

SUSTAINABLE FINANCIAL ECOSYSTEM FOR VIKSIT BHARAT





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Foreword

Mr. Saurabh Sanyal

Secretary General

ASSOCHAM



It gives me great pleasure to present the ASSOCHAM **Banking & Financial Annual Conclave for Transformation (B-FACT)** – a flagship platform dedicated to shaping the future of India’s financial ecosystem. At a time when our nation stands on the threshold of becoming a global economic powerhouse, the themes of resilience, innovation, trust, and inclusion are more relevant than ever. This conclave, along with the accompanying knowledge report, serves as a vital step for accelerating India’s journey towards a **Viksit Bharat**.

India’s financial ecosystem has evolved as one of the most dynamic and technology-driven systems globally. The Indian banking sector, supported by strong capitalisation, improved asset quality, and enhanced governance standards, continues to anchor economic stability. At the same time, non-banking financial companies (NBFCs) have emerged as critical last-mile credit providers, deepening financial penetration and enabling inclusive growth.

The regulatory landscape, led by the Reserve Bank of India, has played a transformative role in strengthening risk management frameworks, enhancing customer protection, and fostering responsible innovation. Progressive measures in regulatory risk management, digital lending guidelines, and customer safety mechanisms have reinforced systemic stability while encouraging responsible growth. As digital finance scales rapidly, regulatory foresight remains central to safeguarding trust and transparency.

A central theme of this report is the credit growth imperative for micro, small and medium enterprises (MSMEs) – the backbone of India’s economic aspirations. MSMEs are not merely contributors to the GDP; they are engines of employment, innovation, and regional development. Addressing their credit needs requires

specialised lending models, innovative risk-sharing mechanisms such as co-lending and securitisation, and robust credit guarantee frameworks. By drawing from global best practices in MSME finance, India can accelerate access to affordable and timely capital for this vital sector.

Equally important is the theme of **sustainable and responsible finance**, which forms the foundation of India’s long-term growth vision. From financing renewable energy to encouraging environmental, social and governance (ESG) integration, financial institutions have a crucial role in accelerating the nation’s clean energy transition. This report outlines policy support, emerging opportunities, and the challenges that must be addressed to scale green finance across the country.

The report also recognises the tremendous strides India has made in digital financial inclusion. Platforms like UPI, mobile banking, and micro ATMs have democratised access to financial services and brought millions into the formal economy.

Finally, the report brings together **global best practices** in MSME financing, risk management, cross border lending, and regulatory governance – insights that can help Indian institutions benchmark themselves against the world’s leading financial systems.

ASSOCHAM remains committed to enabling collaboration, nurturing innovation, and supporting policy frameworks that help India build a robust, inclusive, and forward looking financial sector. I am confident that the insights shared in this report will serve as a valuable guide for stakeholders across the financial ecosystem.

Together, let us work towards a financially empowered, digitally enabled, and sustainably developed India.

Foreword

Mr. K. Ravichandran

*Executive Vice President & Chief Ratings Officer,
ICRA Limited*



India stands at a defining moment in its economic journey, advancing towards the vision of Viksit Bharat. At this stage, the role of a strong, resilient, and inclusive financial ecosystem has never been more critical. Finance today is not merely an enabler of growth; it is a foundation that determines the pace, quality, and sustainability of economic development. Over the past decade, India's financial system has undergone a significant transformation. Stronger balance sheets, improved asset quality, deepening financial inclusion, and digitalisation have enhanced the system's capacity and resilience. At the same time, evolving global risks, technological disruptions, climate risks, and rising consumer expectations have reshaped the operating environment for financial institutions.

This report, '**Sustainable Financial Ecosystem for Viksit Bharat**', seeks to examine the evolving landscape in a holistic manner. It brings together perspectives on the banking and NBFC sectors, regulatory evolution, MSME credit imperatives, sustainable finance, impact of digital payments, along with global learnings and their relevance for India. The analysis highlights that while India's financial system is structurally stronger and more resilient than in the past, new challenges are emerging.

A key theme running through the report is the evolving credit needs and the changing nature of lending. Traditional balance sheet lending alone will not be sufficient to meet India's growing and diverse credit needs. Partnership led models such as co lending, securitisation, and credit guarantee mechanisms are increasingly central to scaling

credit in a sustainable manner. Equally important is the continued evolution of the regulatory framework – one that is forward looking, risk sensitive, and aligned with global best practices while remaining responsive to domestic realities.

The report also looks at the role of **digital public infrastructure**, particularly payments, in advancing financial inclusion and improving efficiency. India's success with Unified Payments Interface (UPI) demonstrates how technology, when combined with sound regulation, can deliver scale, resilience, and inclusiveness. At the same time, safeguarding consumer trust through strong data protection, cybersecurity, and grievance redressal mechanisms remain essential.

As India charts its path towards long term, sustainable growth, the financial sector will be expected to do more – support entrepreneurship, finance the energy transition, enable MSME expansion, and manage emerging risks without compromising stability. Achieving this will require close collaboration among regulators, financial institutions, policymakers, and industry stakeholders.

It is our hope that this report contributes meaningfully to that dialogue and provides insights that help shape a financial ecosystem that is resilient, responsible, and capable of supporting India's aspirations for a developed and inclusive economy.

1 Executive Summary

Sustainable Financial Ecosystem for Viksit Bharat

India's aspiration of becoming Viksit Bharat is closely tied to the strength, resilience, and inclusiveness of its financial ecosystem. Despite global uncertainties, India's economy continues to expand on the back of strong domestic demand, moderated inflation, and steady fiscal consolidation. The financial system remains stable and well-capitalised, though uneven private capital expenditure (capex), geopolitical risks, and evolving credit dynamics underscore the need for prudent risk management alongside growth.

The Indian banking sector remains robust, supported by healthy credit and deposit growth, multi-decade low asset quality indicators, and strong capital buffers. Profitability has stayed resilient despite the pressure on margins arising from faster repricing of assets relative to deposits and moderation in high-yield unsecured lending. While early signs of stress are visible in select retail and MSME portfolios, the overall system-wide asset quality is expected to remain benign. Banks are well positioned to sustain steady credit growth, aided by regulatory reforms, digitisation and balance sheet strength, though margin management, ability to raise deposits at attractive pricing and emerging risks warrant close monitoring.

NBFCs continue to play a pivotal role in expanding credit access, particularly in retail and MSME segments, growing faster than banks and steadily increasing their market share. However, asset quality

pressures, especially in unsecured lending, have led to elevated credit costs and moderated profitability. While headline delinquencies remain controlled through accelerated write-offs, sustainable growth will depend on disciplined underwriting, stronger risk governance, and diversification of funding sources.

India's regulatory framework has evolved into a more risk-sensitive, forward-looking and aligned with global standards. Recent Reserve Bank of India (RBI) initiatives – covering concentration risk norms, a unified credit risk framework for NBFCs, enhanced governance standards, risk-based deposit insurance premiums, and the planned transition to the expected credit loss (ECL) regime – mark a structural upgrade in supervision and loss recognition. Collectively, these measures enhance transparency, financial stability, and systemic resilience across banks and non-banks.

With rapid digitisation, customer protection has emerged as a regulatory priority. The RBI's strengthened grievance redressal mechanisms and the Digital Lending Directions, 2025 establish clear norms for transparency, data privacy, lender-lending service provider (LSP) arrangements, and default loss guarantees. These measures aim to balance innovation with consumer safety, fostering responsible growth in digital credit while safeguarding trust in the financial system.

MSMEs: Central to Growth yet Credit Constrained

MSMEs remain the backbone of India's economy, driving employment, entrepreneurship, and regional development. Formalisation initiatives, enhanced classification thresholds, and policy support have improved credit visibility, making MSMEs a key contributor to incremental bank credit. Nevertheless, a large structural credit gap persists due to heterogeneous risk profiles, limited collateral, and information opacity, necessitating alternative approaches beyond traditional balance sheet expansion.

To scale MSME credit sustainably, the ecosystem is increasingly adopting risk-sharing and partnership-led models. Co-lending combines the origination strength of NBFCs and fintechs with banks' funding cost efficiency while securitisation enables capital recycling, liquidity enhancement, and funding diversification. Credit guarantee schemes, particularly Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE), have facilitated collateral-free lending, though their effectiveness depends on strong governance, partial risk coverage, and lender discipline.

Sustainable finance in India is at an early but important stage. While there has been some traction in green and sustainability-linked capital market instruments, ESG integration into bank lending

remains slow due to data gaps, evolving business models, and the absence of a unified terminology. Renewable energy financing has scaled in mature segments, but emerging areas such as storage and green hydrogen require blended finance, risk-sharing mechanisms, and deeper capital market participation.

India's digital payment ecosystem – led by UPI – has transformed financial inclusion by reducing reliance on cash, lowering transaction costs, and expanding formal financial participation across geographies. However, rising cyber risks and data privacy concerns necessitate continuous strengthening of security frameworks and consumer awareness to sustain trust and resilience.

India's financial ecosystem is well placed to support the Viksit Bharat vision, anchored by strong fundamentals, progressive regulation, and digital innovation. Sustaining this momentum will require balancing growth with prudence, deepening MSME credit through structural enablers, and integrating sustainability into mainstream finance. A coordinated, ecosystem-wide approach remains essential to ensure long-term, inclusive, and resilient economic development.



2 Overview of India’s Financial Ecosystem

India’s economy continues to expand at a healthy pace, driven primarily by strong domestic demand, even as global uncertainties persist. Moderate inflation and steady fiscal consolidation have strengthened the country’s overall economic stability. The domestic financial system also remains

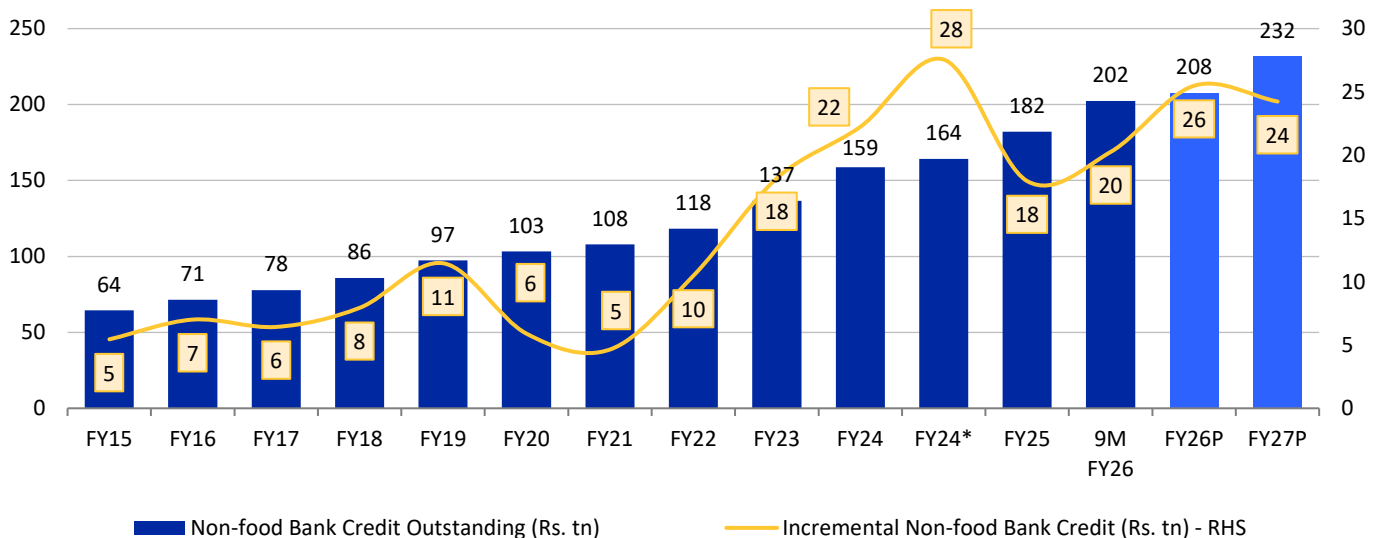
robust, supported by strengthened balance sheets and favourable financial conditions. Nevertheless, the demand for private capex led credit growth remains modest and persisting geopolitical and trade uncertainties continue to challenge the country’s economic and financial ecosystem.

2.1 Indian Banking Sector

The Indian banking sector remains strong and resilient in FY2026, supported by steady double digit growth in deposits and credit, improved asset quality with gross non-performing advances (GNPAs) falling to multi decadal lows, and robust capital ratios among scheduled commercial banks (SCBs). Both public sector banks (PSBs) and private sector banks (PVBs) delivered healthy profitability in 9M FY2026 despite witnessing pressure on net interest

margins (NIMs). The sector is well positioned for future expansion, supported by regulatory reforms, increasing technology adoption and healthy financial fundamentals. At the same time, challenges such as rising cyber threats, pressure on margins due to a lower interest rate environment, and India’s relatively low credit to GDP ratio are areas that need continued focus.

Figure 1: Credit growth trends



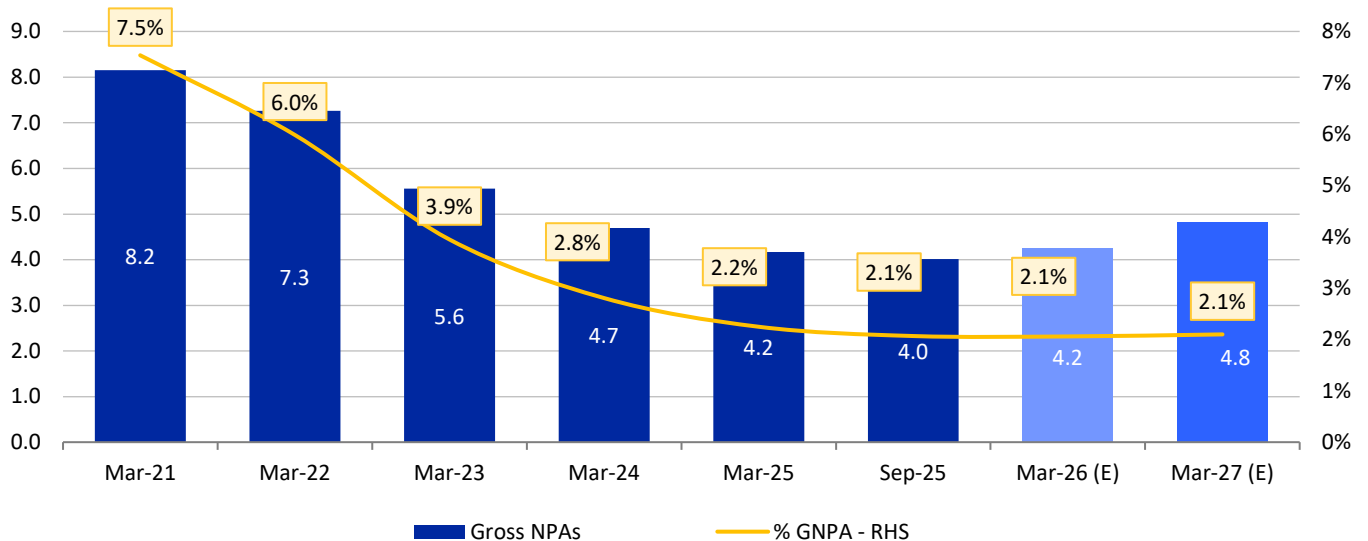
Source: RBI, ICRA Research; FY2024* onwards represents outstanding and incremental credit including the impact of the HDFC merger; P- Projected

The beginning of FY2026 witnessed slow credit offtake as banks remained cautious towards the retail sector and non-banking financial companies (NBFCs) while corporates preferred bond markets, given the low yields. Nevertheless, bank credit picked up by the end of H1 FY2026 and the trend continued in Q3 FY2026. Besides banks remaining competitive to bond markets because of sticky bond yields, the increase in economic activity after the goods and services tax (GST) cut on September 22, 2025, spurring demand for channel financing and retail loans, contributed to the healthy credit offtake. Moreover, the change in the reporting date to the 15th and end of every month from the earlier practice of alternate Fridays led to higher reported credit offtake in Q3 FY2026, resulting in one of the highest-ever increases in fortnightly credit flow

reported as on December 31, 2025. Consequently, the incremental credit growth in 9M FY2026 was healthy at Rs. 20.3 trillion compared to Rs. 11.6 trillion in 9M FY2025 (Rs. 18.0 trillion in FY2025). Before the change in the reporting date, it was Rs. 12.4 trillion as on November 28, 2025 compared to Rs. 10.5 trillion as on November 29, 2024.

ICRA expects credit demand to remain buoyant with retail and micro, small and medium enterprises (MSMEs) being the primary growth drivers. Factoring in the changes in the reporting dates, ICRA estimates a slightly higher credit growth of Rs. 25.0-26.0 trillion {13.7-14.3% year-on-year (YoY)} for FY2026. For FY2027, ICRA expects credit expansion of Rs. 23.50-25.00 trillion (11.3-12.0%).

Figure 2: Banking sector GNPA's

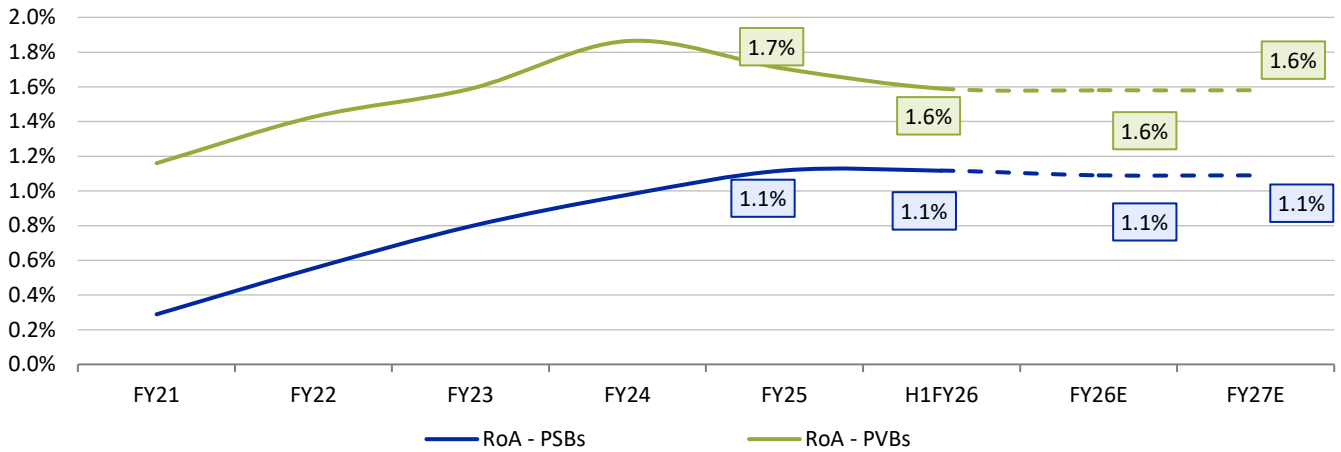


Source: Aggregate of 13 PSBs (including IDBI Bank) and 19 PVBs; Amount in Rs. trillion

The sector's headline asset quality metrics continue to improve with reported GNPA's at a decadal-best level, with contained slippages and steady recoveries leading to a reduction in the stock of GNPA's. However, with the retail sector and MSMEs witnessing some

stress, the overall fresh slippages are expected to rise and recoveries/upgrades are likely to taper gradually in the near term. Nevertheless, the impact is expected to be marginal and the overall GNPA's and net NPAs (NPNAs) are likely to remain benign.

Figure 3: Outlook on RoA



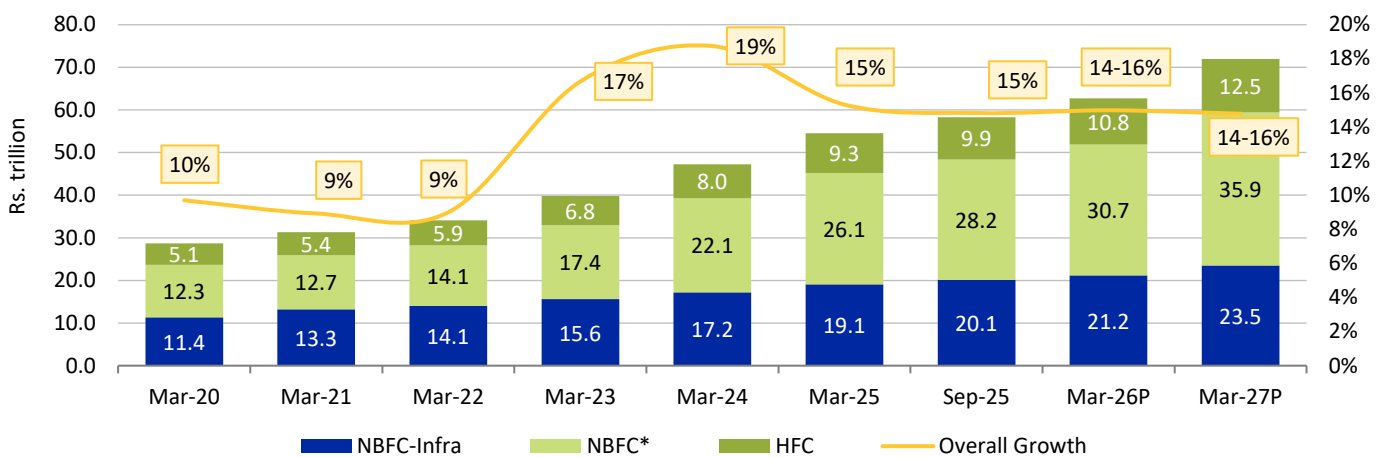
Source: ICRA Research, aggregate of 13 PSBs (including IDBI Bank) and 19 PVBs; E is estimated

The compression in NIMs in H1 FY2026 led to a decline in the return indicators, driven by the lag in the transmission of deposit rates compared to the faster reset of rates in advances coupled with the slowdown in growth towards high-yielding unsecured advances. The expected improvement in margins is expected to be delayed until Q1 FY2027 due to the rate cut of 25 basis points (bps) in December 2025. Additionally, credit costs are likely

to rise slightly in FY2026 but will remain manageable. Accordingly, the return on average assets (RoA) of PVBs is expected to moderate by 5-10 bps in FY2026 while it is projected to decline by 3-7 bps for PSBs. Thereafter, the return indicators are expected to be steady in FY2027. Thus, even at these estimated levels, profit accretion would meet the credit growth (10-12%) requirements of most banks.

2.2 Non-banking Financial Companies

Figure 4: AUM growth trends and outlook



Source: ICRA Research; NBFC* – NBFC-Retail/Wholesale; HFC – Housing finance companies; NBFC-Infra – NBFC-Infrastructure finance companies; Sector – NBFC-Retail/Wholesale, HFC-Retail/Wholesale, NBFC-Infra; Sammaan Capital Limited and Piramal Finance Limited have been reclassified under NBFCs and excluded from HFCs

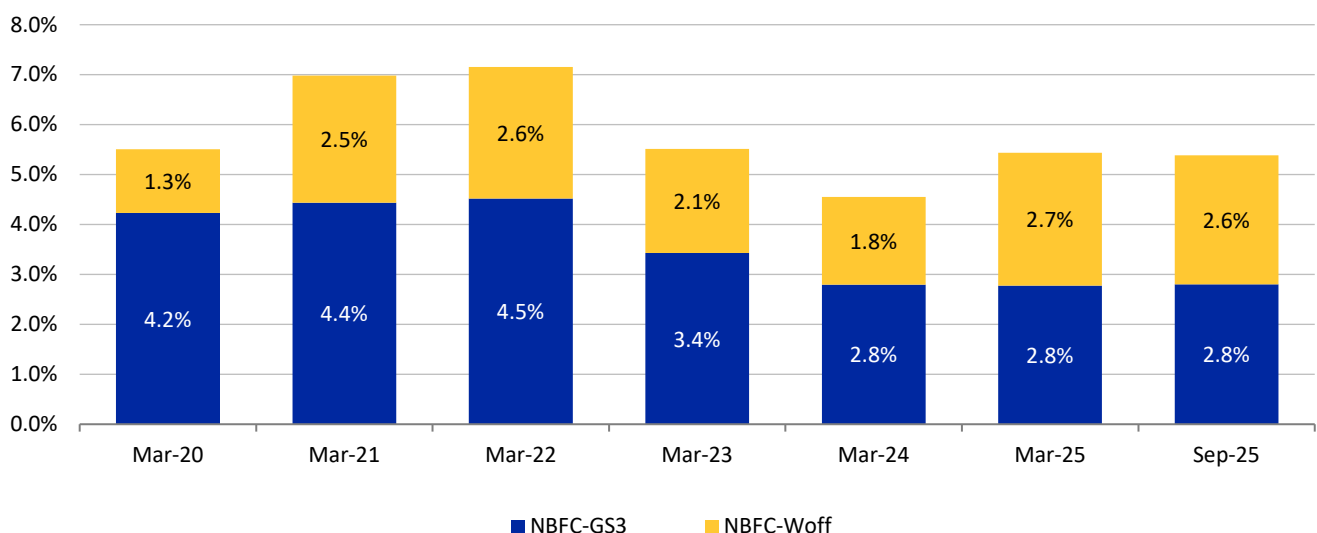
The assets under management (AUM) of the overall NBFC sector (including housing finance companies; HFCs) crossed a significant milestone of Rs. 50 trillion in FY2025 and is anticipated to expand to Rs. 70 trillion by the end of FY2027. Within the NBFC sector, Retail-NBFC (i.e. including HFCs but excluding NBFC-Infra and Wholesale) AUM is forecasted to reach close to Rs. 45 trillion by FY2027, as this remains the fastest-growing segment. Overall, NBFCs would continue to sustain their growth at a significantly faster pace than the banking sector, increasing their share in the overall credit in the domestic market. On a segment-wise basis, NBFC-Retail is expected to expand at a slightly slower pace of 17-19% in FY2026 and 16-18% in FY2027, down from the 19% YoY growth in FY2025. Growth of NBFC-HFCs would also moderate slightly to 15-17% in FY2026 as well as FY2027 from 17% YoY in FY2025, while the NBFC-

Infra sector would remain stable with 10-12% annual growth.

Downside risks to sectoral growth could emerge if global trade uncertainties accentuate the impact on domestic economic activity in the near term. On a positive note, the recent GST rationalisation by the Government of India (GoI) has played its part in sustaining consumer demand and provided some support to credit growth in the near term. The sector continues to witness some pressure from the weakened asset quality performance of unsecured and small-ticket loans; consequently, growth continued to be at a moderated level of 15% YoY in H1 FY2026 compared to 17-19% during FY2023-FY2024. Going forward as well, it is likely to be 14-16% YoY in FY2026 and FY2027.

Asset Quality Metrics of NBFCs Witness Some Pressure

Figure 5: NBFCs – Gross stage 3 (GS3) + Write-offs (for the fiscal)



Source: ICRA Research; Note: Woff – Write-offs; Data for overall credit for NBFC sector covering 85% NBFCs and HFCs (excluding infra NBFCs) as of March 2025; Write-offs are computed as a proportion of opening AUM of the FY; September 2025 write-off data is annualised

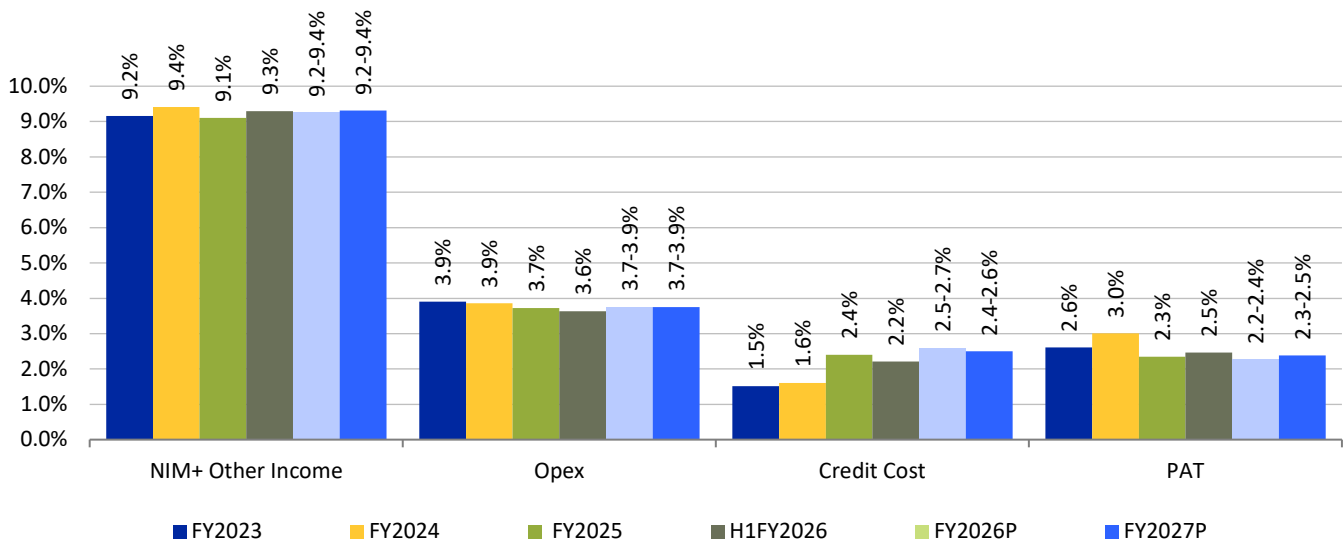
The asset quality of NBFCs has been under pressure over the last two years, with slippages increasing across most segments. Entities have preferred to undertake accelerated technical write-offs to keep the quantum of stressed loans on their balance sheets under control. As such, while delinquencies have inched up slowly, the overall headline sectoral delinquencies remained controlled during this period.

Unsecured segments such as microfinance, unsecured/quasi-secured small and medium

enterprise (SME) loans, and personal loans (PLs) – consumer loans (CLs) have been the most impacted. Secured segments such as vehicle financing and loan against property (LAP) are also witnessing moderate increases in delinquencies on account of seasoning impact as growth slows down. Further, stress is seen in cases where borrower profiles overlap with the unsecured segments, resulting in overleveraging of these borrowers at the household level. Overall, ICRA expects credit costs in the sector to increase by 10-30 bps in FY2026, though it is expected to stabilise and remain range-bound in FY2027.

Profitability to Moderate Slightly in FY2026 and Stabilise in FY2027

Figure 6: Key earnings parameters of NBFCs



Source: ICRA Research; P – Projected, based on ICRA's sample set companies covering 85% NBFCs (excluding infra NBFCs) as of March 2025; ratios are on average managed assets (AMA) basis

NIMs are largely expected to remain stable in the near term, notwithstanding the improvement in the cost of funds of entities. This is on account of some moderation in the share of higher-yielding products (predominantly the unsecured segment) due to asset quality concerns. Operating costs are expected to remain range-bound in the current fiscal.

However, credit costs would remain elevated in FY2026, as entities continue to be weighed down by asset quality concerns. Overall, the net profitability of NBFCs is expected to moderate slightly in FY2026. ICRA anticipates a decline in credit costs in FY2027 as asset quality pressures ease down. Consequently, the net profitability shall improve from the FY2026 level.

3 Regulatory Landscape towards Risk Management

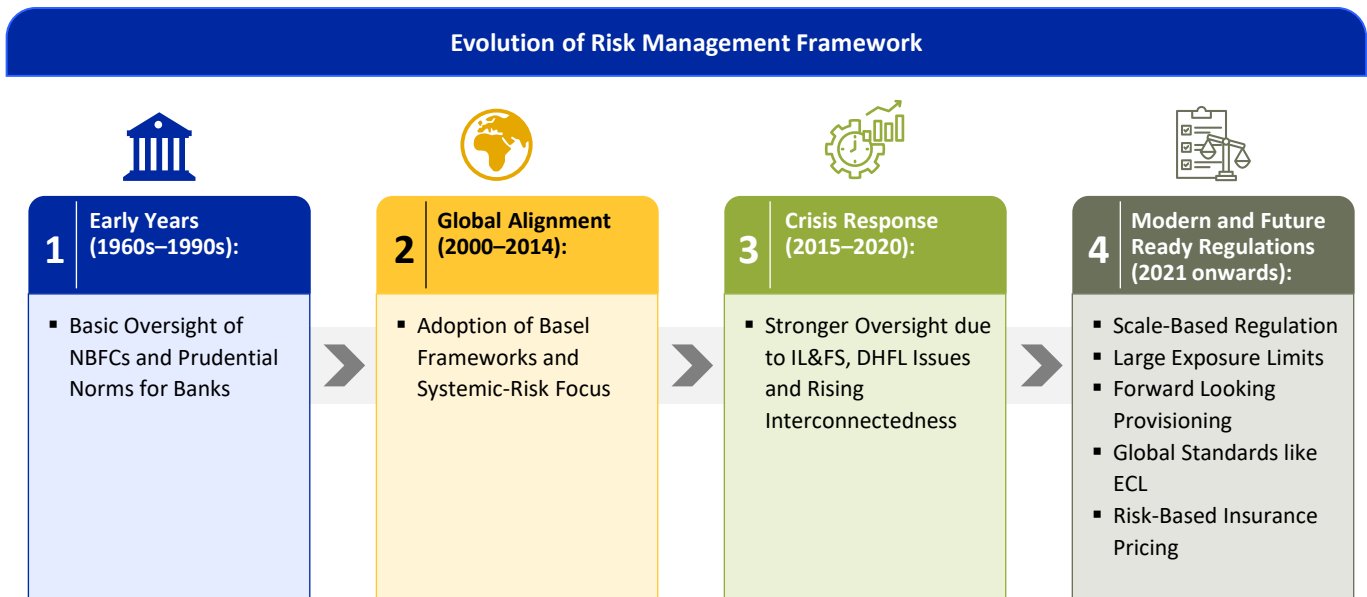
3.1 Regulatory Risk Management Framework

The RBI maintains a comprehensive risk management framework to safeguard financial stability, strengthen regulated entities (REs), and reduce systemic vulnerabilities. In addition, the regulatory framework has been strengthened over

several decades and is targeted to be aligned with global standards. Its approach has evolved alongside the growth of banks, NBFCs, and financial markets, and in response to global regulatory developments and domestic financial crises.



Figure 7: Broad timeline of financial regulation changes in India



Source: ICRA Research, RBI

Recent Changes by Regulator

The RBI has significantly strengthened its risk management framework across the financial system through several actions. It has worked towards reducing concentration risk, improving governance, enhancing controls, and strengthening prudential norms. FY2026 marks an important phase where the RBI introduced, consolidated and refined a series of frameworks with the objective to address systemic vulnerabilities, governance lapses, and depositor protection. These reforms align Indian regulations with global best practices while also responding to domestic financial sector needs.

Some of the key regulatory developments include updated Commercial Banks – Concentration Risk Management Directions, 2025 (updated January 2026), which impose strict prudential limits on exposure to single borrowers, interconnected groups, and sensitive sectors. These guidelines, aligned with global Basel Committee standards, require harmonised exposure measurement, sector specific thresholds, and tighter controls on inter

bank liabilities and country risk exposures, ensuring better diversification and stronger shock absorption capability for banks. The RBI has also reinforced governance and related party credit oversight of All India Financial Institutions (AIFIs) through the Credit Risk Management (Amendment) Directions, 2026. These directions expand the definition of related parties, mandate board approved credit risk policies, prohibit lending to directors or against own shares, and introduce whistleblowing safeguards to ensure transparency and prevent conflicts of interest. Parallely, recognising the growing systemic importance of NBFCs, the RBI introduced a unified Credit Risk Management Framework for NBFCs (2025), replacing fragmented earlier rules. This framework requires stronger underwriting standards, tighter connected lending norms, enhanced reporting, and differentiated requirements under the Scale Based Regulation architecture, while also regulating participation in credit default swaps to reduce contagion risks.

Another major reform is the introduction of a risk based deposit insurance premium system, which replaces the earlier flat rate structure. Under this model, well managed banks with stronger balance sheets pay lower premiums while riskier institutions pay higher rates, thereby incentivising prudent risk management. The deposit insurance coverage limit remains unchanged at Rs. 5 lakh per depositor per bank, though there has been discussion in the sector about a potential hike in the said limit.

To modernise provisioning practices, the RBI has also proposed the adoption of the ECL framework from April 2027 for SCBs and AIFIs. Unlike the traditional incurred loss model, ECL requires early identification of credit deterioration and more proactive provisioning, supported by a 4 year glide

3.2 Customer Safety – RBI’s Actions

The RBI has adopted a multi-pronged approach to strengthen customer safety across the financial ecosystem, focussing on transparency, security, and grievance redressal. It plays a pivotal role in ensuring customer safety by continuously strengthening consumer protection frameworks and grievance redress systems.

Grievance Redressal: For grievance redressal, the RBI operates the Integrated Ombudsman Scheme, offering customers a cost-free, speedy resolution mechanism, complemented by internal ombudsmen across banks and NBFCs along with a two-tier complaint system. This ensures that customer grievances are handled independently and effectively, improving service standards and customer confidence.

Safety from Frauds: The RBI has been working towards strengthening digital banking safety and addressing rising digital fraud risks through a series of actions. It recently introduced stricter digital banking guidelines effective January 2026. The

path for smooth transition through March 2031. Complementing this forward looking approach, the RBI’s proposed revised Basel III capital norms, to be effective from April 2027, update risk weights, sharpen risk sensitivity, and calibrate capital requirements especially for priority sectors such as MSMEs and affordable housing. These measures collectively enhance loan portfolio resilience, align Indian regulations with global best practices, and support sustainable credit flow without compromising prudential safeguards. Overall, the suite of reforms strengthens the resilience, transparency, and stability of India’s financial ecosystem, ensuring robust risk management practices across banks, NBFCs, and financial institutions.

new guidelines mandate banks to obtain explicit customer consent for activating services, provide transparent communication in multiple languages, implement robust cybersecurity audits, and give real-time alerts for all transactions. These norms also prohibit the bundling of digital services and enforce strong authentication measures, including multi-factor verification. Moreover, the RBI has launched initiatives like exclusive banking domains (bank.in) and mandatory additional factor of authentication (AFA) for international transactions to curb phishing and enhance trust in digital payments. Additional measures, such as upgraded UPI security rules requiring verified mobile numbers and explicit consent, further strengthen transactional safety and reduce fraud risk. Consumer awareness campaigns further empower customers to adopt safe banking practices and avoid fraud.

Collectively, these measures underscore the RBI’s commitment to safeguarding consumer interests while promoting a secure, inclusive, and transparent financial environment.

3.3 Digital Lending Guidelines – Overview and Objectives

Recognising the rapid evolution and growing significance of digital lending in the Indian financial ecosystem, the RBI issues guidelines to REs to ensure orderly growth, financial stability, and robust consumer protection. In May 2025, it issued the Digital Lending Directions, 2025, consolidating earlier frameworks such as the 2022 Digital Lending Guidelines and 2023 Default Loss Guarantee (DLG) norms. These directions aim to address concerns around mis-selling, data privacy breaches, exorbitant interest rates, and unethical recovery practices in the rapidly growing digital lending ecosystem. By introducing a unified regulatory framework, as it is applicable to all REs, the RBI intends to enhance transparency, strengthen consumer protection, and ensure responsible innovation while maintaining financial stability.

Key Provisions of Digital Lending Directions, 2025:

The directions lay down stringent norms for RE-LSP arrangements, mandating formal agreements and comprehensive due diligence on the LSP's technical capabilities, data protection posture, and compliance history. Loan disbursements must be made directly to borrower accounts and repayments must flow directly to RE accounts without third-party involvement. Borrowers must receive digitally signed documents and a Key Fact Statement (KFS) detailing the Annual Percentage Rate (APR), fees, and repayment terms. The borrower shall be given an explicit option to exit a digital loan by paying the principal and the proportionate APR without any penalty during an initial cooling-off period determined by the board of the RE.

Data Privacy and Technology Standards: The directions also impose strict technology and data privacy standards. Data collection must be need-based, with explicit borrower consent and audit trails. Borrowers have rights to restrict data sharing, revoke consent, and request deletion of personal data. All data must be stored on servers located in India, and comprehensive privacy policies must be disclosed publicly. Cybersecurity compliance is mandatory for both REs and LSPs.

Default Loss Guarantee Norms: The directions regulate default loss guarantee (DLG) arrangements, which allow LSPs or other REs to provide guarantees to compensate REs for loan defaults up to a specified percentage of the loan portfolio. DLG providers must be incorporated companies, and REs must have board-approved policies governing DLG arrangements. The directions cap the DLG cover at 5% of the disbursed loan portfolio and specify permissible forms of DLG, such as cash deposits, fixed deposits with a lien or bank guarantees. DLG arrangements are not permitted for revolving credit facilities, credit cards or loans already covered by government credit guarantee schemes. The directions clarify that the DLG does not substitute credit appraisal and underwriting standards but only acts as a risk mitigant.

Overall, the directions aim to foster innovation while safeguarding consumer interests by enforcing transparency, accountability, and governance. These guidelines are expected to enhance the user's trust in digital lending and promote fair practices aligned with financial inclusion objectives.

4 Credit Growth Needs of MSMEs

4.1 MSMEs: Backbone of Viksit Bharat Dream

MSMEs lie at the centre of India’s employment, entrepreneurship, and local value creation ecosystem and foster inclusive growth. Though these units are small at the micro level, they collectively play a disproportionately large role in the economy by generating employment, promoting regional dispersal of growth, and enhancing export competitiveness. Accordingly, MSMEs contribute towards the key pillars of India’s Viksit Bharat vision. The sector performs a dual function: sustaining traditional activities such as manufacturing and trade while driving innovation and new-age entrepreneurship. Strengthening MSME credit growth is, therefore, not merely a financial sector priority, but a national development imperative.

MSMEs bridge the gap between large-scale industry and individual entrepreneurship, and act

as an engine of economic growth and a catalyst for socio-economic transformation. In line with the Viksit Bharat vision, the GoI has undertaken multiple initiatives to support MSMEs, including Vocal for Local to promote indigenous production and the PM Vishwakarma Scheme to enhance skill development. Further, to simplify formalisation and improve access to government schemes, the Ministry of MSME launched the Udyam Registration Portal in July 2020. As on December 17, 2025, over 7.30 crore enterprises had been registered across the platforms.

Further, to help MSMEs scale operations and access better resources, the Union Budget 2025-26 increased the investment and turnover limits for classification by 2.5 times and 2 times, respectively, which became effective from April 01, 2025.

Figure 8: Change in investment and turnover limit effective April 2025

Enterprises	Investment		Turnover	
	Old	Revised	Old	Revised
Micro	1	2.5	5	10
Small	10	25	50	100
Medium	50	125	250	500

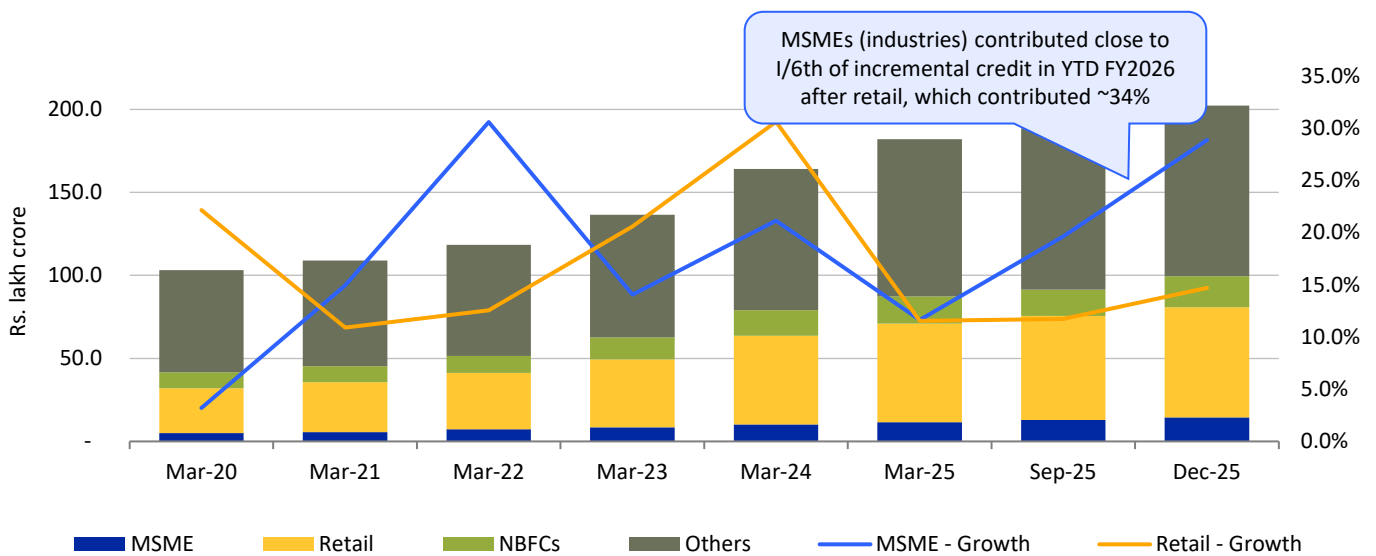
Source: ICRA Research; Union Budget 2025-26; Amount in Rs. crore

MSME Lending

Over the last few years, MSME lending has increasingly emerged as a key driver of overall bank credit growth, supported by formalisation, digitisation of cash flows, and targeted policy support. For instance, MSME credit growth outpaced several other segments in FY2025. The

credit outstanding of SCBs to MSMEs (industries) grew by a healthy 28.9% YoY to Rs. 14.4 lakh crore as on December 31, 2025 compared to the YoY growth rate of 11.7% in FY2025. In 9M FY2026, MSMEs (industries) contributed around 15% to incremental bank credit, similar to the 15% share in FY2025.

Figure 9: Trend in non-food bank credit and its constituents



Source: ICRA Research, RBI



This trend reflects:

- (a) improving lender confidence as portfolio performance stabilises in parts of the MSME book, and
- (b) increasing borrower willingness to engage with formal credit as documentation, digital payments, and data trails strengthen.

However, the MSME credit opportunity remains structurally underserved. Even where formal credit has expanded, demand continues to exceed supply, creating a large addressable market for banks, NBFCs and fintech led partnerships. While credit flow to the MSME sector has improved significantly, SIDBI's report on this sector¹ broadly estimates the addressable credit gap for the sector at ~Rs. 30 lakh crore.

4.2 Credit Needs: Specialised Lending Approach and Players

MSME credit growth requires segment specific underwriting, operational agility, and risk sharing structures rather than pure balance sheet lending expansion. The credit needs of MSMEs are fundamentally different from large corporates and standard retail lending. The segment is diverse, ranging from micro enterprises and proprietorships to formal SMEs integrated into supply chains. Consequently, MSME lending needs a specialised approach across product design, underwriting, servicing and collections.

1) Nature of MSME Credit Demand

- **Working Capital Intensity:** Many MSMEs face cash flow volatility due to seasonality, receivables cycles and input price fluctuations.
- **Thin Financial Buffers:** Limited equity cushions make them more sensitive to shocks (demand slowdown, delayed receivables, commodity volatility).
- **Collateral Constraints:** This is especially acute for micro and first generation entrepreneurs; hence, collateral free or partially secured structures become central to scaling credit. Regulatory directions in India reinforce

collateral free lending mandates for smaller-ticket MSE loans and encourage the use of guarantee covers.

- **Information Opacity:** This includes limited audited financials, mixed personal/business cash flows, and informality elevating the role of alternative data (GST, bank statement analytics, invoice flows, payment rails).

2) Specialised Underwriting and Monitoring

Assessing the income of MSME borrowers remains a significant challenge due to the inherent structural and operational constraints as a large proportion of MSMEs operate in informal sectors with limited or inconsistent financial documentation. Lenders may have to rely on self-reported income where the borrower may also understate/overstate their income to influence loan eligibility. Additionally, many have seasonal income, and establishing a trend becomes difficult in the absence of financial data for new-to-credit businesses as well as scattered data for existing businesses across informal ledgers. This leads to inaccurate credit assessment, using traditional credit appraisal methods.

¹ *Understanding Indian MSME sector: Progress and Challenges; released in May 2025*

In the absence of reliable financial documentation, lenders often resort to surrogate and observational methods to assess the creditworthiness of MSMEs. Some of the alternate data sources deployed by lenders for MSME underwriting include:

- Bank statement and transaction pattern analysis
- GST and invoice data, wherever available
- Bureau and behavioural indicators
- Sector specific risk scoring

Surrogate methods involve using alternative indicators such as utility bill payments and digital transaction patterns to estimate income and cash flows. These proxies help establish a borrower's operational scale and repayment capacity when audited financials are unavailable. Observational methods, on the other hand, rely on physical verification and qualitative assessment. While these approaches provide practical insights, they are inherently subjective and prone to inconsistencies across geographies and lender teams. Moreover, they increase operational costs and turnaround time, limiting scalability. Despite these limitations, surrogate and observational techniques remain critical in bridging the information gap for MSME lending, especially in semi-formal and cash-driven segments.

Additionally, collateral-based lending remains a dominant approach in MSME financing, primarily due to the perceived high credit risk associated with small businesses and the lack of reliable income documentation. Under this model, lenders secure loans against tangible assets such as property,

machinery or fixed deposits, which serve as a safety net in case of default. While collateralisation mitigates credit risk for banks and NBFCs, it creates significant barriers for micro and small enterprises that often lack sufficient assets to pledge. This reliance on collateral limits access to formal credit for asset-light businesses, start-ups, and service-oriented MSMEs, forcing them to depend on informal sources or high-cost borrowing.

3) Key Lending Players and their competitive edge

- **Banks:** Banks are one of the most important sources of funding for MSMEs as they can provide credit to MSMEs at attractive rates, given their lower cost of funds.
- **NBFCs:** Besides banks, NBFCs play an important role in delivering credit to MSMEs, given their stronger distribution reach, niche sector underwriting, faster turnaround, and higher comfort with informal segments.
- **Fintechs:** Fintechs play an important role in overcoming the limitations of traditional financing mediums for MSMEs. Through technology, they play the role of sourcing partner and underwriting enabler, with a focus on alternative data and collections innovation.
- **Development Finance Institution (DFIs)/ Development Institutions:** Refinancing, partial guarantees, and infrastructure are the key enablers for the entire ecosystem to deliver credit to MSMEs. These institutions not only act as the main funding source but also partake in imparting skill development and other operational support to MSMEs.

4.3 Evolution of Financing Structures: Co lending and Securitisation as Enablers

Access to timely and adequate credit remains a critical constraint for MSMEs, given their heterogeneous risk profiles, limited collateral, and high origination and monitoring costs for lenders. To scale MSME credit sustainably, the ecosystem has increasingly shifted towards partnership led origination and risk sharing from on balance sheet growth by lenders. Two such key modes are co lending and securitisation, which have emerged as structural enablers that help bridge this gap by improving credit flow, risk distribution, and capital efficiency within the financial system.

A) Co lending: Combining Reach with Balance Sheet Strength

Co lending structures typically combine:

- the **distribution/underwriting reach** of NBFCs/ fintech partnerships, and
- the **low cost funding** and scalability of banks.

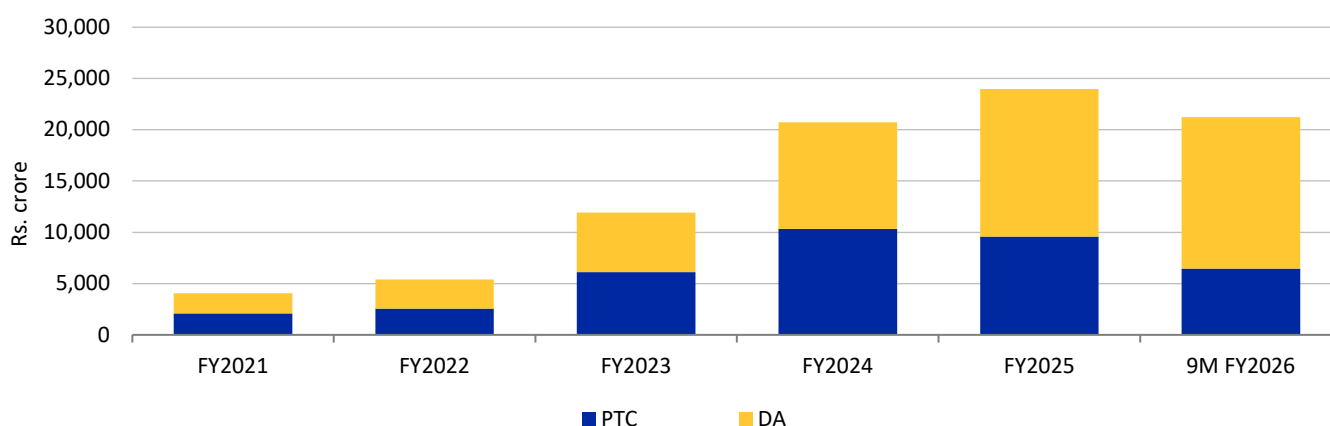
While NBFCs and fintechs bring superior origination capabilities, local presence, and data-driven underwriting for MSMEs, banks contribute lower-cost funding and stronger balance sheets. This partnership enables lenders to expand MSME outreach without proportionately increasing risk

concentration or operating costs. By sharing credit exposure, co lending reduces per lender risk, supports competitive pricing, and allows banks to access borrower segments that were previously uneconomical or operationally challenging. For MSMEs, this translates into improved credit availability, faster turnaround times, and better-aligned loan products, particularly for smaller enterprises and first-time borrowers.

B) Securitisation: Releasing Capital and Funding Constraints

Securitisation acts as an important enabler for MSME financing and involves pooling illiquid loans/ financial assets (MSME loans, trade receivables, etc.) and converts them into tradable securities eventually sold to investors. Lenders can aggregate MSME loans and either issue pass-through certificates (PTCs) or direct assignment (DA) deals to institutional investors. As SMEs continue to seek financing solutions to support their growth and development, securitisation emerges as a viable option that can address some of the challenges they face. By leveraging securitisation, SMEs can access capital markets and diversify their funding sources.

Figure 10: Current MSME securitisation landscape in India



Source: ICRA Research

As per the trend in recent years, securitisation of MSME receivables has been on an upward trajectory, witnessing a compound annual growth rate (CAGR) of more than 55% during FY2021-FY2025. Till FY2024, the share of PTCs and DA was similar. However, investor preference leaned towards DA deals in FY2025 and the trend continued in H1 FY2026 as well.

Securitisation helps in recycling capital and improving liquidity of MSME lenders. By pooling MSME loans and transferring them to investors, lenders can free up their balance sheet capacity, reduce asset-liability mismatches, and redeploy funds toward incremental lending. This is especially relevant for NBFCs, where balance sheet constraints often limit growth despite strong credit demand. Moreover,

securitisation enables risk dispersion across a wider investor base, including banks, mutual funds, and insurance companies, thereby reducing systemic concentration. Credit enhancements and structured tranching further help align risk-return preferences of investors, making MSME assets more investible. Over time, this supports the development of a deeper secondary market for MSME credit, which helps lenders to:

- recycle capital,
- diversify funding,
- improve asset liability management, and
- create headroom for incremental MSME origination.

4.4 Credit Guarantee Schemes: Managing Risk, Improving Access

Credit guarantees are central to expanding MSME credit where collateral and information gaps are binding constraints. They reduce lender loss severity and encourage broader coverage of new to credit and smaller borrowers.

Lending to MSMEs is inherently exposed to higher credit risk due to limited financial buffers, vulnerability to economic cycles, information asymmetry, and often inadequate collateral. Credit guarantee schemes (CGSs) have therefore emerged as a critical institutional mechanism to mitigate lender risk while expanding access to formal credit for MSMEs, particularly first-time and small borrowers.

- **Risk Mitigation for Lenders:** CGSs provide partial credit risk cover to lenders against borrower default, thereby reducing the loss given default (LGD). By absorbing a portion of potential losses, these schemes lower the

downside risk for lenders, encouraging them to extend credit to segments that would otherwise be perceived as too risky. This is especially relevant for micro and small enterprises, where traditional collateral coverage is weak or absent. From a prudential perspective, credit guarantees also help improve the risk-return profile of MSME portfolios, enabling lenders to manage capital consumption more efficiently.

- **Enabling Credit Expansion and Inclusion:** By addressing credit risk concerns, CGSs act as a powerful enabler of credit deepening and financial inclusion. They support lending to underserved MSME segments such as first-generation entrepreneurs, micro enterprises, and informal businesses transitioning into the formal economy. Importantly, guarantee-backed lending helps reduce reliance on collateral-based appraisal and shifts focus towards cash flow-based lending, which is more appropriate for MSMEs.

CGTMSE: In India, schemes such as CGTMSE have played a pivotal role in expanding collateral-free lending, particularly in the post-Covid-19 pandemic phase, when MSME balance sheets were under stress. The CGTMSE framework is designed to enable collateral free lending to eligible micro and small enterprises by providing partial credit risk coverage to member lending institutions.

Guardrails: International and domestic experience suggests that credit guarantees work best when:

- they are partial (retain lender skin in the game);

- operational processes ensure timely claim settlement; and
- portfolio level monitoring remains relevant.

The World Bank's principles for public credit guarantee schemes emphasise governance, risk management, eligibility clarity, transparent pricing, and systematic performance evaluation as useful benchmarks for strengthening guarantee effectiveness. Credit guarantees are best viewed as a risk sharing catalyst, not a substitute for underwriting.

4.5 Global Best Practices: What Works in MSME Finance

Global experience in advanced as well as emerging markets shows that sustained MSME credit growth depends on strengthening the enabling environment (credit infrastructure, legal frameworks, data systems) and targeted interventions (guarantees, concessional risk sharing, capacity building).

Globally, expanding MSME credit, particularly in rural and semi urban regions, has required a combination of institutional innovation, technology adoption, and targeted risk sharing mechanisms. International experience highlights that sustainable MSME credit growth is best achieved by aligning credit delivery models with local economic structures, cash flow patterns, and information availability, rather than relying solely on traditional collateral-based lending.

a) **Strengthening Last Mile Delivery through Local Institutions:** One of the most effective global practices has been the use of localised financial intermediaries, including community banks, cooperative institutions, microfinance entities, and DFIs, to improve rural MSME outreach. These institutions possess superior

understanding of local businesses, seasonal cash flows and informal economic linkages, enabling more accurate credit assessment and monitoring. Successful jurisdictions have focussed on capacity-building of such intermediaries, integrating them into the formal financial system while preserving their relationship-based lending strengths.

b) **Leveraging Alternative Data and Cash Flow Based Lending:** Globally, MSME credit expansion in rural areas has been supported by a shift from asset-based underwriting to cash flow-based and data-driven credit assessment. Use of alternative data, such as transaction histories, utility payments, supply-chain linkages and digital payment trails, has helped lenders overcome information asymmetry and thin credit files. This approach has been particularly effective for small rural enterprises, agri-linked MSMEs, and first-time borrowers, enabling formal credit access without heavy dependence on physical collateral.

- c) **Risk Sharing through Guarantees and Public Backstops:** International best practices underscore the importance of partial credit guarantees and public risk-sharing mechanisms to encourage rural MSME lending. Well-designed guarantee frameworks reduce lender risk while retaining adequate skin in the game, thereby preventing dilution of credit discipline. In many countries, guarantees are combined with counter-cyclical objectives, supporting credit flow during economic downturns, natural shocks, or sectoral stress – conditions to which rural MSMEs are particularly vulnerable.
- d) **Blended Finance and Developmental Capital:** Blended finance, where concessional or development capital is used alongside and/or compared to expensive private sector lending, has been another key global enabler. Development banks and multilateral institutions often provide first-loss support, refinancing lines or subordinated capital, allowing commercial lenders to scale MSME exposure in underserved regions. This approach improves viability of rural MSME lending by addressing structural challenges such as high operating costs, smaller ticket sizes, and longer breakeven periods, while ensuring long-term sustainability.
- e) **Digital Infrastructure and Ecosystem Integration:** Countries that have successfully scaled rural MSME credit have invested heavily in digital public infrastructure, including digital identity, interoperable payments, e-invoicing, and online registries. Integration of credit delivery with tax systems, procurement platforms, and supply chains has reduced onboarding costs and enhanced credit visibility of rural enterprises. Digitisation also enables faster disbursements, remote monitoring, and scalable servicing models, which are critical for cost-efficient rural outreach.
- Global experience suggests that rural MSME credit growth is maximised when policy support, institutional design, and technology adoption work in tandem. Rather than isolated interventions, an ecosystem approach – combining last-mile institutions, data-led underwriting, risk-sharing mechanisms, and digital infrastructure – creates a scalable and resilient rural MSME credit framework.

5 Sustainable Finance & Responsible Lending

India's transition towards a Viksit Bharat in an environmentally sustainable way has brought sustainable finance discourse to the centre stage. Financial institutions are increasingly looking at credit growth, while being careful towards environmental sustenance, social responsibility,

and sound governance practices. However, despite strong policy intent and growing market awareness, the integration of sustainability considerations into lending and investment decisions remains uneven and gradual.

5.1 ESG Integration – A Slow Start

While ESG considerations have gained visibility in capital markets, particularly through green bonds and sustainability linked debt, their integration into bank lending and credit appraisal frameworks

remains in a nascent stage in India. For most banks and NBFCs, ESG analysis is still largely qualitative, compliance oriented, and disclosure driven, rather than a core determinant of strategy.



Several structural aspects are the key limiting factors. First, the absence of a nationally accepted green or sustainable finance terminology has constrained consistency in defining what qualifies as green, transition or sustainable activity. Second, ESG data availability and reliability remain limited, particularly for unlisted entities, MSMEs, and infrastructure special purpose vehicles (SPVs). ESG disclosures under the Securities and Exchange Board of India (SEBI) Business Responsibility and Sustainability Reporting (BRSR) framework have significantly improved transparency for listed corporates, but their usefulness for credit risk assessment is still evolving.

From a lender's perspective, ESG integration raises a fundamental challenge, i.e. how to underwrite effectively. Renewable energy, electric mobility, green hydrogen, and storage technologies often involve evolving business models, technology risks, and policy dependencies. This makes conventional credit appraisal, largely based on historical cash flows and collateral, less effective. Consequently, banks have tended to adopt a cautious, incremental approach, preferring established renewable segments (such as utility scale solar and wind) while remaining hesitant on emerging areas like battery energy storage systems (BESS), offshore wind, green hydrogen, and carbon capture. This cautious stance partly explains why ESG aligned lending has not yet scaled in proportion to India's climate ambitions.

5.2 Renewable Energy Infrastructure – Specific Financing Needs

Scale and Nature of Capital Requirements

India's renewable energy transition is capital intensive and infrastructure heavy. Achieving the target of 500 GW of non fossil fuel capacity by 2030 requires sustained annual investments across generation, transmission, storage, and grid modernisation.

Renewable energy projects differ fundamentally from conventional infrastructure in their financing profile:

- High upfront capex with limited operating costs

- Long payback periods and stable, annuity like cash flows
- Heavy dependence on contractual certainty (power purchase agreements (PPAs), open access agreements)
- Sensitivity to policy, grid availability, and counterparty risk

These characteristics necessitate long tenor, low cost, and predictable financing, which remains difficult to source consistently from the domestic banking system.

Key Credit Challenges

Counterparty risk remains a central constraint in renewable financing, particularly exposure to financially stressed state owned distribution companies (DISCOMs). Delays in payments, renegotiation concerns, and PPA sanctity issues increase perceived credit risk, even for otherwise viable projects. Transmission constraints and

limited storage capacity result in curtailment risks, undermining cash flow stability. Addressing these challenges requires substantial investment in transmission networks and energy storage, estimated at several trillion rupees over the coming decade.

Emerging Segments and Financing Gaps

While utility scale solar and wind projects have relatively mature financing structures, several emerging segments face acute funding gaps:

- **Battery Energy Storage Systems (BESS):** High capital costs, evolving revenue models, and technology risks limit bank appetite despite recent policy support.
- **Green Hydrogen and Transition Technologies:** Long gestation periods and uncertain offtake

arrangements require blended finance and risk sharing mechanisms.

- **Decentralised and Rooftop Renewables:** Smaller ticket sizes and higher transaction costs constrain scalability without aggregation platforms or NBFC participation.

These segments underscore the need for tailored financial instruments, including viability gap funding, partial credit guarantees, and DFI participation.

5.3 Policy Framework and Credit Availability to Support Clean Energy Transition

Role of Monetary and Prudential Policy

India's clean energy transition increasingly intersects with monetary and financial stability considerations. The RBI has recognised climate change as a systemic financial risk, with implications for asset quality, inflation volatility, and long term growth. Priority sector lending (PSL) has emerged as a key policy lever.

Recent revisions to PSL guidelines have expanded coverage and increased loan limits for renewable energy projects, including hybrid systems, storage, and decentralised solutions, thereby improving credit accessibility for smaller and mid sized projects.

Capital Markets and Sustainable Debt

Capital markets are playing a growing role in bridging the long term financing gap. India's sustainable debt market – covering green, social, sustainability, and sustainability linked instruments – has scaled rapidly in recent years, supported by SEBI's strengthened regulatory framework and enhanced disclosure requirements.

However, bank participation remains critical, particularly during construction phases and for refinancing operational assets. Greater use of takeout financing, infrastructure investment trusts (InvITs), and bond refinancing can help recycle bank capital and reduce asset liability mismatches.

Conclusion

Sustainable finance and responsible lending in India are at an inflection point. While ESG integration has begun, it remains cautious, fragmented, and heavily policy driven. Renewable energy financing has achieved scale in select segments but continues to face structural credit and execution challenges. The evolving policy framework – spanning RBI, SEBI, and fiscal authorities – has laid the groundwork for deeper credit flow, yet effective implementation will depend on institutional capacity, risk sharing mechanisms, and market confidence.

Over the medium term, sustainable finance is likely to transition from a niche or compliance led activity to a mainstream determinant of credit allocation, as climate risks become financially material and clean energy investments mature. The pace of this transition will be critical not only for India’s climate commitments, but also for the resilience and relevance of its financial system in a low carbon future.

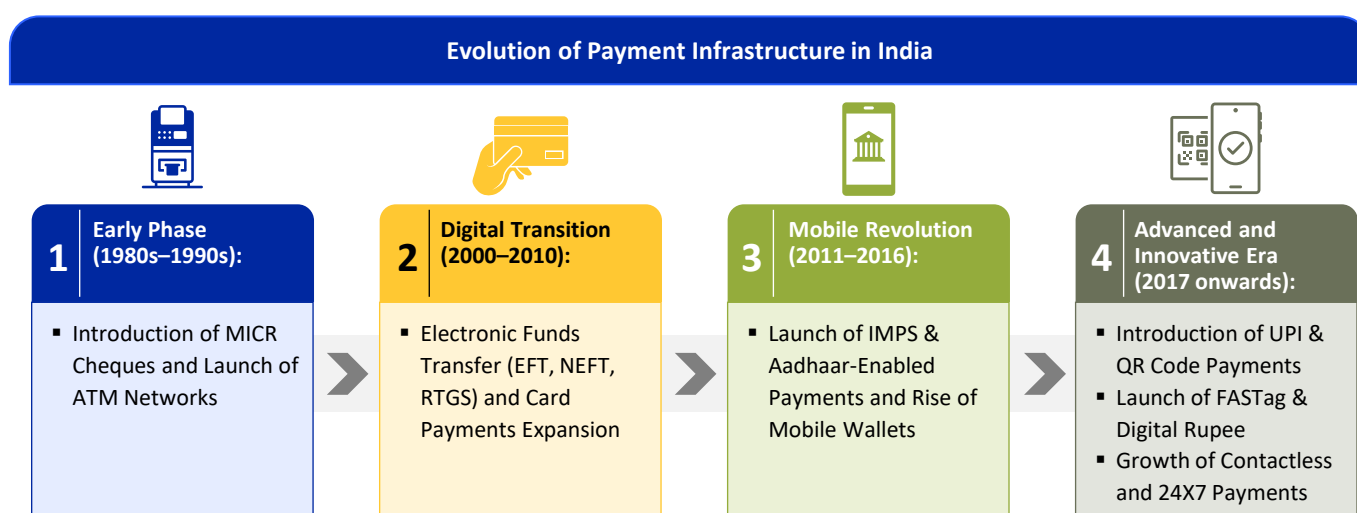


6 Digital Transformation & Financial Inclusion

Payment infrastructure acts as a backbone of economic activity, given its role in promoting financial inclusion, supporting business, and enabling seamless transactions. India's payment ecosystem, which traditionally revolved around cash,

has witnessed a remarkable transformation over the past decade, driven by technological innovation, changing consumer behaviour, and proactive policy interventions.

Figure 11: Broad timeline of payment infrastructure evolution in India



Source: ICRA Research, RBI

Historically, India's payments landscape had been centred around cash, cheques, demand drafts, and manual banking processes. Cash was the predominant means of exchange, prized for its simplicity and universal acceptance, particularly in rural or less-banked regions. Cheques and demand drafts were standard for non-cash and high-value transactions, but these instruments were hindered by lengthy clearing cycles and frequent administrative bottlenecks. Manual banking required in-person visits for routine activities such as deposits, withdrawals, and fund transfers, with all transactions recorded in physical passbooks and ledgers. These traditional methods, though reliable in their time, suffered from high significant delays, elevated costs and security risks due to cash handling.

The adoption of electronic funds transfer systems like National Electronic Funds Transfer (NEFT) and Real Time Gross Settlement (RTGS) marked a pivotal advancement. NEFT enabled batch-wise, bank-to-bank electronic fund transfers, typically settled hourly or in batches throughout the day, which greatly increased operational efficiency compared to manual systems. RTGS, developed for high-value transactions, provided real-time, gross settlement of funds, ensuring immediate and irreversible transfers during banking hours. These innovations dramatically improved speed, security, and reliability in payment settlements and addressed many limitations of traditional instruments. The introduction of such digital rails laid a strong foundation, preparing India's payment ecosystem for the wave of technological innovation along with the rise of internet and mobile banking.

6.1 Innovative Tools – UPI, Mobile Banking, Micro ATMs

The widespread availability of smartphones and affordable internet connectivity played a crucial role in accelerating the adoption of digital payment solutions in India. This transformation was further propelled by the Government’s initiative to interlink national identities with various platforms and bank accounts, laying the groundwork for a transition towards a cashless economy.

Today, India enjoys a diverse and dynamic payment ecosystem, with several prominent modes shaping the way transactions are conducted:

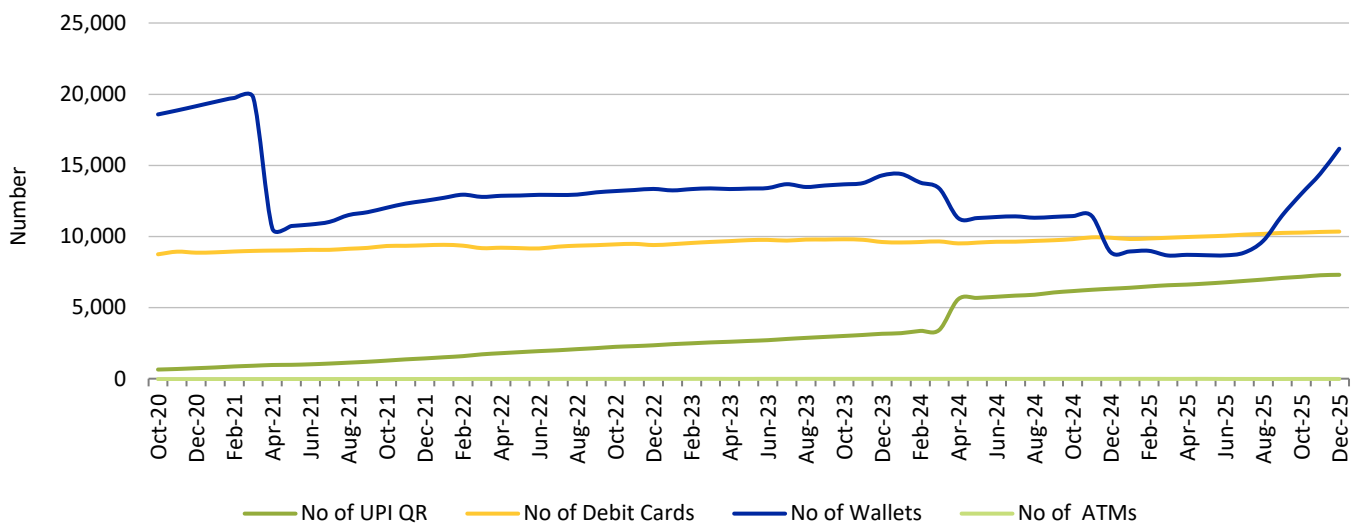
- **UPI:** UPI has revolutionised peer-to-peer and merchant payments, enabling instant fund transfer via mobile devices. Its interoperability across banks and platforms, coupled with minimal transaction costs, has made it the preferred choice for millions.
- **Mobile Banking:** Mobile banking apps offer a comprehensive suite of services, from account management to bill payments and fund transfers. The convenience and accessibility of

mobile banking have significantly reduced the need for physical branch visits.

- **Micro ATMs:** Micro ATMs extend banking services to remote and underserved areas, allowing customers to withdraw cash, check balances, and perform basic transactions using biometric authentication and Aadhaar-enabled payments.
- **Debit and Credit Cards:** Card-based payments remain popular for both online and offline transactions, supported by widespread point of sale (POS) terminals and secure payment gateways.
- **E-wallets:** Digital wallets like Paytm, PhonePe, and Google Pay provide quick, cashless payment options for everyday purchases, mobile recharges, and utility bill payments.

These innovations have collectively enhanced the speed, convenience, and security of payments, catering to a wide spectrum of users across urban and rural landscapes.

Figure 12: Comparison of prominent payment infrastructure

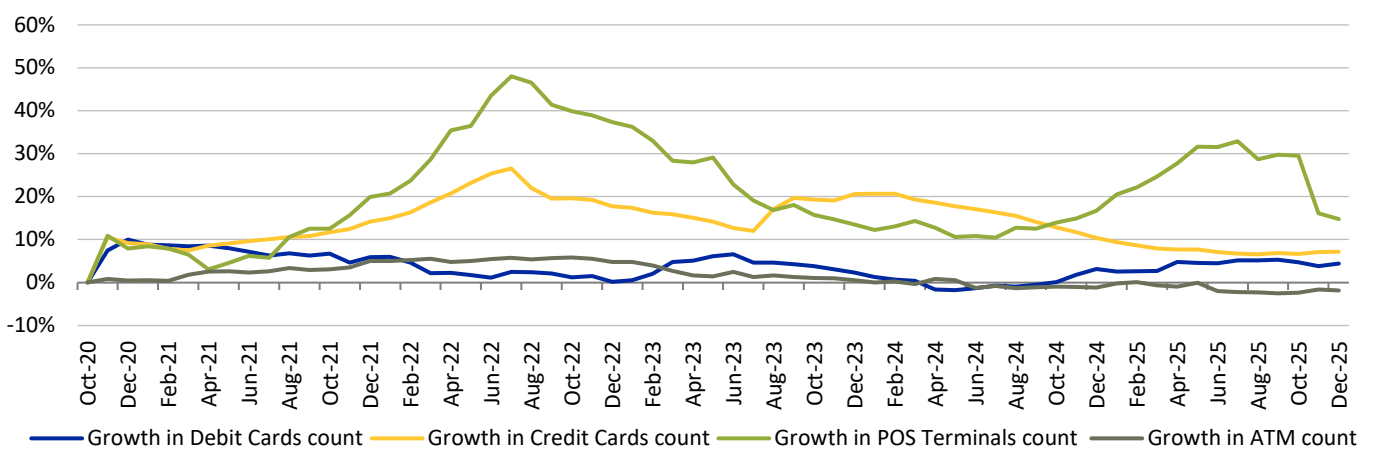


Source: RBI, ICRA Research

Post pandemic, the world witnessed a surge in contactless payments, wherein payment solutions like online wallets, UPI and QR-based payments gained significant traction. Meanwhile, traditional modes of payment infrastructure witnessed stagnated growth. There was a notable nosedive in the number of wallets in a few months in CY2021 on account of new know your customer (KYC) norms

for the maintenance of online wallets. Moreover, with the convenience of UPI payments, the number of wallets has witnessed some dips. Despite the occasional hiccups in the number of wallets, the count of total wallets outstanding as of December 2025 remained higher than the number of debit cards outstanding in the market.

Figure 13: YoY growth rate of traditional payment infrastructure

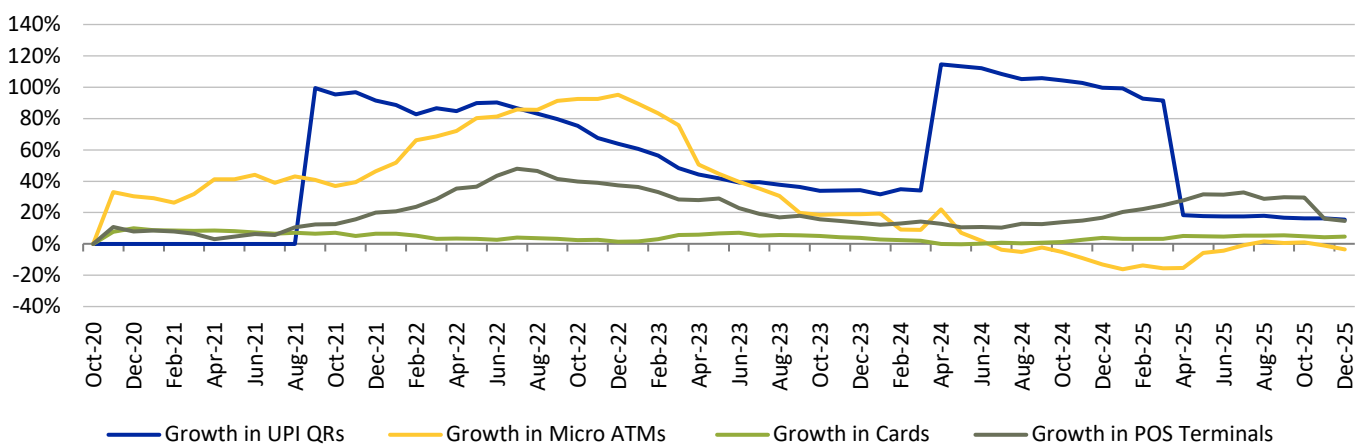


Source: RBI, ICRA Research

In recent years, the increased adoption of UPI payments has single-handedly catered to the incremental demand for payments in the country

while the infrastructure enabling cash-based payments like ATMs, micro-ATMs witnessed a moderation in count or even a decline at times.

Figure 14: YoY growth rate of new-age payment infrastructure compared to cards



Source: RBI, ICRA Research

Meanwhile, payment platforms like the POS terminal exhibited significant growth in the post-pandemic era with the technological adaptation to cater to contactless payments using credit and debit cards. Moreover, innovations by payment solution providers to adapt the POS terminal's technology to cater to UPI QR payments spread the cost of payments to a larger base of values. Growth in the POS terminal platform was propelled in the last 18

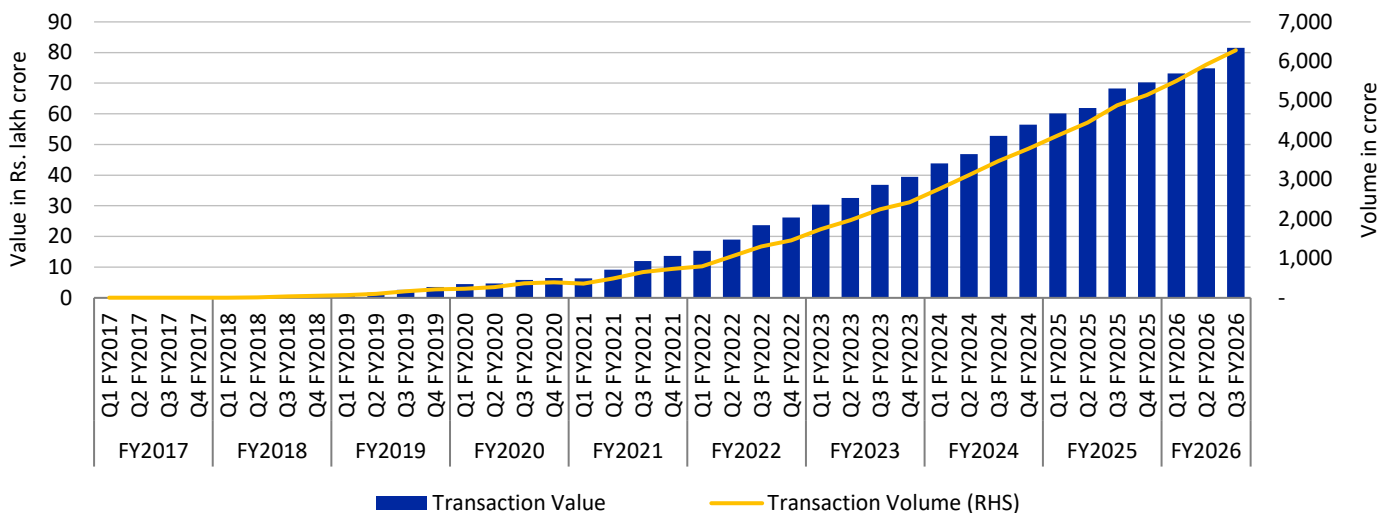
months with the rejig in merchant discount rate (MDR) charges for RuPay credit cards for small-ticket transactions, with the same becoming essentially charge free. This along with other changes led to increase in the number of merchants registering with UPI adding to the growth in QR codes. Later on, the base effect resulted in decline in growth rate in the current fiscal.

6.2 Financial Inclusion – Turning Dream into Reality

One of the most profound impacts of the payment technology evolution in India has been the expansion of financial inclusion. Digital solutions have bridged the gap between formal banking and the unbanked population, bringing essential financial services to the doorsteps of millions. Government initiatives such as Jan Dhan Yojana and Aadhaar-enabled payment systems have further reinforced this trend.

The widespread adoption of UPI and e-wallets has enabled small businesses, street vendors, and gig workers to accept digital payments, enhancing their earning potential and financial security. Mobile banking and micro ATMs have played a crucial role in reaching remote villages and marginalised communities, empowering them to participate in the formal economy.

Figure 15: UPI transaction volume and value growth since inception



Source: RBI, ICRA Research

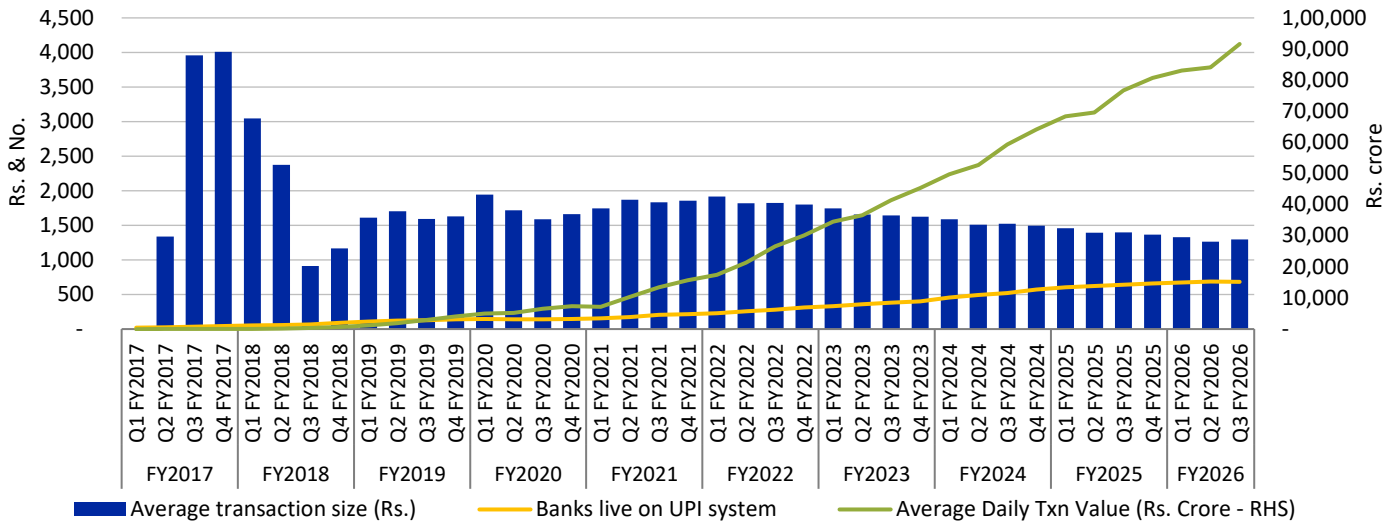
Since its inception in FY2017, UPI payments have gained momentum and scaled new heights in volume and transaction values. The ease of setting

up the infrastructure in digital systems via a mere QR code and the ability to pay with minimal effort have supported transaction volumes.

In rural India, micro ATMs have become lifelines for communities with limited access to traditional bank branches. Field agents equipped with handheld devices facilitate cash withdrawals and deposits, often using biometric verification for added security.

The adoption of mobile banking apps has enabled farmers, artisans, and small traders to receive payments directly into their accounts, reducing dependence on cash and informal channels.

Figure 16: No. of banks on UPI system and comparison with transaction ticket size



Source: RBI, ICRA Research

UPI's average daily transaction volumes have been on the rise while the ticket size per transaction has become granular, indicating widespread adoption with a reported 52.5-crore users as on December 31,

2025. With the increased adoption of technology in daily lives, more banks have joined the platform with 685 registered participating banks on the network.

Figure 17: Countries on board with usage of UPI or RuPay products



Source: NPCI, ICRA Research; As on December 31, 2025

With approximately eight countries already accepting UPI's QR-based payments and others facilitating cross-border transactions with India, UPI is paving the way for the development of a potentially global payment system for making international payments.

As India continues its journey towards a digitally empowered economy, the evolution of payment technologies will remain a cornerstone of financial transformation. Ongoing innovation in areas

such as contactless payments, blockchain, and artificial intelligence promises to further streamline transactions, enhance security, and personalise user experiences. The integration of payment technologies into everyday life is not merely a matter of convenience but also a catalyst for inclusive growth, sustainable development, and national progress.



6.3 Addressing Concerns around Cybersecurity and Data Privacy

The rapid adoption of fast payment systems has significantly enhanced convenience and financial access for millions of users. However, this has also increased vulnerabilities and associated fraud risks. Users are increasingly exposed to cyber-attacks, wherein fraudsters manipulate individuals into revealing sensitive information such as PINs, passwords or one time passwords (OTPs). In addition, the speed, scale, and ubiquity of UPI transactions make the ecosystem an attractive target for sophisticated cyber threats. These risks underscore the growing importance of robust cybersecurity frameworks and continuous user awareness.

To address these challenges, National Payments Corporation of India (NPCI), which operates UPI, has instituted multiple layers of security controls, including end to end encryption and tokenisation to protect sensitive financial data. UPI mandates two factor authentication for every transaction, typically combining a device bound credential with a PIN, biometric verification or OTP. Further, strict compliance with data localisation requirements ensures that transaction data remains within India, reducing exposure to cross border cyber risks. Ongoing measures such as periodic security audits, real time fraud monitoring, and close coordination with banks and fintech partners enable early detection and mitigation of emerging threats.

6.4 Enhancing Customer Experience

The emergence of new payment methods, particularly UPI, has fundamentally transformed consumer financial transactions in India and beyond. Long standing frictions associated with traditional banking have given way to instant, 24x7 digital payments delivered through intuitive mobile applications, enabling seamless transactions ranging from utility payments to everyday retail purchases. The widespread adoption of QR code-based payments has further expanded cashless acceptance across merchants of all sizes, strengthening digital inclusion and consumer trust.

Advances in security, including multi factor authentication, real time transaction alerts, and transparent digital records, have enhanced

consumer confidence and control over personal finances. Peer to peer transfers have become instantaneous and interoperable across banks and fintech platforms, effectively eliminating institutional boundaries. At the same time, payment platforms are increasingly leveraging data analytics to provide personalised experiences, targeted offers, and improved customer support through in app assistance and chatbots. Looking ahead, emerging innovations such as voice enabled payments and wearable devices are expected to further enhance convenience. Collectively, these developments are delivering faster, safer, and more engaging payment experiences, reinforcing digital empowerment and deepening the shift toward a cash light economy.

7 Global Best Practices and Collaboration

7.1 International Insights on MSME Financing

Globally, MSMEs play a vital role in driving economic growth, employment, and innovation. However, access to finance remains a significant barrier for MSMEs, especially in emerging markets. International best practices demonstrate that digital financial services, credit guarantee schemes, and the integration of alternative data for credit assessment have been effective in bridging the MSME financing gap. In addition, collaboration between traditional banks, fintechs, and multilateral development agencies has fostered innovative products tailored to the unique needs of MSMEs, such as supply chain financing and invoice discounting. These efforts are supported by regulatory frameworks that encourage responsible lending while promoting financial inclusion.

- **Digital Lending Platforms:** Accelerate loan approvals using alternative data (e.g., mobile payment history, utility bills)
- **Credit Guarantee Schemes:** Government-backed guarantees reduce lender risk and expand MSME access to credit
- **Supply Chain Financing:** Enables MSMEs to obtain working capital based on receivables, improving liquidity
- **Public-Private Partnerships:** Collaboration among banks, fintechs, and international organisations fosters innovation and capacity building
- **Regulatory Sandboxes:** Allow experimentation with new financial products in a controlled environment, balancing innovation and consumer protection

7.2 Cross-border Lending and Risk Management

Key Challenges

Cross-border lending, while offering significant opportunities for financial growth and market expansion, is fraught with multiple challenges. One of the primary obstacles is the complexity of regulatory environments across different jurisdictions. Lack of harmonisation across jurisdictions not only increases operational costs for lenders but also exposes them to legal and compliance risks. Moreover, differences

in accounting standards, reporting requirements, and tax regimes add layers of difficulty for lenders seeking to operate internationally.

Another major challenge is currency risk. Lending across borders inevitably involves exposure to foreign exchange fluctuations. Further, political and economic instability in borrower countries can lead to heightened credit risks.

Information asymmetry also poses a significant risk in cross-border lending. Lenders often lack access to reliable credit histories, financial statements, and background information on foreign borrowers. Additionally, differences in legal systems can complicate the enforcement of loan agreements and the recovery of assets in the event of default.

Solutions

Despite these challenges, several solutions have evolved and continue to evolve. Regulatory harmonisation helps lenders by creating a more predictable and stable environment for cross-border lending. The international banking standards set by the Basel Committee provide a uniform framework while cross-border credit bureaus and data-sharing platforms address information asymmetry by providing lenders with more accurate and comprehensive borrower profiles.

Technological innovations also play a crucial role. Advanced risk assessment tools, leveraging artificial intelligence and machine learning, can analyse vast amounts of data from multiple sources, enabling more accurate credit scoring and early detection of potential defaults. Blockchain technology is being explored for its potential to streamline cross-border payments, enhance transparency, and enable real-time tracking of transactions, reducing fraud and operational risks.

Operational challenges, including differences in language, business culture, and communication practices, can create misunderstandings and hinder the effective management of cross-border lending relationships. The logistical difficulties of monitoring and servicing loans in distant markets may also result in delays or lapses in risk management processes.

Currency risk management is taken care of through hedging instruments and the development of multi-currency lending platforms, which allow borrowers and lenders to manage exchange rate exposures more effectively. Meanwhile, public-private partnerships and regulatory sandboxes are fostering innovation by allowing financial institutions to test new cross-border lending models in a controlled environment.

In summary, while cross-border lending remains a complex and risky endeavour, ongoing regulatory reforms, technological advancements, and collaborative frameworks are paving the way for more robust risk management and greater confidence among international lenders. As these solutions continue to mature, the prospects for safe and efficient cross-border lending are set to improve significantly in the coming years.

7.3 Learnings from Global Regulatory Frameworks

Global regulatory frameworks across banking and financial systems reflect a common objective: safeguarding financial stability while enabling sustainable growth and innovation.

Global regulatory frameworks governing international finance have evolved through hard earned lessons from repeated crises and regulatory shortcomings. Early approaches to cross border banking supervision were largely fragmented, with jurisdictions applying divergent standards for capital adequacy, risk management, and disclosure. This lack of harmonisation and coordinated oversight created significant regulatory gaps and arbitrage loopholes for financial institutions. Past financial crises repeatedly exposed the systemic risks arising from inadequate capital buffers, opaque risk transfer mechanisms, and weak supervisory enforcement.

In response, international standard setting bodies – most notably the Basel Committee on Banking Supervision – have driven efforts to establish more coherent and resilient global frameworks. The successive Basel Accords (Basel I, II, and III) represent key milestones, progressively strengthening capital requirements, risk sensitivity, leverage controls, and liquidity standards. Complementing the Basel framework, institutions such as the Financial Stability Board have promoted enhanced cross border supervisory cooperation, system wide stress testing, and oversight of systemically important financial institutions. Measures including improved

risk disclosures, and convergence towards common accounting standards such as International Financial Reporting Standards (IFRS) have helped reduce discrepancies in reporting, making it easier to compare financial health across borders.

Some of the key learnings or broad principles can be enumerated below:

- Need of robust capital and liquidity standards to enhance resilience
- Risk based supervision rather than uniform, one size fits all rules
- Forward-looking supervision including stress testing, scenario analysis, and early warning indicators
- Coordination has become increasingly critical in an interconnected financial system where risks can transmit rapidly across jurisdictions
- Stability with innovation – regulatory sandboxes, phased licensing, and activity based regulation allow new business models to develop under controlled conditions, thereby maintaining oversight without stifling innovations
- Growing emphasis on governance, risk culture, accountability, enhanced disclosure requirements and conduct standards

Overall, global regulatory frameworks demonstrate that effective regulation is dynamic and forward looking. The key learning is the need to balance resilience, market discipline, and innovation through strong capital buffers, proactive supervision, credible resolution mechanisms, and coordinated

oversight. These principles remain highly relevant for strengthening domestic regulatory frameworks in an increasingly complex and interconnected financial environment.



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