, target indicators of the bank and strategic and Current Directions of development, current and future requirements of banking legislation, the results that the bank expects from investors, including financial contracts, prospects for the development of the banking sector in regions where, it is necessary to take into account the factors of support and increase the credit rating of the bank, which are noted in the latest professional conclusions of rating agencies. Departments of the bank's business areas determine the highest risk – appetite indicators by type of operation. Before carrying out large transactions and new transactions, monitoring of indicators of the risk profile and, accordingly, compliance with the indicators of the bank's risk-appetite is carried out monthly or, if necessary, more often. it is necessary to take into account the factors of support and increase the credit rating of the bank, which are noted in the latest professional conclusions of rating agencies. Departments of the bank's business areas determine the highest risk – appetite indicators by type of operation. Before carrying out large transactions and new transactions, monitoring of indicators of the risk profile and, accordingly, compliance with the indicators of the bank's risk-appetite is carried out monthly or, if necessary, more often.

Bank's risk appetite management measures

Stage I: determination of Risk-appetite indicators;

Phase II: discussion and approval of Risk-appetite indicators;

Phase II: setting Risk-profile indicator limits;



Phase II: monitoring of Risk-appetite indicators;

Phase V: making decisions to reduce risks.

In order to identify Risk-profiles early and ensure compliance of risk-profiles with risk-appetite indicators, the bank uses risk-profile indicators to constantly analyze the level and dynamics of risk. The formation of Risk-profile indicators in the process of their use and improvement, the Bank is based on the following principles. In order to identify Risk-profiles early and ensure compliance of risk-profiles with risk-appetite indicators, the bank uses risk-profile indicators to constantly analyze the level and dynamics of risk. The formation of Risk-profile indicators in the process of their use and improvement, the Bank is based on the following principles:

The risk profile should include financial indicators that comprehensively assess all significant risks that could adversely affect the bank's operations over the year;

Based on the results of the study, the following proposals and recommendations were developed to ensure financial stability of commercial banks of Uzbekistan.

1. Credit quality monitoring: banks need to introduce advanced risk models based on machine learning algorithms in assessing the financial stability of borrowers to reduce NPL.
2. Liquidity asset diversification: to strengthen the LCR, banks must reduce foreign exchange risks by attracting government securities and international currencies. Short-term sources of financing should be deployed to eliminate liquidity shortages.
3. Raising the capital base: to strengthen the car, banks must attract additional capital in cooperation with international institutions such as the World Bank and the Asian Development Bank.
4. Risk management modernization: banks are required to manage credit portfolio and NPL quality by implementing real-time monitoring systems in accordance with Basel III standards.

As important conclusions formed on the basis of the above recommendations, credit risk management of commercial banks of Uzbekistan makes it possible to early identify systemic risks, as well as to improve the risk strategies of the banking system by applying international standards in practice. The purpose of this scientific study is also to strengthen the financial stability of commercial banks by eliminating circulating loans, accelerate their integration into the global financial system and increase their competitiveness.

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