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Article

Resolving Problem Loans in Commercial Banks: Comparative Evidence from Advanced and Emerging Economies

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Abstract: Non-performing loans (NPLs) weaken bank profitability, liquidity and capital, yet countries use different approaches to reduce them. This article compares the experience of the United States, the European Union, China and selected Asian economies, Kazakhstan and India, and uses Ukraine and Bangladesh to show how classification rules and write-offs can change the reported NPL ratio. The analysis draws on World Bank data, supervisory statistics and official documents. Resolution measures are grouped into three areas: preventing new NPLs, removing problem assets from bank balance sheets, and separate management and recovery. The comparison shows that low or declining NPL ratios are usually associated with a combination of early recognition, adequate provisioning, workable legal procedures and effective recovery or transfer mechanisms. Asset-management companies and state-supported securitization can accelerate balance-sheet clean-up, but their results depend on valuation, creditor rights, insolvency procedures and secondary-market capacity. India also shows that better recognition may initially raise the reported ratio before later improvement. The study is descriptive and does not claim causal effects. Based on the country evidence, practical lessons are identified for emerging banking systems, including Uzbekistan.

Keywords: non-performing loans; asset management companies; securitization; bank supervision; emerging markets

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1. Introduction

Non-performing loans (NPLs) weaken bank profitability, liquidity and capital and, when widespread, threaten financial stability. Their macroeconomic and bank-level determinants are well documented, and the role of prudential rules such as Basel III and IFRS 9 provisioning in recognizing credit losses early has been reviewed in an earlier article by the author, together with a comparison with Uzbekistan. The present study therefore concentrates on what happens after problem loans appear: which instruments banking systems have used to remove and recover them [1].

Yet the evidence on which institutional arrangements actually reduce NPL stocks is fragmented. Studies tend to examine a single instrument, most often asset management companies (AMCs), or a single region or crisis episode [2] . Policymakers in emerging markets, who must choose among prudential tightening, securitization, state-sponsored asset purchase and legal reform, therefore lack a comparative picture that links each instrument to the conditions under which it worked [3]. Measurement is a second

problem: reported NPL ratios are affected by write-offs, portfolio growth and classification rules, so a falling ratio does not necessarily mean that problem loans were resolved.

The objective of this study is to compare how banking systems in advanced, crisis-hit and emerging economies have prevented, removed and recovered problem loans, and under what conditions these measures coincided with sustained falls in reported NPL ratios, in order to draw lessons for emerging-market regulators [4]. The study builds on, and does not repeat, the earlier article: it adds instrument-level evidence from Kazakhstan, India, Greece, Italy and the Asian crisis economies and examines whether reported ratios reflect resolution or reclassification.

2. Materials and Methods

2.1 Research design and case selection

We use a comparative qualitative case design supported by descriptive statistics. Cases were purposively selected to capture four analytically distinct settings: (i) systems with persistently low reported NPL ratios (the United States and China); (ii) systems that removed large NPL stocks through market-based or state-guaranteed mechanisms (EU member states); (iii) crisis-driven AMC programs and emerging-market institutional reforms (selected Asian economies, Kazakhstan and India); and (iv) cases in which reported NPL movements were materially affected by recognition, write-offs or classification changes (Ukraine and Bangladesh).

2.2 Data sources

Quantitative evidence comes from the World Bank indicator "bank nonperforming loans to total gross loans" for 2015–2025, supplemented by European Banking Authority (EBA) reports, publications of the Reserve Bank of India (RBI) and the Government of India, and data of the National Bank of Kazakhstan and the Problem Loans Fund. Qualitative evidence comes from regulations, IMF Article IV staff reports, and central bank and government documents. For each case we recorded the instruments introduced, their timing and the subsequent path of the NPL ratio.

2.3 Classification of resolution instruments

We distinguish three groups of instruments (Table 1), adapted from a classification of EU mechanisms. The same logic is applied to non-EU cases: for example, India's Prompt Corrective Action framework, Special Mention Account categories and central credit register belong to Group 1, and its SARFAESI Act, debt recovery tribunals and Insolvency and Bankruptcy Code belong to Group 3.

Table 1. Classification of NPL-reduction instruments

Group	Main objective	Instruments	Main effect
1. Preventing NPL formation	Identify problem loans early and push banks to act in time	Calendar provisioning (prudential backstop); supervisory review and bank-specific NPL strategies; credit-risk monitoring	Prevents long-term accumulation; encourages early recognition

Group	Main objective	Instruments	Main effect
2. Removing existing NPLs from balance sheets	Transfer problem loans to investors or special financial structures	State-guaranteed securitization (GACS, HAPS/Hercules); NPL securitization; secondary-market sales	Cleans balance sheets, eases pressure on capital and liquidity, attracts private investors
3. Separate management and recovery	Professional management, restructuring and recovery outside the bank	AMCs (NAMA, SAREB, DUTB); credit servicers; collateral enforcement and write-off	Speeds up recovery, restores asset value, limits realized losses

Source: adapted from official European Union materials; extension to non-EU cases by the author.

Two further elements, which emerge from the cases, frame the interpretation. First, instruments operate within enabling conditions: transparent asset valuation, protection of creditor rights, efficient insolvency and collateral-enforcement procedures, tax neutrality and a secondary market for stressed assets. Second, instruments create incentives: a state purchase mechanism can stabilize a banking system in the short and medium term, but if banks expect to transfer problem assets to the state later, moral hazard follows.

2.4 Limitations of the design

Three caveats apply. NPL definitions, coverage and reporting periods differ across jurisdictions and sources, so levels are not strictly comparable and we focus on trajectories. Instruments were often introduced together with recapitalization, exchange-rate changes or large write-offs, so co-movement with NPL ratios is not evidence of causation. Much of the evidence rests on official and secondary documents rather than bank-level microdata.

3. Results

3.1 Cross-country patterns

Table 2 reports NPL-to-gross-loans ratios for seven economies in 2015–2025. The United States (0.7–1.5%) and China (1.5–1.9%) remain low and stable. The EU falls steadily from 7.0% to 1.8%. India peaks at 10.0% in 2017 and declines to 2.1%; Kazakhstan fluctuates between 6.7% and 9.3% until 2020 and then settles at about 3–3.6%. Kyrgyzstan and Nigeria stay at moderate-to-high levels, with Nigeria's ratio rising to 8.1% in 2025 [5].

Table 2. Bank NPLs to total gross loans, 2015–2025 (%)

Economy	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
United States	1.47	1.32	1.13	0.91	0.86	1.07	0.81	0.72	0.85	0.97	0.96
China	1.67	1.74	1.74	1.83	1.86	1.84	1.73	1.63	1.59	1.50	1.50
European Union	7.03	6.15	4.93	3.81	3.22	2.63	2.06	1.84	1.89	1.93	1.84
India	5.88	9.19	9.98	9.46	9.23	7.94	6.54	4.81	3.36	2.50	2.06
Kazakhstan	7.95	6.72	9.31	7.39	8.14	6.87	3.32	3.36	2.89	3.05	3.63

Kyrgyzstan	6.74	8.52	7.37	7.30	7.73	10.09	10.82	12.46	8.92	10.26	10.06
Nigeria	4.86	12.82	14.81	11.67	6.06	6.02	4.93	4.01	4.00	4.50	8.12

Source: World Bank WDI (FB.AST.NPER.ZS); European Banking Authority; China's National Financial Regulatory Administration; Central Bank of Nigeria and Agusto & Co.; author's calculations. Calendar-year WDI values are not identical to RBI fiscal-year and point-in-time GNPA ratios because reporting periods and definitions differ[6].

3.2 The United States: prevention and fast write-off

The United States has maintained one of the lowest NPL ratios in the sample, declining from 1.47% in 2015 to 0.96% in 2025. The result reflects several parts of the post-crisis framework rather than one instrument [7]. Annual supervisory stress tests are used to assess whether large banks can absorb severe losses, while stronger capital requirements increased resilience after the 2007–2009 crisis[8].

Problem consumer loans are also subject to clear charge-off rules. Federal guidance generally requires closed-end consumer loans to be charged off at 120 days past due and open-end credit at 180 days, with faster treatment in bankruptcy cases[9]. Credit scoring, including widespread use of FICO scores, adds a preventive layer at origination [10]. These features help limit the long-term accumulation of old problem loans.

3.3 The European Union: prevention, securitization and national AMCs

The European Union provides an example of a broad policy package rather than a single NPL tool. The aggregate NPL ratio declined from 7.0% in 2015 to 1.8% in 2025, and the stock of NPLs in EU banks stood at EUR 373 billion in June 2025 [11]. Three elements are especially relevant.

First, Regulation (EU) 2019/630 introduced minimum loss-coverage requirements for newly originated exposures that later become non-performing. Full coverage is reached after 3 years for unsecured NPEs, 7 years for other secured NPEs and 9 years for exposures secured by immovable property and certain qualifying residential guarantees [12]. Any shortfall is deducted from prudential own funds, which reduces the incentive to keep old NPLs under-provisioned.

Second, several countries used market-based balance-sheet transfer. Italy's GACS framework allows banks to securitize bad-loan portfolios through special-purpose vehicles, with the state guarantee limited to qualifying senior notes while riskier tranches remain with private investors [13]. Greece introduced the similar Hercules scheme in 2019. The European Commission reported a fall in Greece's NPL ratio from 40.6% at end-2019 to 12.8% at end-2021 and identified Hercules securitizations as an important driver of the reduction [14].

Third, some EU countries used national asset-management companies. Ireland's NAMA, Spain's SAREB and Slovenia's DUTB separated impaired assets from banks for professional workout. The European Commission notes that such vehicles require reliable valuation, strong governance, adequate servicing and a legal framework that limits fiscal risk and moral hazard [15].

3.4 Asset management companies in China and Asia

Asset-management companies (AMCs) become particularly useful when the stock of distressed assets is too large for ordinary bank collection units. By moving problem loans to a specialized vehicle, banks can concentrate on normal lending while the AMC focuses on restructuring, collateral management and disposal. The outcome, however, depends on the transfer price, legal powers and quality of asset management [16].

China is one of the best-known Asian cases. Comparative ADB–ECB evidence reports an NPL ratio of 28.5% in 1999, when four state AMCs were established, and 13.2% five years later [17]. In 2020 the authorities approved China Galaxy Asset Management as a new national financial AMC. Over 2015–2025 China's reported NPL

ratio remained within a narrow 1.5–1.9% range (Table 2). Other Asian countries also used AMCs during banking crises, but their results differed according to mandate, pricing, recovery powers and the surrounding legal framework [18].

Table 3. State asset management companies and NPL ratios in selected Asian economies

Economy	Key features	Peak NPL ratio, % (year)	Five years later, % (year)
China	Four state AMCs set up in 1999; fifth national AMC in 2020	28.5 (1999)	13.2 (2004)
Indonesia	IBRA set up 1998, closed 2004, sold about 60% of its NPL portfolio; PPA set up 2004	48.6 (1998)	6.8 (2003)
Malaysia	Danaharta set up 1998, closed 2005; recovery rate 58% by 2005, about 96.4% of acquired assets disposed	18.6 (1998)	13.9 (2003)
South Korea	KAMCO re-established 1997; bought over KRW 111.4 trillion of NPLs in 1997–2002 at an average 64.8% discount; recovery rate 43.2% by 2013	8.9 (2000)	1.2 (2005)
Thailand	TAMC set up 2001; by 2006 roughly all acquired assets had been disposed, with a recovery rate of about 19.4% of acquisition value	42.9 (1998)	13.5 (2003)
Vietnam	VAMC set up 2013 under the central bank, with a limited resolution function	3.3 (2012)	2.0 (2017)
Japan	RCC (1999) and IRCJ (2003); IRCJ wound up in 2007, RCC still operating	8.1 (2002)	1.5 (2007)

Source: Asian Development Bank and European Central Bank, Nonperforming Loans in Asia and Europe—Causes, Impacts, and Resolution Strategies [19]; World Bank WDI for Vietnam ratios; author's compilation.

The Asian cases therefore show that an AMC is a resolution tool, not a complete solution. Peak NPL ratios, recovery rates and the speed of clean-up differed considerably across countries, and several vehicles were deliberately temporary. The strongest outcomes occurred where the AMC operated together with workable legal and recovery arrangements [20].

3.5 Kazakhstan: an institutional vehicle with uneven results

Kazakhstan entered the post-2008 period with a large stock of problem loans, especially in real-estate and construction lending. IMF data show that NPLs were close to 32% of total loans in March 2012 and amounted to about 11% of GDP. As Table 4 shows, the ratio remained very high through 2014, reaching 31.2% in 2013 before declining to 23.5% in 2014.

Table 4. NPLs in Kazakhstan's banking sector, selected years

Year	Loan portfolio (KZT billion)	NPL volume (KZT billion)	NPL share (%)
2011	10,400	3,203.2	30.8
2013	13,300	4,149.6	31.2
2014	14,100	3,313.5	23.5
2015	15,500	1,240.0	8.0
2017	13,400	1,246.2	9.3

2020	15,700	1,083.3	6.9
2021	20,100	663.3	3.3
2023	28,600	915.2	3.2
2024	≈35,293	1,094.0	3.1
2025	43,455.5	1,575.4	3.6

Source: Problem Loans Fund; author's calculations (NPL share = NPL volume / loan portfolio).

A central part of Kazakhstan's response was the Problem Loans Fund (PLF), created in 2012 to purchase and manage distressed assets [21]. Moving difficult assets to a specialized institution was intended to free banks from prolonged workout activity and allow professional restructuring, collateral management and disposal. The experience also revealed important limits: the IMF identified legal, tax, collateral-enforcement and information-sharing barriers to asset transfers, while some banks were reluctant to sell at market values.

The fund was accompanied by tighter prudential requirements, including progressively lower ceilings for NPL ratios [22]. The reported ratio fell from 23.5% in 2014 to 8.0% in 2015, but this change reflected more than loan recovery. IMF reporting links the clean-up to restructuring of large problem banks and to changes that made write-offs and transfers easier [23]. Kazakhstan later conducted a system-wide Asset Quality Review covering most banking assets, linking loan quality, collateral valuation, expected losses and capital adequacy more directly.

From 2016 to 2020 Kazakhstan's NPL ratio moved within a 6.7–9.3% range. In 2021–2025 the loan portfolio expanded rapidly, from KZT 20.1 trillion to KZT 43.5 trillion, while the NPL ratio stayed near 3.2–3.4% in 2021–2023 before rising from 3.1% in 2024 to 3.6% in 2025. At 1 January 2026, the 23 banks had a combined loan portfolio of KZT 43,455.5 billion, of which KZT 1,575.4 billion were NPLs.

The risk profile has also changed. Corporate, real-estate and construction problems dominated the earlier period, whereas retail credit has become more important. The National Bank of Kazakhstan reported that unsecured consumer lending increased from KZT 8.8 trillion in 2023 to KZT 10.8 trillion in 2024, while Stage 3 loans in this segment reached 8.2%[24]. The main lesson is that a purchasing institution works best when valuation, creditor rights, bankruptcy procedures, collateral enforcement, tax treatment and a secondary market develop alongside it.

3.6 India: recognition first, then resolution and recapitalization

India followed a different path because the first major step was to recognize previously understated stress. Government data show a GNPA ratio of 2.15% for scheduled commercial banks' domestic operations in September 2025. In the broader scheduled-commercial-bank series, the ratio had reached 11.2% at end-March 2018 before declining to about 2.05% by September 2025. The earlier rise reflected, in part, the 2015 Asset Quality Review, which required more transparent recognition of stressed exposures [25].

Table 5. Gross NPA ratio of India's banking system

Period	GNPA ratio (%)	Comment
FY2014–15	4.3	Baseline before the asset quality review
FY2017–18	11.2	Hidden stress recognized; peak
FY2018–19	9.1	IBC and recapitalization begin to take effect
FY2019–20	8.2	Decline stabilizes
FY2020–21	7.3	Decline continues despite pandemic support

		measures
FY2021–22	5.8	National Asset Reconstruction Company (NARCL) begins operating
FY2022–23	3.9	Cumulative effect of institutional reforms
FY2023–24	2.8	RBI Financial Stability Report: multi-year low at end-March 2024
September 2025	2.05	Provisional SCB-wide ratio; domestic-operations measure was 2.15%

Source: compiled from RBI statistical tables, RBI Financial Stability Reports and Government of India publications [26], [27].

After recognition, India combined several resolution measures under the government's "4R" approach: recognition, resolution, recapitalization and reforms. Debt Recovery Tribunals provide specialized recovery of bank claims; the SARFAESI Act gives secured creditors statutory enforcement tools; and the Insolvency and Bankruptcy Code created a creditor-oriented corporate insolvency process. Recapitalization was supported through the Indradhanush programme, while asset reconstruction companies and the later NARCL provided additional capacity for managing stressed assets.

Preventive tools were also strengthened. At bank level, the Prompt Corrective Action framework uses prudential thresholds to trigger supervisory restrictions. At loan level, Special Mention Account categories identify early payment stress before an exposure becomes an NPA, while the Central Repository of Information on Large Credits improves information sharing across lenders. Table 6 summarizes the main mechanisms.

Table 6. Classification of India's NPL mechanisms

Mechanism	Year	Role in the NPL cycle
Lok Adalat	1987	Curative: settlement of small claims
Debt Recovery Tribunals	1993	Curative: specialized recovery tribunals
SARFAESI Act	2002	Curative: out-of-court collateral enforcement
ARCs / NARCL	2002 / 2021	Centralized management of problem assets
Prompt Corrective Action	2002; revised 2017, 2021	Preventive: supervisory discipline at bank level
SMA / CRILC / JLF	2014	Preventive: early warning at loan level
Asset Quality Review	2015	Recognition: disclosure of hidden NPLs
Indradhanush	2015	Recapitalization of public-sector banks
Insolvency and Bankruptcy Code	2016	Curative: time-bound, creditor-led resolution

Source: RBI and Government of India documents cited in the text.

India's improvement therefore cannot be attributed to one reform. The decline in GNPAs occurred alongside stricter recognition, insolvency reform, collateral enforcement, recapitalization, asset reconstruction and stronger supervision. The provision coverage ratio also increased substantially, reaching 93.23% in September 2025 on a provisional basis. Implementation remains imperfect, however: IBBI data show that

completed corporate insolvency cases often take much longer than the timetable originally envisaged by the Code [28].

3.7 Ukraine and Bangladesh: when reported ratios mislead

Ukraine demonstrates why a lower NPL ratio does not always mean that borrowers have repaid more. The earlier increase reflected stricter recognition rules and the identification of problem loans at PrivatBank, while the full-scale invasion in 2022 created a new deterioration in credit quality. By end-2025 the ratio had fallen to 13.9%, but the National Bank of Ukraine reported that legacy write-offs by state-owned banks were an important part of that decline.

Bangladesh illustrates the reverse effect. As classification and provisioning rules became stricter, the reported NPL ratio rose sharply. IMF reporting shows that reclassification contributed materially to the increase during 2024, and Bangladesh Bank reported an NPL ratio of 35.73% in September 2025. Weak governance, poor risk management and related-party lending were also identified as underlying vulnerabilities[34]. These two cases show that changes in the headline ratio must be interpreted together with recognition, write-offs and portfolio dynamics.

4. Discussion

4.1 Main findings

The country evidence points to different sequences. The United States relies mainly on prevention and timely charge-offs. The European Union combines prevention with securitization, secondary-market sales and, in some countries, national AMCs. India first improved recognition and then expanded resolution, recapitalization and preventive tools. Kazakhstan combined a specialized fund with prudential tightening and later asset-quality review. In several Asian crisis economies, AMCs were used as a direct response to large legacy NPL stocks.

Despite these differences, three common conditions appear repeatedly. The first is early and credible recognition of credit deterioration. The second is a legal and market framework that allows collateral enforcement, insolvency resolution, valuation and asset transfer to work in practice. The third is an incentive structure that avoids shifting all losses to the state; Italy's GACS and Greece's Hercules are useful examples because private investors continue to bear part of the risk.

The comparison also shows that the NPL ratio should not be used alone to judge success. Recognition can push the ratio up, while write-offs, portfolio growth or asset transfers can push it down. Recovery cash flows, restructurings, write-offs and provision coverage should therefore be considered together with the headline NPL measure [29].

4.2 Implications for emerging-market regulators, including Uzbekistan

For Uzbekistan, the foreign experience is more useful as a set of practical lessons than as a model to copy directly. The evidence suggests four priorities.

1. First, credit deterioration should be identified before a loan reaches 90 days past due. IFRS 9 stage migration, restructuring and refinancing history, payment behaviour and other early-warning information can be used together to detect rising risk.
2. Second, any specialized vehicle for stressed assets should be created together with the legal and market infrastructure needed for it to work. Kazakhstan shows that a fund alone is not enough when valuation, collateral enforcement, insolvency procedures, tax treatment or information sharing remain weak.
3. Third, public support should be limited and designed to preserve private risk sharing. The Italian GACS and Greek Hercules schemes show one way to support NPL transactions without transferring all risk to the state. Over time, a secondary

market with private investors and professional servicers is preferable to permanent state ownership of problem assets.

4. Fourth, NPL reduction should be evaluated through several indicators. The NPL ratio should be read together with recoveries, write-offs, restructuring outcomes and provision coverage. The experience of Ukraine and Bangladesh shows why a change in classification or balance-sheet clean-up can materially alter the reported ratio [30].

4.3 Limitations and future research

The analysis is descriptive. NPL definitions and coverage differ across jurisdictions and sources, the cases were chosen for institutional variety and include several success stories, and much of the evidence rests on official and secondary documents [31], [32]. The 2025 data are provisional. Because instruments were typically introduced together with recapitalization, regulatory changes or write-offs, the study identifies associations, not causal effects. Future work could use bank-level panel data to estimate event-study effects of AMC and securitization introduction, controlling for write-offs, and could test the proposed framework with bank-level data from Uzbekistan [33].

5. Conclusion

The comparison shows that sustained NPL reduction usually depends on a combination of measures rather than on one institution. Early recognition, sufficient provisioning, effective recovery rules, credible valuation and a functioning market for distressed assets reinforce one another. AMCs and securitization can accelerate balance-sheet clean-up, but only where the surrounding legal and institutional framework is strong enough. For emerging banking systems, including Uzbekistan, the main implication is to improve recognition and recovery at the same time, use state support selectively, and assess results through several credit-quality indicators rather than the NPL ratio alone.

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