



NPL SYNDROME: ASSESSING THE IMPACT OF NON-PERFORMING LOANS ON BANK FINANCIAL STABILITY

Suxrob Gaybulloev

Independent researcher at Kimyo International University in Tashkent, Tashkent, Uzbekistan

ABSTRACT

This article analyzes non-performing loans (NPLs) and their levels – factors that affect the financial stability of the banking system – through the concept of the “NPL Syndrome”. The study covers the determinants of NPL emergence, the mechanisms of their impact on the financial system, and proposals for their resolution. According to the IMF Financial Sector Assessment Program (FSAP) for the Uzbekistan banking system and official statistics for year-end 2025: GDP growth was 7.7%, inflation 7.3%, CAR 18.3%, LCR 207%, ROA 2.2%, NPL 3.0%, and the IFRS 9 Stage 3 indicator was 7.5%. The two-fold discrepancy between these figures indicates systemic weaknesses in asset quality assessment. Based on international experience – specifically from South Korea (KAMCO), Ireland (NAMA), and Spain (SAREB) – a four-pillar model for NPL management in Uzbekistan is proposed.

KEYWORDS: NPL Syndrome, Non-Performing Loans, Bank Stability, Credit Risk, Asset Quality, IFRS 9, Asset Management Company, Financial Restructuring, Prudential Supervision.

INTRODUCTION

The banking system plays a crucial role in ensuring economic growth and investment through financial intermediation, directing credit resources from those with surplus funds to those seeking to invest in production. However, the operation of the banking system is directly tied to the quality of the credit portfolio. The transformation of issued loans into problem assets negatively affects all key indicators of a bank, including liquidity, capital adequacy, lending capacity, and overall financial stability.

Historically, non-performing loans (NPLs) have been a primary factor in all banking crises. Specifically, sharp increases in NPL ratios led to systemic banking instability during the 1990s Asian financial crisis, the 2008–2009 global financial crisis, and the 2010–2012 Eurozone sovereign debt crisis. Even today, the NPL issue remains relevant. According to IMF Financial Soundness Indicators, the average NPL ratio across 129 countries was 5.8% in 2022. In developing economies, this figure is significantly higher, and World Bank research proves that high NPL levels significantly hinder GDP growth, credit allocation, and bank profitability.

For the Uzbekistan banking system, the NPL issue presents unique complexities. IMF FSAP assessment results show a two-fold gap between the regulatory NPL indicator (4.0% at end-2024, 3.0% in 2025) and IFRS 9 Stage 3 loans (7.8–8.4%). By the end of 2025, GDP growth reached 7.7%, inflation fell to 7.3%, and the net profit of the banking system in 2025 rose to 15.5 trillion UZS—a 2.2-fold increase over 2024. However, state-owned banks control over 66% of system assets, and their low ROA remains a negative factor.

The main purpose of the article is to theoretically and empirically analyze the specific features of NPLs as a “syndrome”, namely their progressive symptoms that systematically weaken banks, to study international experience, and to develop an effective NPL management model for Uzbekistan.

THEORETICAL FOUNDATIONS AND LITERATURE REVIEW

The Concept of NPL and “NPL Syndrome”

In international practice, NPLs are defined as loans where payments are overdue by more than 90 days or where full recovery is unlikely. The IMF Financial Soundness Indicators methodology (2019) and the Basel Committee’s “Prudential Treatment of Problem Assets” (2017) provide a unified international definition for NPLs.

Under the IFRS 9 accounting standard, credit quality is classified into three stages: Stage 1 (normal/initial recognition), Stage 2 (significant increase in credit risk), and Stage 3 (credit-impaired). Stage 3 loans correspond



to the IMF definition of NPLs. However, in many developing countries, bank NPL classifications do not fully encompass Stage 3 loans.

In this article, the author defines «**NPL Syndrome**» as a condition where the accumulation of NPLs on a bank's balance sheet triggers a self-reinforcing negative cycle. This cycle involves the cessation of new lending, a decline in capital adequacy ratios, deteriorating profitability, and loss of customer trust, ultimately affecting both the bank and the wider economy.

NPL and Financial Stability: Theoretical Links

From the perspective of financial stability theory, the relationship between NPLs and bank stability is explained through three points.

The first theoretical explanation is the “Credit Channel” theory. In the study by Bernanke and Gertler (1989), the deterioration of credit quality was theoretically justified to halt the bank's lending function (credit crunch). When NPLs increase, banks allocate resources for reserves and capital expenditures, reduce the issuance of new loans, and as a result, this causes a halt to investment and GDP growth in the country.

Secondly, according to the “Balance Sheet Channel” theory, the study by Kiyotaki and Moore (1997) demonstrated an amplifying mechanism between asset value and credit availability: an increase in NPLs lowers asset prices, deteriorating their valuation as loan collateral, which ultimately increases NPLs.

The third explanation, based on the concept of “Systemic Risk”, was confirmed by the econometric analyses in studies by Jacobs et al. (2012) and De Bock and Demyanets (2012), demonstrating the “contagion” nature of NPLs, meaning a problem in one bank transfers to others and ultimately destabilizes the entire banking system.

Major studies in NPL literature

International literature possesses rich experience regarding the determinants and consequences of NPLs. Louzis et al. (2012), based on data from 9 Greek banks, studied the impact of GDP growth, unemployment, and interest rates on NPLs, proving that macroeconomic factors are the main determinants of NPLs.

Klein (2013) analyzed data from 135 banks in Central, Eastern, and South-Eastern Europe using the GMM method, confirming that GDP growth, unemployment, and inflation are crucial factors in explaining NPLs.

Ari, Chen, and Ratnovski (2021) studied the dynamics of NPLs during crises based on a new database encompassing 92 banking crises. Based on the analysis, during crises, the NPL ratio increases by 22 percentage points compared to the onset of the crisis, peaks in 3 years, and the decline lasts for 5-8 years

Studies by Aiyar et al. (2015) and the IMF (2016) quantitatively proved that high NPLs reduce bank lending volumes by 6-15 percent and slow down GDP growth by 1.5-3 percent.

Beck, Jakubik, and PiloIU (2015), as a result of dynamic panel analysis across 75 countries, identified that real GDP growth, share prices, and exchange rates are the main determinants of NPLs, calculating that the elasticity of NPLs to GDP growth ranges from 0.7 to -1.4.

DETERMINANTS OF NPL: MACRO AND MICRO FACTORS

Macroeconomic Determinants

In the literature, it is widely accepted to divide the factors affecting the NPL ratio into two groups: macroeconomic (the overall economic environment) and microeconomic (bank-level) factors.

Table 1. Macroeconomic Determinants of NPL

Factor	Direction of Impact	Mechanism	Empirical Case	Source
GDP Growth	Negative (NPL↑ when GDP↓)	Income decline, insolvency	Elasticity: -0.7 to -1.4	Beck et al., 2015
Unemployment	Positive (NPL↑)	Loss of household income	Greece: $r=0.78$	Louzis et al., 2012
Real Interest Rate	Positive (NPL↑)	Increase in credit costs	EM: 1 b.p. → +0.15 NPL	Klein, 2013
Inflation	Dual	Real debt burden ↓; but income uncertainty ↑	Mixed results	Beck et al., 2015
Exchange Rate	Positive (Devaluation NPL↑)	Increase in FX loan burden	CIS: Strong impact	De Bock & Demyanets, 2012
Credit/GDP Growth	Lagged Positive	Excessive lending → asset bubble	Crisis precursor	IMF, 2024

Source: Compiled by the author based on the research findings of Beck et al. (2015), Louzis et al. (2012), Klein (2013), De Bock & Demyanets (2012), and IMF FSR (2024).

Microeconomic (Bank-Level) Determinants

Macroeconomic determinants. It is widely accepted in the literature to divide factors influencing the NPL ratio into two groups: macroeconomic (general economic environment) and microeconomic (bank-level) factors. Microeconomic (bank-level) determinants. In addition to macroeconomic factors, internal bank policy and management quality significantly affect NPL dynamics. Berger and DeYoung (1997) substantiated this situation based on the “Bad Management” hypothesis: inefficient management increases costs, lowers asset quality, and further exacerbates inefficiency by increasing NPLs. This self-reinforcing sequence is considered a micro-symptom of the NPL syndrome.

Jiménez and Saurina (2006), based on Spanish bank data, identified that easing lending standards during growth periods predetermines NPLs during subsequent downturns. This approach theoretically justified the “credit cycle” phenomenon.

Table 2. Bank-Level Determinants of NPL

Factor	Effect on NPL	Transmission Mechanism
Easing of credit standards	NPL↑ (with lag)	Extension of credit to riskier borrowers
Policy-directed (targeted) lending	NPL↑	Credits not assessed on commercial merit
Loan portfolio concentration	NPL↑ (sector shock)	Low diversification
Insufficient provisioning and reserves	NPL↑	Late recognition of credit losses
Management quality (ROA)	Negative (inverse)	Sound management → lower NPL

Source: Compiled by the author based on research results

IMPACT MECHANISMS OF NPL SYNDROME ON FINANCIAL STABILITY

The impact of NPLs on bank stability occurs through four main mechanisms. These mechanisms are interconnected and combine to create the dynamics of the “syndrome”.

1. Mechanism of impact on bank capital.

When NPLs increase, the bank is forced to create provisions, resulting in increased expenses. Once credit provisions are reflected as an expense, it leads to a decrease in bank profit and subsequently lowers capital in future calculations. Capital is the bank’s first line of defense, and its depletion limits the ability to manage credit risks.

From a mathematical analysis perspective, if the NPL ratio increases by 1 percentage point and the coverage ratio is 70%, an additional burden of 0.7% impacts the capital. During the Global Financial Crisis (2008–2009), the increase in NPLs in Icelandic banks from 3% to 30% between 2007 and 2010 “swallowed” the banks’ entire capital, forcing the government to nationalize the banks.

2. Decline in lending capacity.

A bank with elevated NPLs faces a second major problem: when risky assets occupy a large part of the balance sheet, the bank refrains from issuing new loans to meet capital and liquidity requirements. The emergence of a "credit crunch" in banks reduces the flow of financing to the economy.

Based on an IMF study (2016) using data from 24 European countries, it was found that a 1 percentage point increase in the NPL ratio reduces credit growth by 1.5–2.5 percentage points. Another study (Aiyar et al., 2015) confirmed this effect for European banks, showing that banks with high NPLs reduce lending by 6–15% compared to banks with low NPLs.

This mechanism is of particular importance in the banking system of Uzbekistan: the credit-to-GDP ratio stood at 31.7 percent (at the end of 2025), which is low compared to developed countries. However, an increase in NPLs can reduce the efficiency of financial intermediation and slow down the investments that drive economic growth.

3. Problems of ensuring bank liquidity and sourcing funds.

A high NPL ratio deteriorates the bank's financial statements and serves as a warning signal for credit rating agencies and investors. A rating downgrade makes it difficult for the bank to source funds in capital markets and also causes the cost of financial resources to rise. At the same time, if depositor confidence wanes, the risk of deposit withdrawals (bank run) emerges.

In global experience, this mechanism was clearly evident in Irish banks during 2009–2010: when the NPL ratio exceeded 25 percent, Irish banks became unable to raise funds from foreign creditors. The government was forced to inject 64 billion euros into the banks. This unexpected fiscal expense, which constituted about 40 percent of Ireland's GDP, drove the country into a 3-year recession.

4. Amplifying systemic impact on economic growth.

The fourth and most dangerous mechanism of the NPL syndrome is the systemic impact: the problem of one bank spreading to others through contagion.

There are two main channels for this spread: it can occur through credit markets (joint borrowers, supply chains) and through deposit markets (crisis of confidence). In their study on Central and Eastern European countries, Jakubík and Reininger (2013) found that a 5 percentage point increase in the NPL ratio reduces GDP growth by 1.5–3.0 percentage points with a 1–2 year lag.

Table 3. Transmission mechanisms of the NPL syndrome on bank stability

Mechanism	Channel	Consequence	Global Case	Crisis Risk
Capital depletion	Provision → P&L → Capital	CAR decline, regulatory breach	Iceland: 3%→30%	Very high
Credit crunch	Balance sheet burden → Credit decline	Investment and GDP decline	EU: –1,5–2,5%/б.п.	High
Liquidity stress	Rating downgrade → Funding difficulty	Increase in funding cost	Ireland: 64 billion EUR	High
Systemic contagion	Contagion → Systemic shock	Banking system unstable	2008: Lehman	Substantial

Source: Prepared by the author based on the research findings.

An accurate assessment of NPLs in the banking system of Uzbekistan is a highly pressing issue. The gap between the two indicators confirmed in the IMF's first Financial Sector Assessment Program evaluation in 2025 is diagnostically significant:

- Regulatory NPL ratio (according to CBU classification): 4.0% at the end of 2024
- IFRS 9 Stage 3 loan ratio (at the end of 2023): 7.8–8.4%
- The gap in the quantitative share of NPLs is approximately 2-fold

The main reasons for this discrepancy are clearly stated in the IMF FSAP documents: the Central Bank's NPL classification standards do not fully capture IFRS 9 Stage 3 assets; some banks may delay NPL recognition by classifying loans as substandard (higher category). There are cases in banks where loans that are actually NPLs but have been restructured are classified differently.

This situation has been identified by the IMF as “regulatory asset quality overstates true quality”, and it was recommended to strengthen banking supervision and fully implement IFRS 9.

The share of state-owned banks in the banking system of Uzbekistan accounts for 66 percent of system assets and 67 percent of loans. However, this dominant position masks serious vulnerabilities in terms of financial efficiency. The ROA of state-owned banks averages merely 0.1%, which is 51 times lower than the 5.1% indicator of private banks. Furthermore, the loan-to-deposit ratio of state-owned banks stands at 237.2 percent, meaning they have issued 2.4 times more loans than their deposits, supplementing this excess through foreign borrowings and state transfers. This situation increases banks liquidity and funding risks, creating a systemic vulnerability.

Table 4. Dynamics of NPL and stability indicators of the Uzbekistan banking sector

Indicator	2020	2021	2022	2023	2024	2025
GDP growth, %	1,9	7,4	5,7	6,3	6,7	7,7
Inflation, %	11,1	10,8	11,5	8,8	9,8	7,3
Policy rate, %	14,0	14,0	17,0	14,0	13,5	14,0
NPL регулятив, %	4,5	4,0	3,2	2,8	4,0	3,0
IFRS Stage 3, %	—	—	—	7,8	8,4	7,5
CAR, %	15,2	14,6	14,5	14,1	14,3	15,2
Liquidity Coverage Ratio (min. req. 100%), %	224,5	189,6	211,6	164,8	193,8	207,5
Net Stable Funding Ratio (min. req. 100%), %	109,9	115,4	115,6	111,8	115,3	119,9
Loan portfolio growth, %	30	17	20	21	12	14
Credit/GDP, %	40,4	38,6	38,1	38,0	33,5	31,7

Source: Prepared by the author based on the research findings.

Positive changes were observed in the banking system of Uzbekistan in 2025. The country's GDP growth reached 7.7 percent (the highest since 2021), and inflation decreased from 9.8 percent to 7.3 percent. At the same time, the fact that the regulatory NPL remains at 3.0% while the IFRS Stage 3 indicator is significantly higher (approximately 7.5%) indicates that systemic structural vulnerabilities still persist.

Comparing the regulatory NPL indicators in the banking system of Uzbekistan with regional countries: Georgia - 2.5%, Armenia - 3.5%, Kazakhstan - 3.1% (as of the end of 2024). However, the fact that the share of Stage 3 under the IFRS-9 Standard in the banking system of Uzbekistan is 2 times higher than the actual reported figure highlights the necessity to strengthen NPL recognition standards.

The 1997 Asian financial crisis brought the South Korean banking system to the brink of collapse. The overall NPL ratio at the system level exceeded 18 percent in 1997, and a 4-element crisis management strategy, initiated with primary assistance from the IMF, was adopted:

- Restoring financial system liquidity;
- State intervention and recapitalization in insolvent banks;
- Aligning prudential standards with international levels;
- Removing NPLs from bank balance sheets via KAMCO.

The Korea Asset Management Corporation (KAMCO), established in 1997, was a central state asset management company that purchased distressed assets from all financial institutions at a price “close to market value”. This model is considered the most successful example of a “state AMC”. By 2000, KAMCO had removed NPLs equivalent to 110 trillion won (approximately 22% of GDP) from bank balance sheets. It introduced a funding mechanism through the issuance of ABS (Asset-Backed Securities) and created a market for this type of asset in South Korea. Although KAMCO operated at a loss during its first 5 years due to high operational costs, it later became profitable and recovered 46 percent of the total invested capital.

The main lessons from KAMCO's experience: firstly, the success of a state AMC depends on its mandate and independence from political interference; secondly, pricing transparency, as KAMCO accepted market prices; and thirdly, the creation of a legal framework prior to establishing the AMC.

Ireland's experience: NAMA - a good version of a “bad bank”.

The 2008 global financial crisis devastated the Irish banking system (mainly through real estate loans). In 2010, the NPL ratio exceeded 25 percent, and the country applied for 85 billion euros in EU/IMF assistance.



The National Asset Management Agency (NAMA), established in 2009 and operational since 2010, acquired 74 billion euros worth of distressed real estate loans from Irish banks at a 57% discount to book value (43 billion euros). This transfer price was based on the “long-term economic value” principle, acquiring assets at a price higher than the market value but lower than the book value.

By 2021, NAMA fulfilled its obligations and generated an 800 million euro positive balance in 2022. From NAMA’s experience: centralized asset management increases specialization efficiency, and state guarantees backed NAMA bonds.

The ECB/EBA NPL strategy in European banking supervision

In 2017, the European Union developed a comprehensive strategy to reduce the “NPL” share in Eurozone banks. The European Central Bank's “NPL Guidance” (2017, 2018) required banks to develop clear, targeted plans to recognize and reduce NPLs. By 2024, the average Eurozone NPL ratio dropped to 2.0%. This led to a sharp decrease from the 8 percent level in 2013. This reduction was primarily influenced by the development of NPL markets (secondary NPL trading), increased transparency in asset quality, and convergent supervisory requirements.

Table 5. International NPL management experience: comparative analysis

Parameter	Korea, KAMCO	Ireland, NAMA	Spain, SAREB	Швеция (1990-лар)	Хитой (Big 4 AMC)
Year established	1997	2009	2012	1992	1999
Acquired NPL volume	110 trn won (~22% GDP)	74 billion EUR	51 billion EUR	64 billion SEK	~1,4 trn RMB
Transfer pricing method	Market price	Long-term economic value	–57% of book value	Market price	Book value
NPL reduction dynamics	Reduced to 5% by 2000	<5% by 2020	~3% by 2024	Recovery in 3 years	Multi-year process
Outcome	Successful, 46% return	Successful, 800 mln EUR surplus	Partial, still operating	Highly successful	Mixed
Recommendation for Uzbekistan	Independence and transparency	Legal framework clarity	Realistic valuation	Swift decision	High state ownership

Source: Prepared by the author based on the research findings.

Based on an analysis of the state of the banking system in Uzbekistan and international experience, an integrated four-pillar model for the early detection and management of the NPL syndrome is proposed. This model is based on the principle of “early action vs. forbearance”.

First Pillar: Aligning the regulatory and legal framework in the banking system of Uzbekistan with the IFRS 9 standard

According to the IMF FSAP (2025) recommendation, bridging the gap between the regulatory NPL criteria and the determination of NPLs under IFRS 9 Stage 3 is considered the very first measure. To implement this:

- Align the Central Bank's regulation on asset quality classification in commercial banks with IFRS 9 by introducing Stage 1/2/3 classification at the regulatory level.
- Establish clear definitions and recognition standards for “restructured but still non-performing” loans in banks (introducing the concept of “forborne exposure”).
- Conduct an Independent Asset Quality Review (AQR): mandatorily implementing it for all banks in accordance with IMF recommendations.
- Abandon the practice of “delaying NPL recognition” (evergreening) and strengthen accountability measures when these situations occur and a bank misclassifies an NPL.

Second Pillar: Establishing an Asset Management Company in Uzbekistan (UzAMC)

To systematically “clean up” the distressed assets accumulated in commercial banks with state ownership, it is recommended to create a structure based on the experiences of KAMCO and NAMA. Structural parameters for UzAMC:

Table 6. Proposed parameters for the Asset Management Company (UzAMC) for Uzbekistan

Parameter	Description
Objective	Acquisition, management, and realization of distressed assets from state-owned banks
Ownership	Initially 100% state-owned via the Ministry of Finance, later attracting private investors
Transfer price	Fair market value - based on IFRS 9 Stage 3 valuation, subject to independent auditor confirmation
Funding	UzAMC bonds with State guarantee, international financial institutions like WB, EBRD
Funding volume	Phase I - 50% of Stage 3 assets of state-owned banks
Governance	Independent Supervisory Board, representatives of the Central Bank and Ministry of Economy and Finance
Sunset clause	0–15 years operational life, thereafter dissolved or continues as an intermediary for classifying private assets

Source: Prepared by the author based on the research findings.

Before creating the proposed Asset Management Company (UzAMC) for Uzbekistan, it is required primarily to solve key issues: strengthening internal NPL workout units within banks, conducting AQR in banks, and transitioning to IFRS 9.

Third Pillar: Developing the financial restructuring infrastructure in banks

Removing NPLs within and from the banking system is only one part of the solution. However, its second part requires creating an effective infrastructure to restructure the obligations of problem borrowers.

This pillar comprises three elements:

- corporate restructuring court/mechanism: as recommended by the IMF FSAP (2025), implementing a specialized financial restructuring procedure at a separate court level. In South Korea's experience, KAMCO restructured major debtors via ABS and partnerships.
- Increasing the efficiency of credit bureaus and credit registries. This requires full inclusion of "Buy Now Pay Later" loans in the credit bureau and maintaining a realistic calculation of the DSTI – "Debt Service to Income ratio"
- Developing a secondary NPL market in the country: specialized investors who purchase NPLs (distressed debt investors) and securitization opportunities must be created. Currently, the infrastructure for selling NPLs at market prices is practically non-existent in Uzbekistan.

Fourth Pillar: Privatization of state-owned banks.

One of the deep and structural causes of the NPL problem in Uzbekistan's banking system is the presence of preferential and state-program-oriented lending practices by banks with state ownership.

The main way to halt this practice is through privatizing banks and transitioning them to independent management. The banking reform strategy for 2020–2025 established this goal but it has not been fully implemented.

CONCLUSION

This article analyzed the increasingly deepening systemic impact of the "NPL syndrome" on the financial stability of banks when non-performing loans are not prevented.

The main conclusions derived based on the results of this research are:

First, the NPL syndrome operates through four interconnected mechanisms: it depletes capital, and credit contraction, liquidity stress, and systemic contagion occur. These mechanisms mutually reinforce each other, creating the "syndrome" dynamics, and an initially "small" increase in NPLs, if left unaddressed, can self-amplify and turn into a massive systemic crisis.

Second, the 2-fold discrepancy between NPLs (3.0%) and IFRS 9 Stage 3 (7.8–8.4%) in the banking system of Uzbekistan is an important sign for preventing the problem. The risk of the CAR falling below the minimum in an adverse economic scenario in state-owned banks, as confirmed by the IMF FSAP, necessitates timely intervention.

Third, international experience from Korea's KAMCO, Ireland's NAMA, Spain's SAREB, and the Swedish model demonstrates that addressing the NPL syndrome early and consistently yields positive results. While



“forbearance”, i.e., delaying the recognition of NPLs, may initially seem easier, it exponentially increases costs over time.

Fourth, the proposed four pillars—IFRS 9 standardization, establishing UzAMC, developing the financial restructuring infrastructure, and privatizing state banks—were developed taking into account the unique conditions of Uzbekistan.

In conclusion, it should be noted that the “NPL syndrome” is a “chronic disease” of the banking system; its recognition, diagnosis, and comprehensive treatment are key prerequisites for the banking system and macroeconomic stability. Uzbekistan is currently at a risky, yet developmentally favorable and resolvable point on this path.

REFERENCES

1. International Monetary Fund. Republic of Uzbekistan: Financial Sector Assessment Program - Financial System Stability Assessment. Country Report No. 25/145. - Washington D.C.: IMF, June 2025. DOI: 10.5089/9798229015103.002
2. International Monetary Fund. Republic of Uzbekistan: Financial Sector Assessment Program - Basel Core Principles Assessment. Country Report No. 25/227. - Washington D.C.: IMF, July 2025.
3. World Bank. Republic of Uzbekistan Financial Sector Assessment. - Washington D.C.: World Bank, July 2025.
4. International Monetary Fund. The Case for (and Against) Asset Management Companies in Banking Crises // IMF Technical Notes and Manuals. TN/24/04. - 2024.
5. International Monetary Fund. Global Financial Stability Report, October 2025: Shifting Gears. - Washington D.C.: IMF, 2025.
6. Basel Committee on Banking Supervision. Prudential Treatment of Problem Assets - Definitions of Nonperforming Exposures and Forbearance. - Basel: BIS, 2017.
7. Central Bank of the Republic of Uzbekistan. 2024 Annual Report. - Tashkent, 2025.
8. Central Bank of the Republic of Uzbekistan. Financial Stability Review for the 1st Half of 2025. - Tashkent, 2025.
9. European Central Bank. Guidance to Banks on Non-Performing Loans. - Frankfurt: ECB, March 2017.
10. Vienna Initiative. NPL Monitor H1 2025: NPL Developments in the CESEE Region. - Vienna: EBRD/World Bank, 2025.
11. Ari A., Chen S., Ratnovski L. The dynamics of non-performing loans during banking crises: A new database with post-COVID-19 implications // Journal of Banking & Finance. - 2021. - Vol. 133. - Art. 106140.
12. Beck R., Jakubik P., Piloii A. Key Determinants of Non-performing Loans: New Evidence from a Global Sample // Open Economies Review. - 2015. - Vol. 26. - No. 3. - P. 525–550.
13. Berger A.N., DeYoung R. Problem Loans and Cost Efficiency in Commercial Banks // Journal of Banking & Finance. - 1997. - Vol. 21. - No. 6. - P. 849–870.
14. Bernanke B.S., Gertler M. Agency Costs, Net Worth, and Business Fluctuations // American Economic Review. - 1989. - Vol. 79. - No. 1. - P. 14–31.
15. He D. The Role of KAMCO in Resolving Nonperforming Loans in the Republic of Korea // IMF Working Paper WP/04/172. - Washington D.C.: IMF, 2004.
16. Jiménez G., Saurina J. Credit Cycles, Credit Risk, and Prudential Regulation // International Journal of Central Banking. - 2006. - Vol. 2. - No. 2. - P. 65–98.
17. Klein N. Non-Performing Loans in CESEE: Determinants and Macroeconomic Performance // IMF Working Paper WP/13/72. - Washington D.C.: IMF, 2013.
18. Kiyotaki N., Moore J. Credit Cycles // Journal of Political Economy. - 1997. - Vol. 105. - No. 2. - P. 211–248.
19. Louzis D.P., Vouldis A.T., Metaxas V.L. Macroeconomic and bank-specific determinants of non-performing loans in Greece: A comparative study of mortgage, business and consumer loan portfolios // Journal of Banking & Finance. - 2012. - Vol. 36. - No. 4. - P. 1012–1027.
20. Aiyar S., Bergthaler W., Garrido J.M., Ilyina A., Jobst A., Kang K., Koontun D., Liu Y., Monaghan D., Moretti M. A Strategy for Resolving Europe's Problem Loans // IMF Staff Discussion Note SDN/15/19. - Washington D.C.: IMF, 2015.
21. Fung B., George J., Hohl S., Ma G. Public Asset Management Companies in East Asia // FSI Occasional Paper No. 3. - Basel: BIS, 2004.
22. Asian Development Bank. NPLs in Asia and Europe - Causes, Impacts, and Resolution Strategies. - Manila: ADB, 2022.
23. European Economy. A Role for Systemic Asset Management Companies in Solving Europe's Non-Performing Loan Problems. - Brussels, 2017/1.
24. De Bock R., Demyanets A. Bank Asset Quality in Emerging Markets: Determinants and Spillovers // IMF Working Paper WP/12/71. - Washington D.C.: IMF, 2012.
25. Jakubik P., Reininger T. Determinants of Nonperforming Loans in Central, Eastern and Southeastern Europe // Focus on European Economic Integration. - 2013. - No. 3. - P. 48–66.