Financial Stability Report

December 2024

Reserve Bank of India

Financial Stability Report

December 2024

Reserve Bank of India

The publication can also be accessed through Internet at **https://www.rbi.org.in**

Feedback of this report may be mailed to **cgmfsd@rbi.org.in**

Published by Financial Stability Department, Reserve Bank of India, Mumbai 400 001 and designed and printed at Jayant Printery LLP, 352/54, Girgaum Road, Murlidhar Temple Compound, Near Thakurdwar Post Office, Mumbai - 400 002.

Foreword

As the year 2024 draws to a close and a new year dawns, the global economy exhibits resilience in the face of formidable headwinds from political and economic policy uncertainty, persisting conflicts and an environment of fragmenting international trade and tariffs. Brightening the global prospects is the likelihood that the decline in inflation will continue and align with targets during the year ahead, allowing purchasing power to recover. As monetary policy gains headroom to further support economic activity, financial conditions can be expected to remain easy and contribute to an improvement in the trajectory of global GDP from a prolonged phase of low growth. Robust labour market and sound financial system too provide congenial conditions for this turnaround.

The medium-term outlook, however, remains challenging, with downside risks from possible intensification of geopolitical conflicts, sporadic financial market turmoil, extreme climate events and rising indebtedness. Stretched asset valuations, fragilities in the less regulated non-bank financial intermediaries, and threats from new and emerging technologies also add to the evolving uncertain outlook.

The resilience of financial systems can be tested if these risks materialise. Prudently, therefore, even as near-term risks to financial stability appear to be receding, the national financial regulators and supervisors across the globe remain on guard, scarred by the lessons drawn from experiences of black swan events such as the global financial crisis and the pandemic as well as from episodic visitations of financial market volatility. Further, they are maintaining their focus on strengthening the financial institutions while collaborating with international standard-setting bodies to deepen regulatory reforms, especially in areas of possible vulnerabilities in the global financial system.

Financial sector regulators in India too are intensifying reforms and sharpening their surveillance against the backdrop of the soundness of the financial system bolstered by robust earnings, low levels of impaired assets and strong capital buffers, as this report highlights. Stress test results reveal that capital levels of the banking system as well as of the non-banking financial companies (NBFCs) sector will remain well above the regulatory minimum even under adverse stress scenarios.

Notwithstanding the uncertainties shrouding the global macrofinancial ethos as it unfolds, prospects for the Indian economy are expected to improve after the slowdown in the pace of economic activity in the first half of 2024-25. Consumer and business confidence for the year ahead remain high and the investment scenario is brighter as corporations step into 2025 with robust balance sheets and high profitability.

As we strive to preserve financial stability to support a higher growth path for the Indian economy, our focus remains steadfast on maintaining stability of financial institutions and, more broadly, systemic stability. We continue to secure and anchor public trust and confidence to support India's aspirational goals. We remain committed to developing a modern financial system that is customer-centric, technologically leveraged and financially inclusive.

Sanjay Malhotra
Governor

December 30, 2024

Contents

Page No.

Page No.

LIST OF BOXES

Chapter I

Chapter II

LIST OF CHARTS

Chapter I

Page No.

Page No.

Chapter II

Page No.

LIST OF TABLES

Chapter I

Page No.

Chapter II

Chapter III

List of Select Abbreviations

3-MMA	3-Month Moving Average
AA	Adjudicating Authority
AD	Assessable Deposit
ADDV	Average Daily Delivery Value
AEs	Advanced Economies
AFS	Available for Sale
AI	Artificial Intelligence
AID	All Inclusive Direction
AIFs	Alternative Investment Funds
AIFIs	All India Financial Institutions
AMCs	Asset Management Companies
AMFI	Association of Mutual Funds in India
AML	Anti Money Laundering
APY	Atal Pension Yojana
AR	Authorised Representative
AUM	Assets Under Management
BBPS	Bharat Bill Payment System
BCBS	Basel Committee on Banking Supervision
BCP	Business Continuity Plan
BE	Budget Estimates
BG	Bank Guarantee
BIFR	Board for Industrial and Financial Reconstruction
BIS	Bank for International Settlements
BoE	Bank of England
BSDA	Basic Services Demat Account
BSI	Banking Stability Indicator
CBOE	Chicago Board Options Exchange
CAD	Current Account Deficit
CAF	Common Application Form
CAGR	Compounded Annual Growth Rate
CASA	Current Account and Savings Account
CBDCs	Central Bank Digital Currencies
CBF	Central Bank Funding
CCI	Cyber Capability Index
CCIL	Clearing Corporation of India Limited
CCMP	Cyber Crisis Management Plan
CCPs	Central Counterparties
CCs	Clearing Corporations
CDD	Client Due Diligence
CDs	Certificates of Deposits
CDS	Credit Default Swaps
CDSL	Central Depository Services Limited
CET1	Common Equity Tier 1
CFT	Combating the Financing of Terrorism
CICRA	Credit Information Companies (Regulation) Act, 2005
CICs	Core Investment Companies
CIs	Credit Institutions
CIRP	Corporate Insolvency Resolution Process
CIS	Customer Information Sheet
CISO	Chief Information Security Officer
CLOs	Collateralised Loan Obligations
CMIs	Capital Market Intermediaries
CMs	Clearing Members
CoC	Committee of Creditors
CoR	Certificate of Registration
CP	Commercial Paper
CPI	Consumer Price Index
CPMI	Committee on Payments and Market Infrastructures
CRAR	Capital to Risk-Weighted Assets Ratio
CRAs	Credit Rating Agencies
CSCRF	Cybersecurity and Cyber Resilience Framework
DC	Disciplinary Committee
DeFi	Decentralised Finance
DGA	Duration Gap Analysis

DGCI&S	Directorate General of Commercial Intelligence & Statistics
DICGC	Deposit Insurance and Credit Guarantee Corporation
DIF	Deposit Insurance Fund
DLT	Distributed Ledger Technology
DMA	Direct Market Access
DPD	Days Past Due
DR	Disaster Recovery
DSR	Debt Service Ratio
EAR	Earnings At Risk
EBIT	Earnings Before Interest and Taxes
EBPT	Earnings Before Profit and Tax
ECB	External Commercial Borrowings
EMDEs	Emerging Markets and Developing Economies
EMP	Exchange Market Pressure
EPS	Earnings per Share
ERPs	ESG Rating Providers
ESG	Environmental, Social, and Governance
ESMA	European Securities and Markets Authority
EU	European Union
EWS	Early Warning Signals
FAR	Fully Accessible Route
FATF	Financial Action Task Force
FBs	Foreign Banks
FBIL	Financial Benchmarks India Pvt. Limited
FCs	Financial Creditors
FCI	Financial Conditions Index
FDI	Foreign Direct Investment
FDRs	Fixed Deposit Receipts
FIU-IND	Financial Intelligence Unit - India
FMEs	Fund Management Entities
FPI	Foreign Portfolio Investment
FRBM	Fiscal Responsibility and Budget Management
FRED	Federal Reserve Bank of St. Louis
FSB	Financial Stability Board
FSDC	Financial Stability and Development Council
FSDC-SC	Sub Committee of the Financial Stability and Development Council
FSR	Financial Stability Report
FSSI	Financial System Stress Indicator
FVTPL	Fair Value Through Profit and Loss
FY	Financial Year
F&O	Futures and Options
G20	Group of Twenty
GDP	Gross Domestic Product
GenAI	Generative AI
GFC	Global Financial Crisis
GFD	Gross Fiscal Deficit
GNPA	Gross Non-Performing Asset
GSDP	Gross State Domestic Product
G-secs	Government Securities
HFCs	Housing Finance Companies
HFT	Held for Trading
HQLAs	High Quality Liquid Assets
HTM	Held-to-Maturity
HUF	Hindu Undivided Families
IBBI	Insolvency and Bankruptcy Board of India
IBUs	IFSC Banking Units
ICR	Interest Coverage Ratio
ID	Insured Deposit
IFSC	International Financial Services Centre
IFSCA	International Financial Services Centres Authority
IIBX	India International Bullion Exchange
IIP	International Investment Position
IMF	International Monetary Fund
Ind-AS	Indian Accounting Standards
INR	Indian Rupee
InvITs	Infrastructure Investment Trusts

IOSCO	International Organization of Securities Commissions
IPO	Initial Public Offering
IPs	Insolvency Professionals
IRF	Impulse Response Function
IRDAI	Insurance Regulatory and Development Authority of India
IRP	Interim Resolution Professional
IU	Information Utilities
JPY	Japanese Yen
KRIs	Key Risk Indicators
KYC	Know Your Customer
LCR	Liquidity Coverage Ratio
LDMs	Lead District Managers
LEAs	Law Enforcement Agencies
LEI	Legal Entity Identifier
LGD	Loss Given Default
LPCC	Limited Purpose Clearing Corporation
LT	Long-term
MDG	Modified Duration Gap
MF	Mutual Fund
MFOS	Mutual Fund Overnight Schemes
MII	Market Infrastructure Institutions
ML	Machine Learning
MoU	Memorandum of Understanding
MPS	Minimum Public Shareholding
MQSOS	Median Quarter Sigma Order Size
MRC	Minimum Required Corpus
MSCI-EMI	Morgan Stanley Capital International-Emerging Markets Index
MSF	Marginal Standing Facility
MTM	Mark-To-Market
MVE	Market Value of Equity
MWPL	Market Wide Position Limit
NABARD	National Bank for Agriculture and Rural Development
NAVs	Net Asset Values
NaBFID	National Bank for Financing Infrastructure and Development
NBFC	Non-Banking Financial Company
NBFC-ML	Middle-layer NBFC
NBFC-UL	Upper-layer NBFC
NBFI	Non Banking Financial Intermediation
NBSI	Non Banking Stability Indicator
NCD	Non-Convertible Debenture
NCLT	National Company Law Tribunal
NCMC	National Common Mobility Card
NCRPS	Non-Convertible Redeemable Preference Shares
NDTL	Net Demand and Time Liabilities
NFC	Non-Financial Company
NGFS	Network for Greening the Financial System
NGOs	Non-Government Organisations
NHB	National Housing Bank
NIC	National Industrial Classification
NII	Net Interest Income
NIM	Net Interest Margin
NNPA	Net Non-Performing Assets
NoC	No-Objection Certificate
NOI	Net Operating Income
NPS	National Pension System
NRIs	Non-Resident Indians
NSDL	National Securities Depository Limited
NSFR	Net Stable Funding Ratio
NSUCBs	Non-Scheduled Urban Cooperative Banks
OCIs	Overseas Citizens of India
OECD	Organisation for Economic Co-operation and Development
OIS	Overnight Indexed Swap
OOI	Other Operating Income
ORBIO	Offices of the Reserve Bank of India Ombudsman

OSS	Off-Site Surveillance
OTC	Over-The-Counter
OTM	Out-of-The-Money
PA	Provisional Accounts
PCA	Prompt Corrective Action
P/E	Price-to-Earnings
PAT	Profit After Tax
PCMs	Professional Clearing Members
PCR	Provisioning Coverage Ratio
PFRDA	Pension Fund Regulatory and Development Authority
P&L	Profit and Loss
PMS	Portfolio Management Services
PoPs	Points of Presence
PSBs	Public Sector Banks
PSF	Product Success Framework
PSL	Priority Sector Lending
PSOs	Payment System Operators
PVBs	Private Sector Banks
QIPs	Qualified Institutional Placements
RECO	Revenue Expenditure to Capital Outlay
REITs	Real Estate Investment Trusts
REER	Real Effective Exchange Rate
REs	Regulated Entities
RFA	Red Flagging of Accounts
RI	Resident Indian
RoA	Return on Asset
RoD	Record of Default
RoE	Return on Equity
RPs	Resolution Plans
RRBs	Regional Rural Banks
RSAs	Rate-Sensitive Assets
RSLs	Rate-Sensitive Liabilities
RVEs	Registered Valuer Entities
RVs	Registered Valuers
RWA	Risk-Weighted Assets
SA	Sponsored Access
SAF	Supervisory Action Framework
SBs	Stock Brokers
SCBs	Scheduled Commercial Banks
SCN	Show Cause Notice
SD	Standard Deviation
SDLs	State Development Loans
SEBI	Securities and Exchange Board of India
SEs	Supervised Entities
SEZ	Special Economic Zone
SFBs	Small Finance Banks
SGrBs	Sovereign Green Bonds
SGF	Settlement Guarantee Fund
SIPs	Systematic Investment Plans
SLBCs	State Level Banker's Committees
SLCCs	State Level Coordination Committees
SLR	Statutory Liquidity Ratio
SMAs	Special Mention Accounts
SMEs	Small and Medium Enterprises
SROs	Self Regulatory Organisations
SRS	Systemic Risk Survey
SUCBs	Scheduled Urban Cooperative Banks
SWITS	Single Window IT System
TGA	Traditional Gap Analysis
ToRs	Terms of Reference
TR	Trade Repository
TRAI	Telecom Regulatory Authority of India
UCB	Urban Cooperative Bank
UCC	Unsolicited Commercial Communications
USCNBA	Up Streaming Client Nodal Bank Account
VAR	Vector Auto Regression
VARX	Vector Auto Regression with Exogenous Variables
VIX	Volatility Index
VRIN	Valuation Report Identification Number

Overview

The Financial Stability Report (FSR) is a half-yearly publication, with contributions from all financial sector regulators. It presents the collective assessment of the Sub Committee of the Financial Stability and Development Council on current and emerging risks to the stability of the Indian financial system.

Global Macrofinancial Risks

The global economy and the financial system remain resilient despite heightened uncertainty. Normalisation of monetary policy is underway and financial conditions remain accommodative. While near-term risks have receded, vulnerabilities such as stretched asset valuations, high public debt, prolonged geopolitical conflicts and risks from emerging technologies pose threats to financial stability in the medium term. Emerging market economies (EMEs) face challenges in preserving financial stability from global spillovers and growing uncertainty regarding trade policies and logistics disruptions.

Domestic Macrofinancial Risks

Against an uncertain global backdrop, the Indian economy is exhibiting steady growth, underpinned by solid macroeconomic fundamentals and strong domestic growth drivers. The domestic financial system is demonstrating resilience, supported by healthy balance sheets of banks and non-banks, and fortified by strong capital buffers, robust earnings and improving asset quality. Vulnerabilities in the form of stretched equity valuations, pockets of stress in the microfinance and consumer credit segments and risks from external spillovers require close monitoring.

Financial Institutions: Soundness and Resilience

The soundness of scheduled commercial banks (SCBs)[1] has been bolstered by strong profitability, lower non-performing assets and adequate capital and liquidity buffers. Return on assets (RoA) and return on equity (RoE) are at decadal highs, while gross non-performing assets (GNPA) ratio has fallen to a multi-year low.

Macro stress tests, which are not forecasts and are based on adverse hypothetical scenarios, demonstrate that most SCBs have adequate capital buffers relative to the regulatory minimum even under adverse stress scenarios. Stress tests of mutual funds and clearing corporations also attest to the resilience of these segments.

The CRAR of urban co-operative banks (UCBs) has remained robust in September 2024, while that of non-banking financial companies (NBFCs) is well above the prescribed regulatory minimum. The consolidated solvency ratio of the insurance sector also remains above the minimum threshold limit.

Network analysis indicates that the total outstanding bilateral exposures between financial institutions are expanding, with SCBs holding the largest share. A simulated contagion analysis, however, shows that losses due to failure of five banks with the maximum capacity to cause contagion would not lead to failure of any additional bank.

Regulatory Initiatives and Other Developments in the Financial Sector

Global regulatory efforts remain focused on strengthening the stability of the financial system, identifying and mitigating potential vulnerabilities,

[1] Excluding Small Finance Banks.

fostering collaboration and improving adaptability. Recent initiatives have concentrated on mitigating risks arising from technological advancements, cyber security threats and third-party dependencies. Addressing vulnerabilities in non-bank financial intermediaries and cross-border payment systems remain priorities.

Domestic regulatory initiatives continue to focus on reinforcing the safety and resilience of the financial system. Efforts have been focused on strengthening the resilience of financial intermediaries and market infrastructure, with emphasis on cyber resilience, fraud prevention and customer protection.

Assessment of Systemic Risk

In the latest round of the systemic risk survey (SRS) carried out in November 2024, respondents categorised all major risk groups in the 'medium' risk category. Majority of respondents expressed confidence in domestic financial system stability and assessed geopolitical conflicts, evolution of global growth and inflation, and capital outflows/ rupee depreciation as major near-term risks. Nearly 95 per cent of the respondents perceived 'medium' to 'limited' near-term impact of global spillovers on domestic financial stability. 60 per cent of the respondents assessed better or similar prospects for the Indian banking sector over a one-year horizon.

Chapter I

Macrofinancial Risks

The global financial system displayed continued resilience amidst moderation in economic activity, rising policy uncertainty and elevated geopolitical tensions. Major vulnerabilities, such as elevated and rising public debt and stretched asset valuations, however, remain. Spells of high volatility in the global financial markets suggest continued uncertainty on future growth prospects.

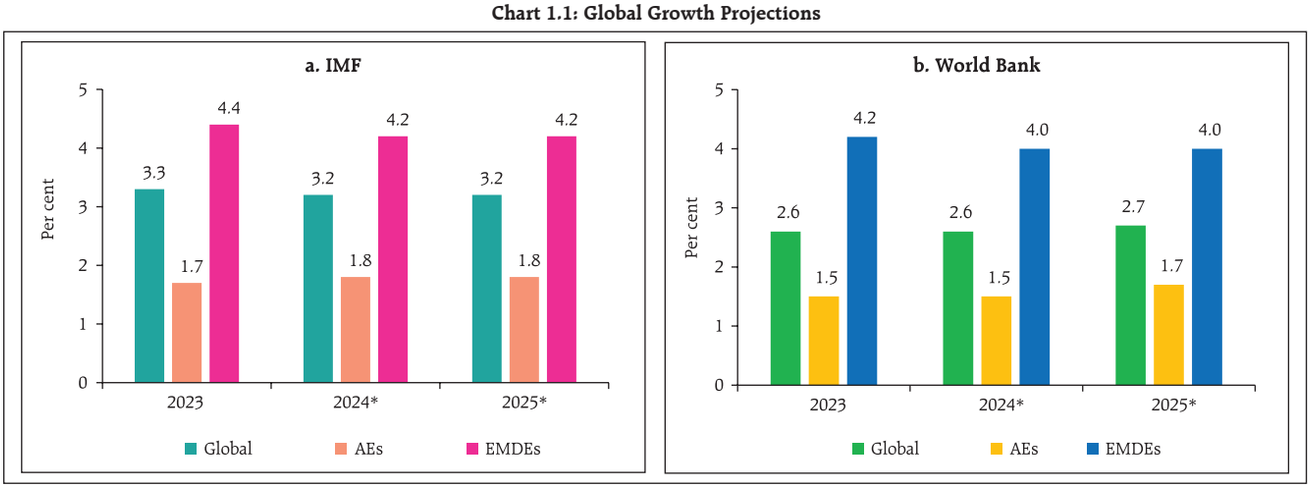
The Indian economy and the financial system remain strong and stable underpinned by sound macroeconomic fundamentals, healthy balance sheets of banks and non-banks and low volatility in financial markets despite some qualms about global spillovers.

Introduction

1.1 Since the June 2024 issue of the Financial Stability Report (FSR), receding inflation has enabled a broadening of the pivot towards easing monetary policy, barring a few outliers. So far, global economic activity and trade have remained resilient to the widening of geopolitical conflicts. Global financial markets remain on the edge and are prone to sudden bouts of volatility as policy uncertainty, including that from political spillovers, remains elevated. Vulnerability to abrupt and sharp price actions has consequently increased, as witnessed during the August 2024 episode of market turmoil involving Japanese Yen (JPY) carry trade unwinding. The global financial system has generally displayed resilience during this period of significant shifts. With financial conditions remaining accommodative, vulnerabilities are festering in the form of leveraged positions, stretched asset valuations, elevated levels of public and private debt and opaque fragilities in less regulated non-bank financial intermediaries. Global banking sector asset quality concerns due to stress in select segments such as credit cards and commercial real estate linger.

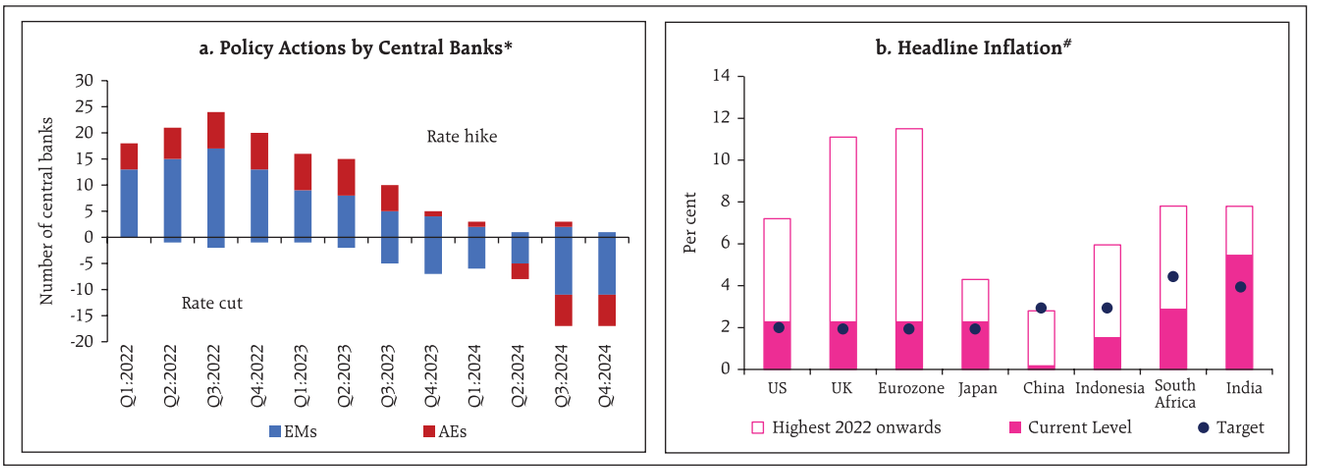
1.2 As per its latest assessment, the International Monetary Fund (IMF) projects global growth at 3.2 per cent in 2024 and 2025 (Chart 1.1 a), with emerging markets and developing economies (EMDEs) growing at a steady pace,

Chart 1.1: Global Growth Projections



Note: * Forecasts.
Sources: IMF and World Bank.

Chart 1.2: Policy Rate and Inflation



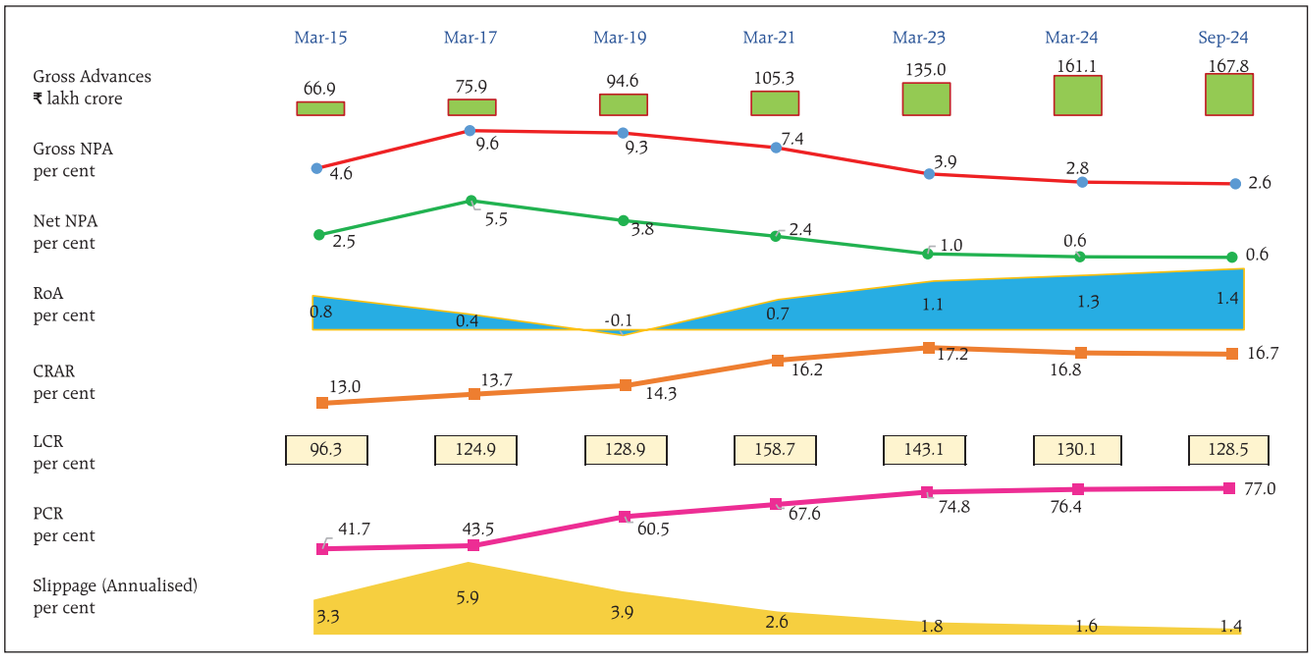
Note: (1) * Based on policy actions of 8 advanced economy central banks and 20 emerging market central banks. Positive figure denotes rate hike action and negative figure denotes rate cut action in respective quarters. Data available as on December 12, 2024.
(2) # PCE Index used for US and CPI Index used for other countries. Data available as on December 12, 2024.
Source: Bloomberg.

advanced economies (AEs) reverting or approaching potential growth, and low-income economies facing downside risks. The World Bank, on the other hand, projects global growth at 2.6 per cent and 2.7 per cent in 2024 and 2025, respectively (Chart 1.1 b).

1.3 While disinflation has progressed without significant wage pressures in spite of strong labour markets and stubborn services prices, upside risks to inflation from further escalation in geopolitical conflicts and growing economic fragmentation persist, with commodity prices and supply shocks as conduits. Moreover, expansionary fiscal policies could negate the hard-earned gains in fighting higher inflation. Consequently, central banks remain cautious about a premature easing of monetary policy stance (Chart 1.2 a and b).

1.4 In this uncertain global macroeconomic and financial environment, the Indian economy is exhibiting resilience and stability. Real gross domestic product (GDP) is projected to grow at 6.6 per cent in 2024-25 aided by revival in rural consumption, pickup in government consumption and investment and strong services exports. The underlying growth momentum remains strong and is supported by the steadfast focus of monetary policy on a durable alignment of inflation to the target. A stable financial system, bolstered by healthy balance sheets and profitability of banks and non-banks and reasonable expansion in credit, is providing support to businesses and households (Chart 1.3).

Chart 1.3: Banking Sector Soundness Indicators



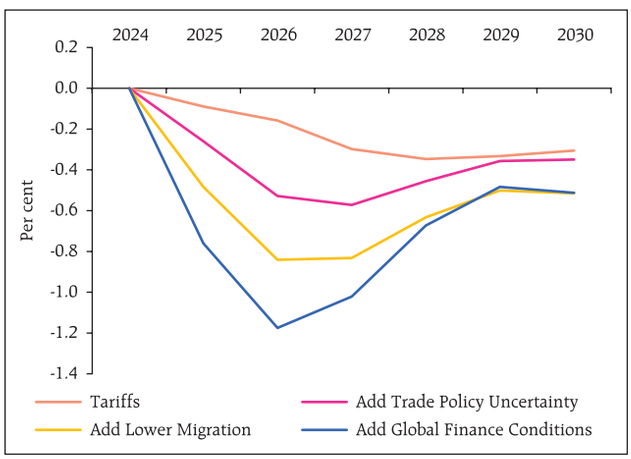
Notes: (1) Data as on December 12, 2024.
(2) Data pertains to domestic operations of SCBs (excluding SFBs).
Sources: RBI supervisory returns and staff calculations.

I.1 Global Backdrop

I.1.1 Macrofinancial Development and Outlook

1.5 Global growth remains steady, with the balance of risks to outlook tilted to the downside. Strong growth in the U.S. and stable outlook in EMDEs are positives for the world economy. Moreover, the global battle against inflation is winding down without the risk of recession. With stronger recovery in public investment in AEs and structural reforms in EMDEs, growth could accelerate. Downside risks, such as escalating geopolitical tensions, uncertainty about trade and industrial policies in the aftermath of major global elections, and potential tightening of financial conditions, however, could drag global output lower from baseline projections[1]. From a financial stability standpoint, while downside risks to economic growth could raise medium-term vulnerabilities, any abrupt tightening in financial conditions, when economic uncertainty is elevated, could heighten near-term risks (Chart 1.4).

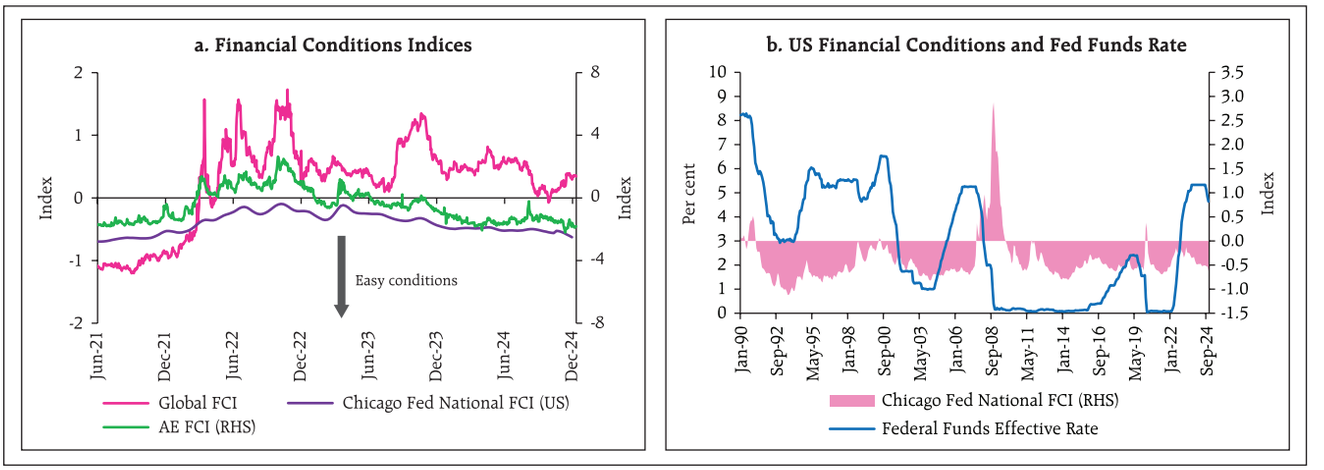
Chart 1.4: Downside Risks to Global Growth Outlook



Note: Results are shown as deviation from baseline projections.
Source: IMF.

[1] International Monetary Fund (2024), "World Economic Outlook: Policy Pivot, Rising Threats", October.

Chart 1.5: Financial Conditions



Note: Value for Global Financial Conditions Index (FCI) is derived by subtracting 100 from Goldman Sachs Global FCI. Advanced economy (AE) FCI is derived as the first principal component of US, UK and Eurozone FCIs. Individual FCIs provided by Bloomberg have been multiplied by (-1).
Sources: Bloomberg, FRED (Federal Reserve Bank of St. Louis), Goldman Sachs and RBI staff calculations.

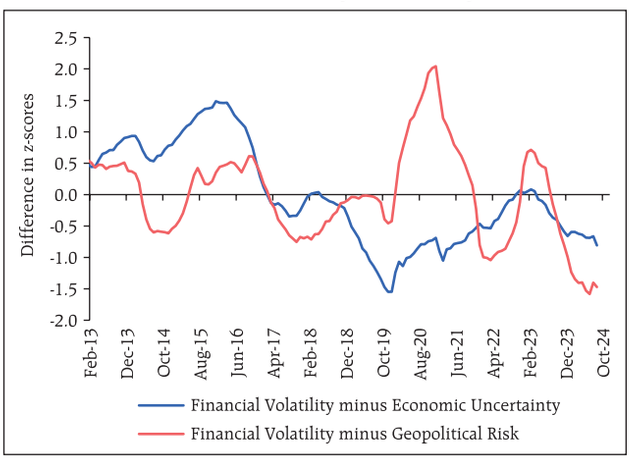
1.6 Financial market conditions, as reflected in summary indices, are moving in alignment with policy shifts. Monetary easing is, however, coinciding with accommodative financial conditions, which could fuel irrational exuberance among market participants and amplify any shock, through nonlinear reactions and fire sales (Chart 1.5 a and b).

1.7 There is a widening disconnect between uncertainty and financial market volatility, with potential macrofinancial implications (Chart 1.6). According to the IMF, one-year-ahead global real GDP growth could worsen by 1.2 percentage points if global real economic uncertainty reaches levels seen during the global financial crisis in 2008[2].

1.8 Low volatility may be engendering inaccurate assessments of risks in asset prices. Concentrated, interconnected, complex and opaque exposures in the financial system can amplify sudden shift in sentiments and trigger sell-offs and snap backs as witnessed in the market turmoil involving deleveraging of Yen carry trades in August 2024 and worldwide sell-offs.

1.9 Overall, even as near-term risks remain contained, medium-term vulnerabilities and the growing influence of new technologies in the financial sector, in addition to the potential financial stability consequences of climate and cyber risks, require close monitoring.

Chart 1.6: Uncertainty and Volatility



Note: (1) All series are 12 month moving averages of differences in z-scores from 2012 to 2024.
(2) Economic uncertainty is the index of Baker, Bloom and Davis (2016); Geopolitical Risk is the index of Caldara and Iacoviello (2022); Financial volatility is average of CBOE VIX, JPM FX volatility index, and volatility in high yield corporate bond index.
Sources: Bloomberg and RBI staff calculations.

[2] International Monetary Fund (2024), "Global Financial Stability Report: Steadying the Course: Uncertainty, Artificial Intelligence, and Financial Stability". October.

I.1.2 Global Macrofinancial Risks

1.10 Several other vulnerabilities foreshadow global financial stability. This section focuses on the following vulnerabilities that require closer monitoring: high and rising levels of public debt; asset valuations and volatility; and the impact of artificial intelligence on financial stability.

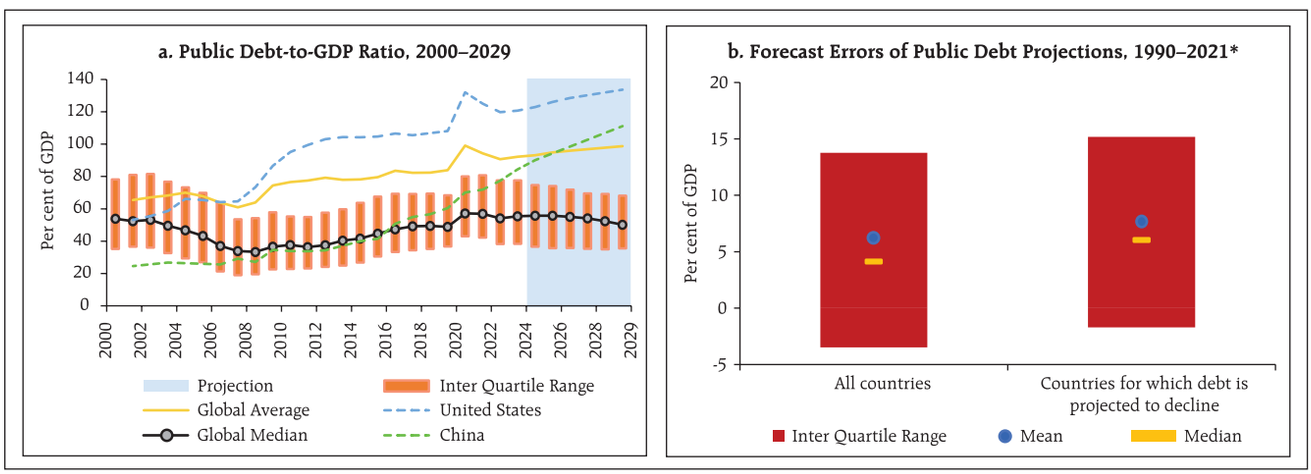
A. High and Rising Levels of Public Debt

1.11 Global public debt is projected to exceed US$ 100 trillion (*i.e.*, 93 per cent of global GDP) by the end of 2024. The world's two largest economies (*viz.*, the U.S. and China) are the main drivers of this surge which is expected to surpass 100 per cent of GDP by 2030[3] (Chart 1.7 a). Future debt levels could exceed these projections[4], given that actual debt-to-GDP ratios turned out to be higher than forecasts in the past (Chart 1.7 b). In addition, the estimates of unidentified debt[5] range between 1.0 and 1.5 per cent of GDP on an average[6].

1.12 High levels of debt, the associated interest burden and potential debt-at-risk[7] prompt concerns about debt sustainability endangering financial stability amidst structural changes such as ageing populations and healthcare needs, green transition and climate adaptation, and defence spending in the midst of elevated geopolitical tensions (Chart 1.8 a and b). Fiscal risk premia could rise sharply as a result, leading to a spike in the cost of government debt and instability in government bond markets as witnessed in the September 2022 turmoil in the UK.

1.13 Fiscal sustainability influences sovereign ratings. Among G-20 economies, there have been more downgrades than upgrades (Table 1.1).

Chart 1.7: Public Debt-to-GDP Ratio and Forecast Errors



Note: *Forecast errors are defined as the projected debt-to-GDP ratio relative to the realised outcome for each country. The bars show the interquartile range for the three-year horizon.
Source: IMF.

[3] International Monetary Fund (2024), "Fiscal Monitor: Putting a Lid on Public Debt", October.

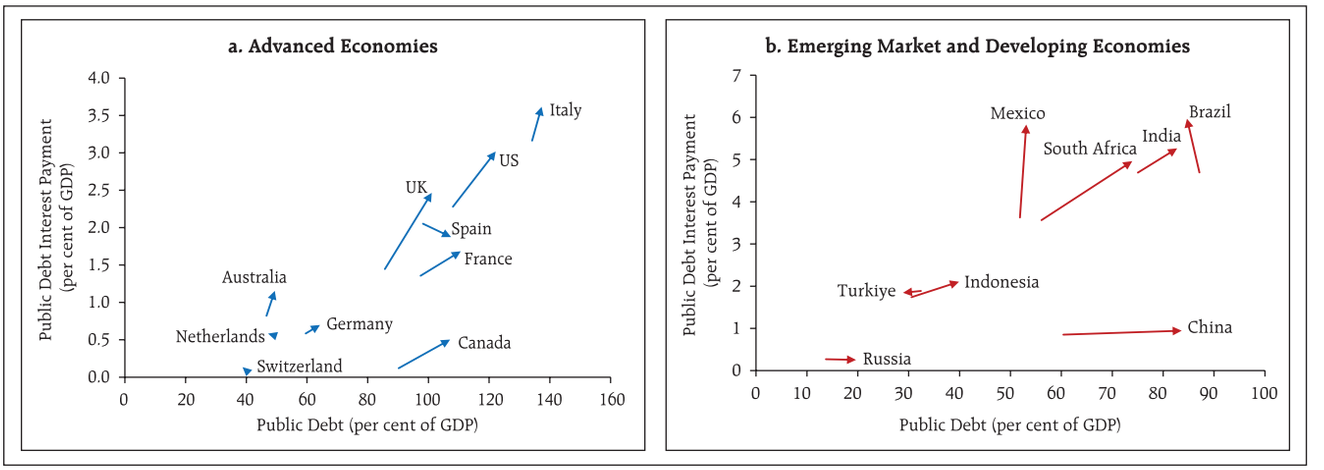
[4] International Monetary Fund (2024), "Fiscal Monitor: Putting a Lid on Public Debt", October.

[5] Unidentified debt consists of: materialisation of contingent liabilities and fiscal risks. These liabilities and risks stem largely from losses of state-owned enterprises as well as from bank recapitalisations and loan guarantees typically implemented during banking crises and periods of financial stress; Other important sources include arrears, recognition of debt from institutional changes in the perimeter of government, and extrabudgetary spending.

[6] International Monetary Fund (2024), "Fiscal Monitor: Putting a Lid on Public Debt", October.

[7] Debt-at-risk is the level of future debt in an extremely adverse scenario.

Chart 1.8: Public Debt and Interest Burden



Note: Arrow represents change between 2019 and 2023.
Source: UNCTAD.

Table 1.1: Sovereign Rating of G20 Economies

Country	2019			2024		
	Moody's	S&P	Fitch	Moody's	S&P	Fitch
Australia	Aaa	AAA	AAA	Aaa	AAA	AAA
Argentina	Caa2	CC	CC	Ca	CCC	CCC
Brazil	Ba2	BB-	BB-	Ba1	BB	BB
Canada	Aaa	AAA	AAA	Aaa	AAA	AA+
China	A1	A+	A+	A1	A+	A+
France	Aa2	AA	AA	Aa3	AA-	AA-
Germany	Aaa	AAA	AAA	Aaa	AAA	AAA
India	Baa2	BBB-	BBB-	Baa3	BBB-	BBB-
Indonesia	Baa2	BBB	BBB	Baa2	BBB	BBB
Italy	Baa3	BBB	BBB	Baa3	BBB	BBB
Japan	A1	A+	A	A1	A+	A
Mexico	A3	BBB+	BBB	Baa2	BBB	BBB-
Saudi Arabia	A1	A-	A	Aa3	A	A+
South Africa	Baa3	BB	BB+	Ba2	BB-	BB-
South Korea	Aa2	AA	AA-	Aa2	AA	AA-
Türkiye	B1	B+	BB-	B1	BB-	BB-
United Kingdom	Aa2	AA	AA	Aa3	AA	AA-
United States	Aaa	AA+	AAA	Aaa	AA+	AA+

No ratings change from 2019
Ratings downgrade from 2019
Ratings upgrade from 2019

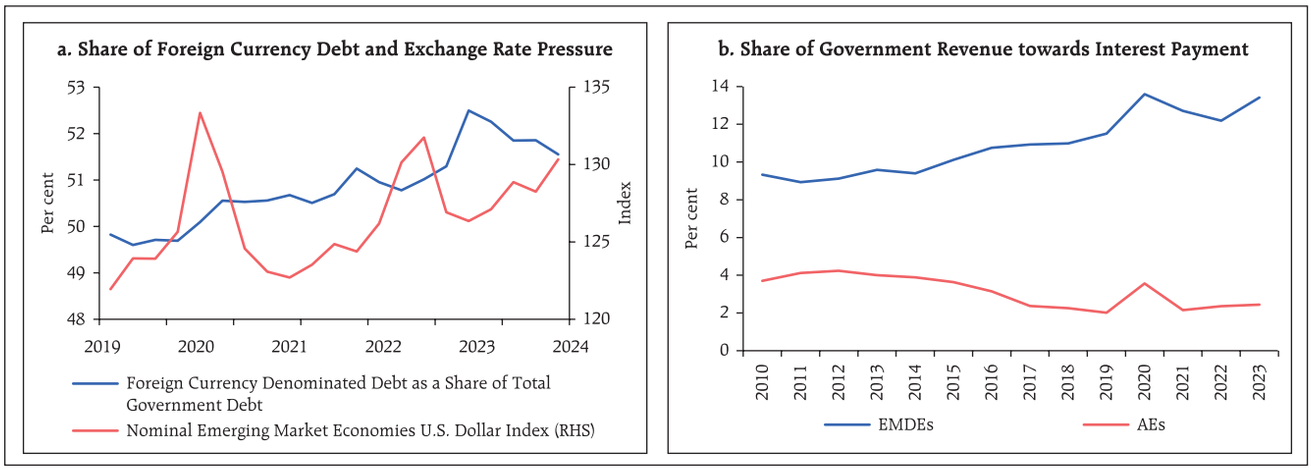
Note: Russia is not included here as its ratings for 2023 and 2024 are not available.
Source: Bloomberg.

1.14 EMDEs that have a greater share of foreign-currency denominated debt remain vulnerable to potential default. Empirical analysis shows that prior to defaulting on foreign currency debt, sovereigns typically spent about 20 per cent of general government revenues on interest payments. Moreover, during the three years prior to default, their net foreign investment positions weakened by an average of 30 percentage points to 106 per cent of GDP, often in tandem with depreciating domestic currencies[8] (Chart 1.9 a and b).

1.15 Banks' exposure to their own governments has grown in many EMDEs since the end of 2019. This has deepened the "sovereign-bank nexus" and therefore, shocks between sovereigns and banks may spread more quickly. A sharp rise in sovereign bond yields could impact bank capital by reducing the value of government securities held by them as well as expose them to funding risk in money markets due to depletion in the value of collateral used for borrowing. On the other hand, since governments often support banking sector in times

[8] S&P Global (2024), "The Early Warning Signs of Sovereign Foreign Currency Defaults", October.

Chart 1.9: Debt Vulnerabilities in EMDEs



Note: Share of foreign currency denominated debt in total government debt is based on latest data available for 25 EMDEs.
Sources: UNCTAD, Federal Reserve Economic Data and World Bank.

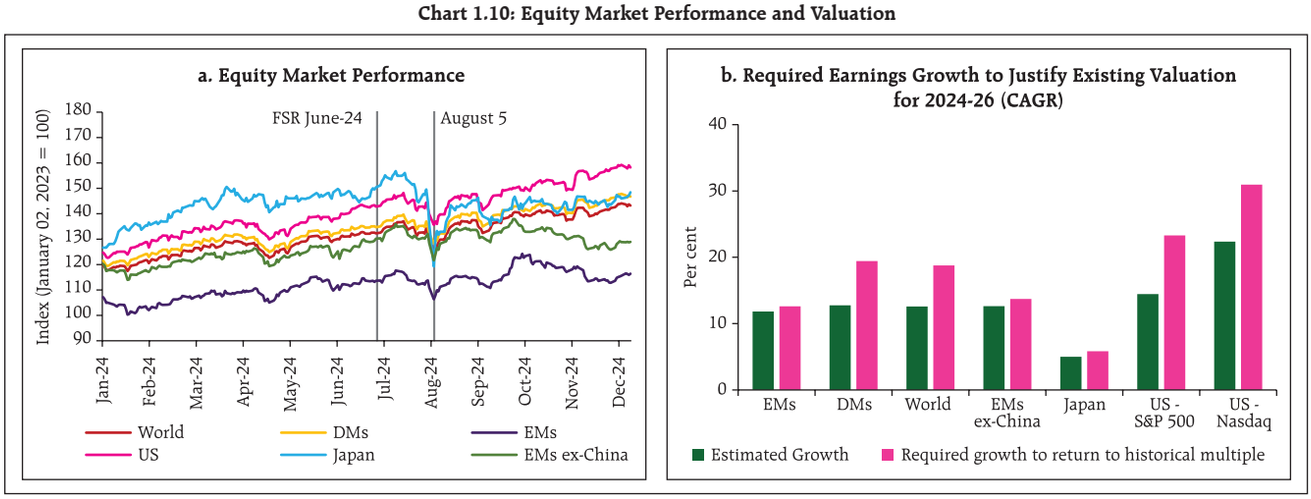
of stress to prevent bank runs, any reduction in this capacity due to limited fiscal headroom could exacerbate stress and affect banks' ability to provide credit to the real sector.

B. Asset Valuations and Volatility

1.16 Since the June 2024 FSR, global equity markets have rallied, fuelled by expectations of soft landing and lower interest rates. This has stretched equity valuations, with many stock indices trading at high price-to-earnings (P/E) ratios relative to historical levels. Moreover, in the U.S., the so-called Magnificent 7, a group of technology stocks, now forms 31 per cent of the S&P 500 Index, up from 25 per cent at the beginning of 2024. To justify current valuations and for P/E ratios to return to their historical 10-year average, earnings per share must grow at compounded annual growth rates (CAGR) between 10 and 30 per cent over the next two years (Chart 1.10 a and b).

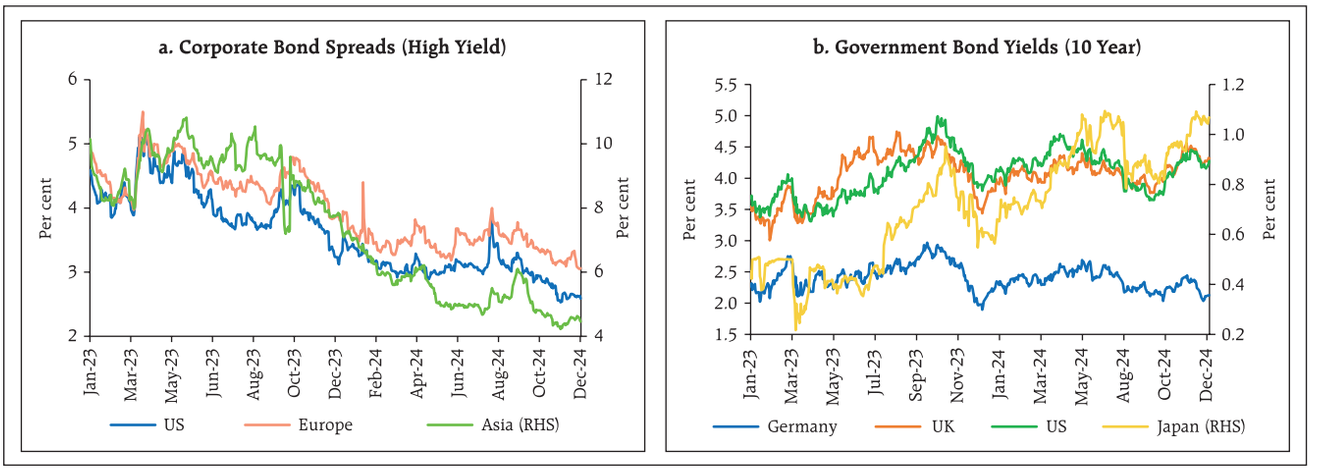
1.17 Corporate bond market valuations also remain high, with credit spreads (*viz.*, the yield difference between corporate bonds and similar-

Chart 1.10: Equity Market Performance and Valuation



Sources: Bloomberg and RBI staff calculations.

Chart 1.11: Credit Spreads and Government Bond Yields



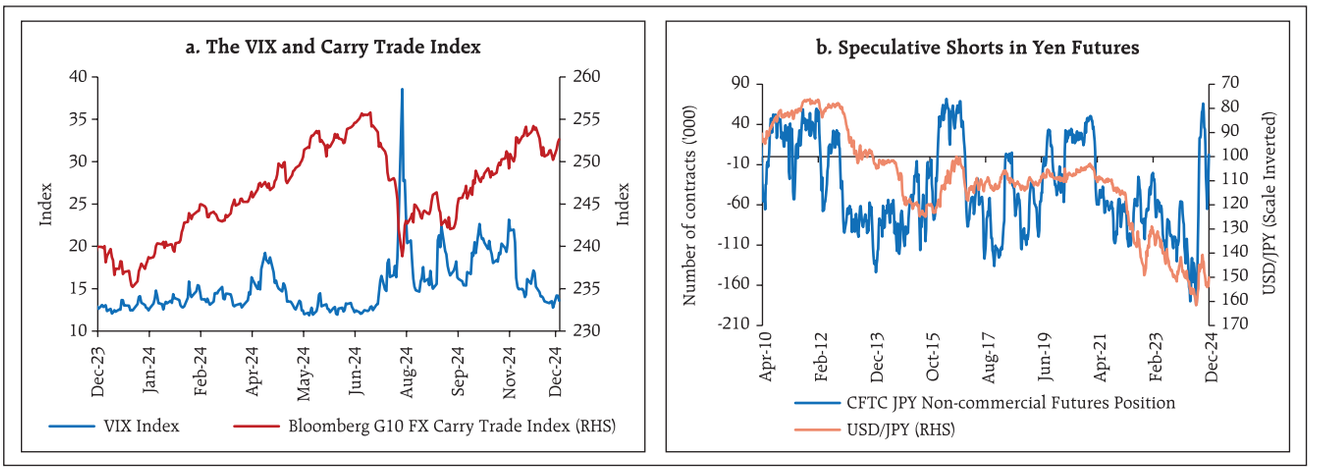
Source: Bloomberg.

maturity government bonds) narrowing to low levels relative to historical distributions. Despite monetary policy easing, sovereign bond yields have hardened in major economies on market expectation of policy shifts on tariffs and geopolitical conditions (Chart 1.11 a and b).

1.18 High equity valuations and low credit spreads could be a source of vulnerability to financial stability, especially when market expectations turn volatile as in the first week of August 2024, when global financial markets saw an unwind of leveraged carry trades, which were primarily funded using the JPY (Chart 1.12 a and b).

1.19 The ensuing decline in stock prices, widening of corporate bond spreads and spike in volatility exemplified the outsized market reaction to unexpected developments. The Chicago Board Options Exchange (CBOE) Volatility Index (VIX)[9], which is often referred to as a fear gauge in financial markets, saw its largest one-day spike

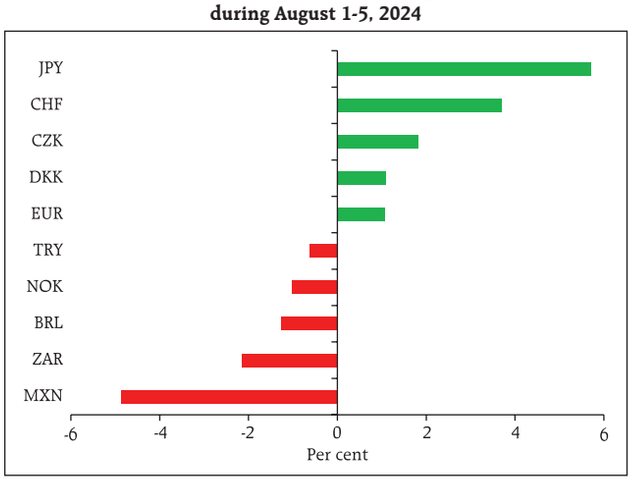
Chart 1.12: Carry Trade and Volatility



Source: Bloomberg.

[9] The VIX is constructed from the market prices of out-of-the-money (OTM) puts and calls written on the S&P500 Index.

Chart 1.13: Movement of Major Currencies against the US Dollar during August 1-5, 2024



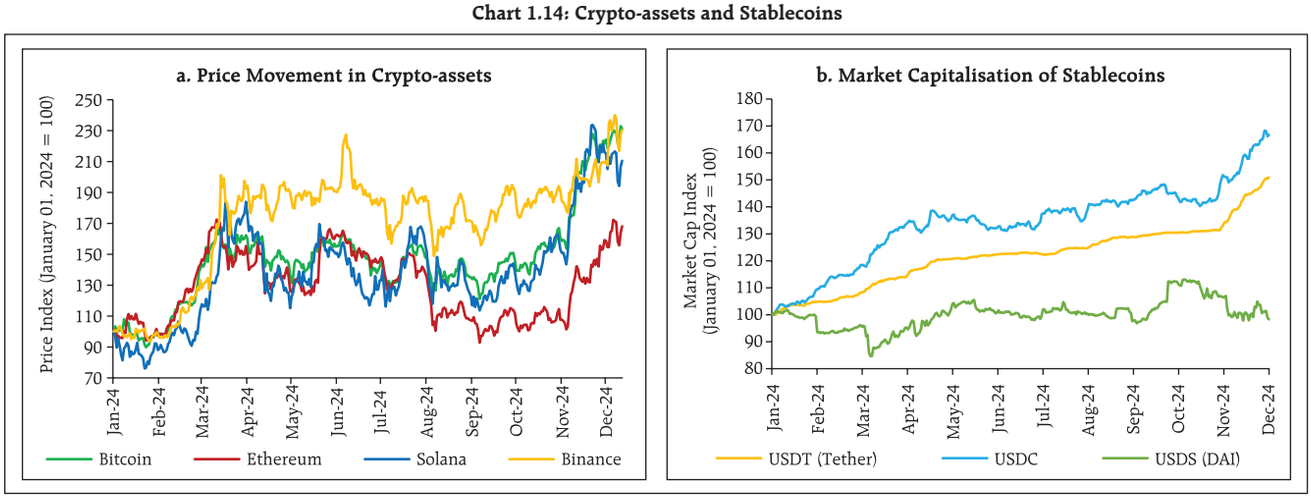
Source: Bloomberg.

ever on August 5, 2024, surpassing peaks witnessed around the GFC and the onset of the pandemic in March 2020. According to the Bank for International Settlements (BIS), roughly US$ 250 billion of these carry trades were unwound, though their exact size is difficult to estimate as they can be implemented through various on- and off-balance sheet positions[10]. The impact of the carry trade unwinding was felt on many currencies (Chart 1.13).

1.20 Crypto-assets' prices swung wildly and the rally, which faded during March-September 2024, was boosted subsequently, especially after the US election outcome (Chart 1.14 a). Bitcoin, the most prominent of them, more than doubled during this calendar year and hit a record high of US$ 108,316 on December 17, 2024. This has also fuelled market capitalisation of stablecoins (Chart 1.14 b), which are primarily used to enable lending, borrowing and trading of other digital assets and support the crypto ecosystem.

1.21 Widespread usage of crypto-assets and stablecoins has consequences for macroeconomic and financial stability. As highlighted in the IMF-FSB synthesis paper[11], it could reduce the effectiveness of monetary policy, worsen fiscal risks, circumvent capital flow management measures, divert resources available for financing the real economy and threaten global financial stability. Even though the size of crypto-asset markets remains small, their continued growth and increasing linkages with the traditional financial system could pose systemic risks. Stablecoins also present potential run risks.

Chart 1.14: Crypto-assets and Stablecoins



Source: Bloomberg.

[10] Aquilina, Matteo, Lombardi, Marco, Schrimpf, Andreas and Sushko, Vladyslav (2024), "The market turbulence and carry trade unwind of August 2024", BIS Bulletin No 90, August.

[11] IMF-FSB (2023), "IMF-FSB Synthesis Paper: Policies for Crypto-Assets", September.

1.22 Another new and rapidly growing financial innovation is tokenisation, which refers to the process of creating digital representations - known as tokens - of real-world assets using technologies such as distributed ledger technology (DLT). Tokenisation of financial assets – bank deposits, money market funds' shares, repos, and government securities – is rising. Given that it is still in its infancy, financial stability concerns of tokenisation of assets are currently limited. Nonetheless, it has the potential to deepen the interconnectedness between the traditional financial system and the decentralised financial (DeFi) system, including the crypto-assets ecosystem[12], and cause spillovers to broader financial system. DLT-based tokenisation can expose several financial stability vulnerabilities, including liquidity and maturity mismatches, leverage, asset price and quality, interconnectedness, and operational fragilities[13].

C. Impact of Artificial Intelligence

1.23 Artificial intelligence (AI) is rapidly changing many aspects of human life. The emergence of generative AI has significant implications for the financial system. Financial institutions have long employed various forms of AI such as rule-based models and machine learning (ML). The advent of generative AI models, however, would be transformative as they have unique features that can adapt and learn independently and at speed[14], produce a range of responses in many formats rather than being restricted to a specific set of possible responses, and in some use cases match or exceed human capabilities[15].

1.24 Constantly evolving AI technology offers benefits to financial firms through its ability to process large and unstructured data, scalability, and adaptability, which could result in efficiency gains and cost savings in many areas such as quantitative analysis, risk management, operational processes, customer interaction and cyber security. Alongside these benefits, they are also prone to increased risks in terms of bias and hallucination[16], misuse, overreliance on common models, faulty predictions, data quality issues, and third-party dependence[17]. Model risk would be a major hazard for financial firms that use AI tools. A key challenge with AI models is their lack of explainability or the so-called 'black box problem' due to the difficulty in explaining how these complex models are making decisions even as they achieve more accurate predictions[18]. Since AI depends heavily on the data that it is trained on, the inability to explain how these systems work could result in models using biased or less related data. These issues are particularly pertinent in the financial sector, especially in the banking industry, in which adoption of AI is rapidly growing (Chart 1.15 a and b).

1.25 The evolution and adoption of AI poses several risks to financial stability. First, interconnectedness could become enhanced through overreliance on shared technology, service providers and infrastructure. In particular, there is a high risk of market concentration both within the financial industry as well as critical third-party service providers of cloud and AI services

[12] International Monetary Fund (2024), "Global Financial Stability Report: Steadying the Course: Uncertainty, Artificial Intelligence, and Financial Stability", October.

[13] Financial Stability Board (2024): "The Financial Stability Implications of Tokenisation", October.

[14] Breeden, Sarah (2024), "Engaging with the machine: AI and financial stability", Bank of England, October.

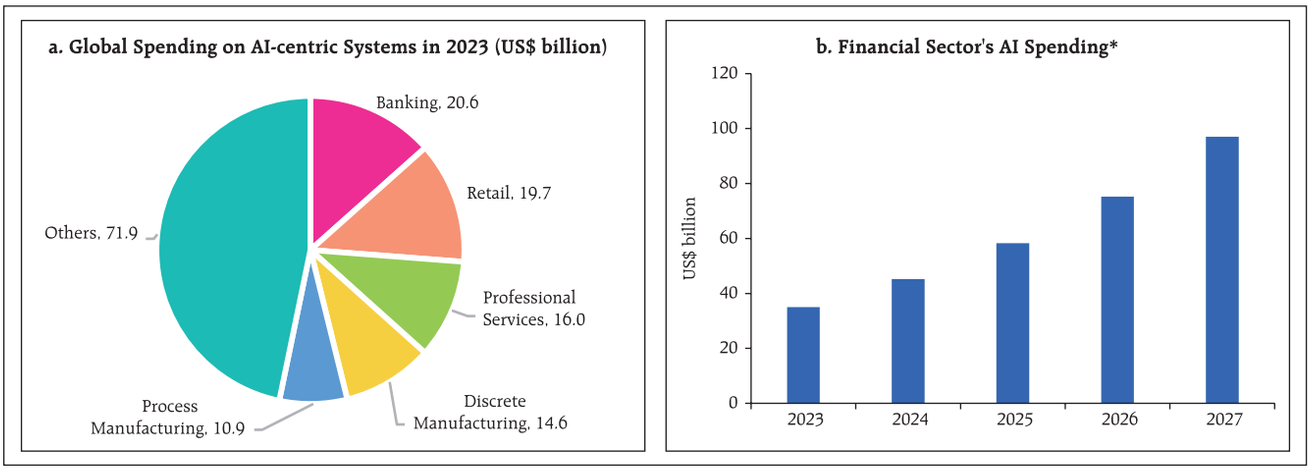
[15] Liang, Nellie (2024), "Remarks on Artificial Intelligence in Finance", Financial Stability Board, June.

[16] Hallucination refers to presenting false or misleading information as facts.

[17] European Central Bank (2024), "Financial Stability Review - The rise of artificial intelligence: benefits and risks for financial stability", May.

[18] Araujo, Douglas, Doerr, Sebastian, Gambacorta, Leonardo, Tissot, Bruno (2024), "Artificial intelligence in central banking", BIS Bulletin No 84, January.

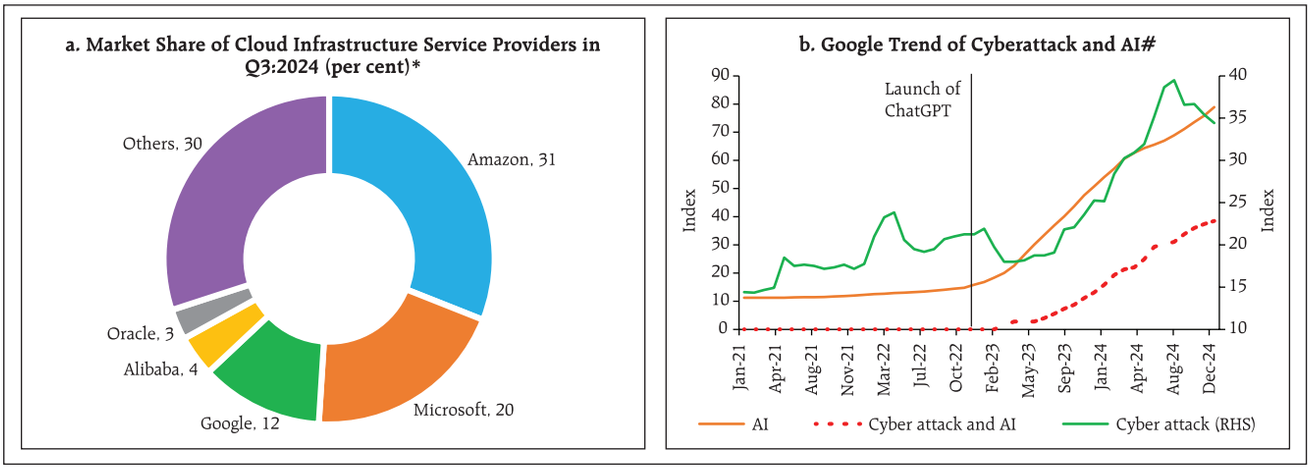
Chart 1.15: Global Spending on Artificial Intelligence



Note: * Forecasts from 2024 to 2027.
Sources: IMF, IDC and Statista.

(Chart 1.16 a). Second, the threat of cyber risk turning into a financial stability risk is high as AI could aid cyber attackers through sophisticated phishing attacks such as creation of deepfakes using generative AI. With widespread availability of AI services such as ChatGPT, there has been a growing concern that these services are being used for cyberattacks (Chart 1.16 b). Third, according to the IMF, the increased adoption of AI in capital markets can create additional risks related to increased market speed and volatility under stress, especially when trading strategies using AI become highly correlated. Specifically, if such trades are funded through leverage, any shock could amplify market stress through fire sales and feedback loops. Moreover, AI may encourage migration of more activities to NBFIs, increasing systemic opacity[19]. Fourth, if technological penetration and market and vendor concentration are high, transition of risk from individual firms to the financial system

Chart 1.16: Market Concentration and Cyber Attacks



Note: (1) * Includes platform as a service, infrastructure as a service and hosted private cloud services
(2) # Index represents 12-month moving average of search interest relative to the highest point since 2004 for worldwide google search of 'AI', 'Cyber attack' and 'Cyber attack and AI'. Data accessed on December 12, 2024.
Sources: Statista, Synergy Research Group and Google Trends.

[19] International Monetary Fund (2024), "Global Financial Stability Report - Steadying the Course: Uncertainty, Artificial Intelligence, and Financial Stability", October.

could be nonlinear and portend systemic risk[20]. Standard setting bodies and national regulators and supervisors should, therefore, take a balanced approach to reap the benefits of AI while safeguarding the financial system. They must update their skills and tools as well as proactively adapt their frameworks to identify and mitigate emerging risks from this rapidly evolving technology.

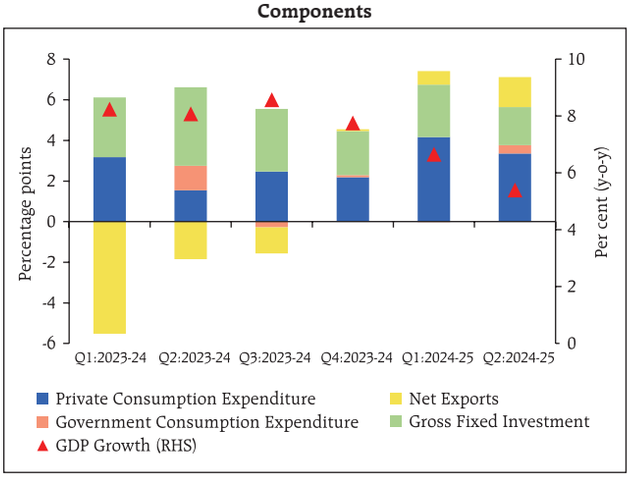
I.2 Domestic Macrofinancial Risks

1.26 India remains the fastest growing major economy of the world, with strong investment and public consumption underpinning economic performance[21]. The domestic financial system is fortified by healthy balance sheets of banks and non-banking financial companies (NBFCs), and relatively low volatility in financial markets.

I.2.1 Domestic Growth and Inflation

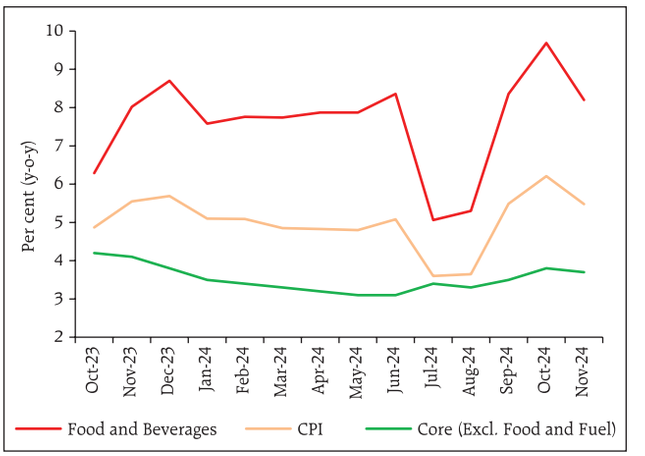
1.27 During H1:2024-25, real GDP growth (y-o-y) moderated to 6.0 per cent from 8.2 per cent and 8.1 per cent growth recorded during H1 and H2 of 2023-24, respectively. Despite this recent deceleration, structural growth drivers remain intact. Real GDP growth is expected to recover in Q3 and Q4 of 2024-25 supported by pick up in domestic drivers, mainly public consumption and investment, strong service exports and easy financial conditions (Chart 1.17).

Chart 1.17: GDP Growth and Weighted Contribution of Components



Sources: National Statistical Office (NSO) and RBI staff calculations.

Chart 1.18: Inflation



Sources: National Statistical Office (NSO) and RBI staff calculations.

1.28 On the downside, the softness in industrial activity, especially in the manufacturing sector, moderation in urban demand, global spillovers and protective trade and industrial policies pose risks to the outlook.

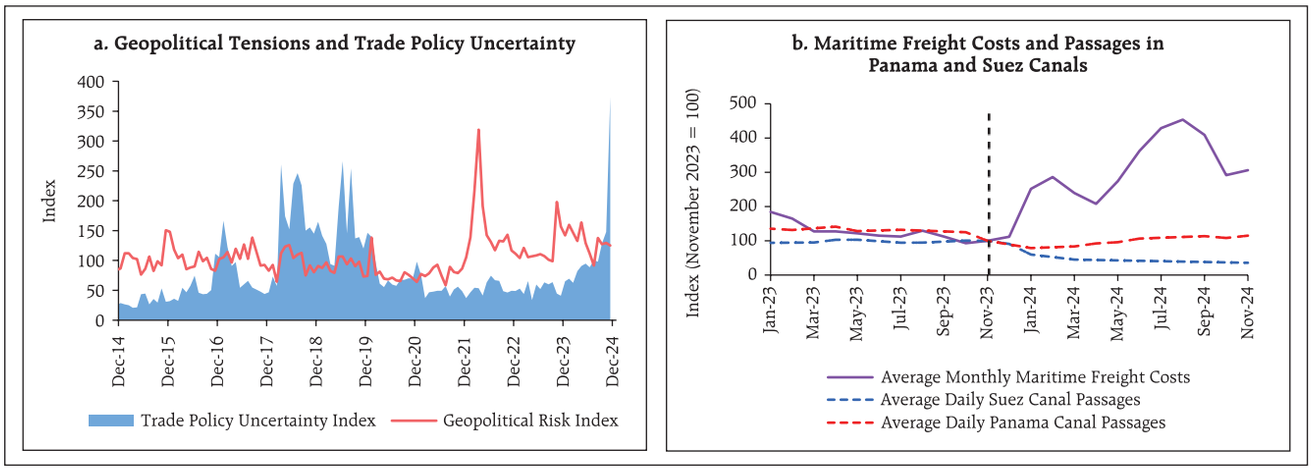
1.29 After its descent to sub-target levels in July and August 2024, consumer price index (CPI) inflation changed course on the back of a rise in food prices and rose beyond the upper tolerance level to 6.2 per cent in October 2024. Subsequently, with some softening of food prices and favourable base effect, CPI inflation came down to 5.5 per cent in November 2024. Meanwhile, core CPI inflation (*i.e.*, CPI excluding food and fuel) rose by 64 basis points (bps) since May 2024 to 3.7 per cent in November 2024 (Chart 1.18).

1.30 Going forward, the disinflationary effect of a bumper *kharif* harvest and the *rabi* crop prospects are expected to soften prices of foodgrains. On the flipside, the rising frequency of extreme weather events (*e.g.*, heat waves and unseasonal rains) continue to pose risks for food inflation dynamics. Persisting geopolitical conflicts and geo-economic fragmentation can also impose upside pressures on global supply chain and commodity prices (Chart 1.19 a and b).

[20] European Central Bank (2024), "Financial Stability Review - The rise of artificial intelligence: benefits and risks for financial stability", May.

[21] International Monetary Fund (2024), "Regional Economic Outlook: Asia and Pacific - Resilient Growth but Higher Risks", November.

Chart 1.19: Uncertainties in Global Trade

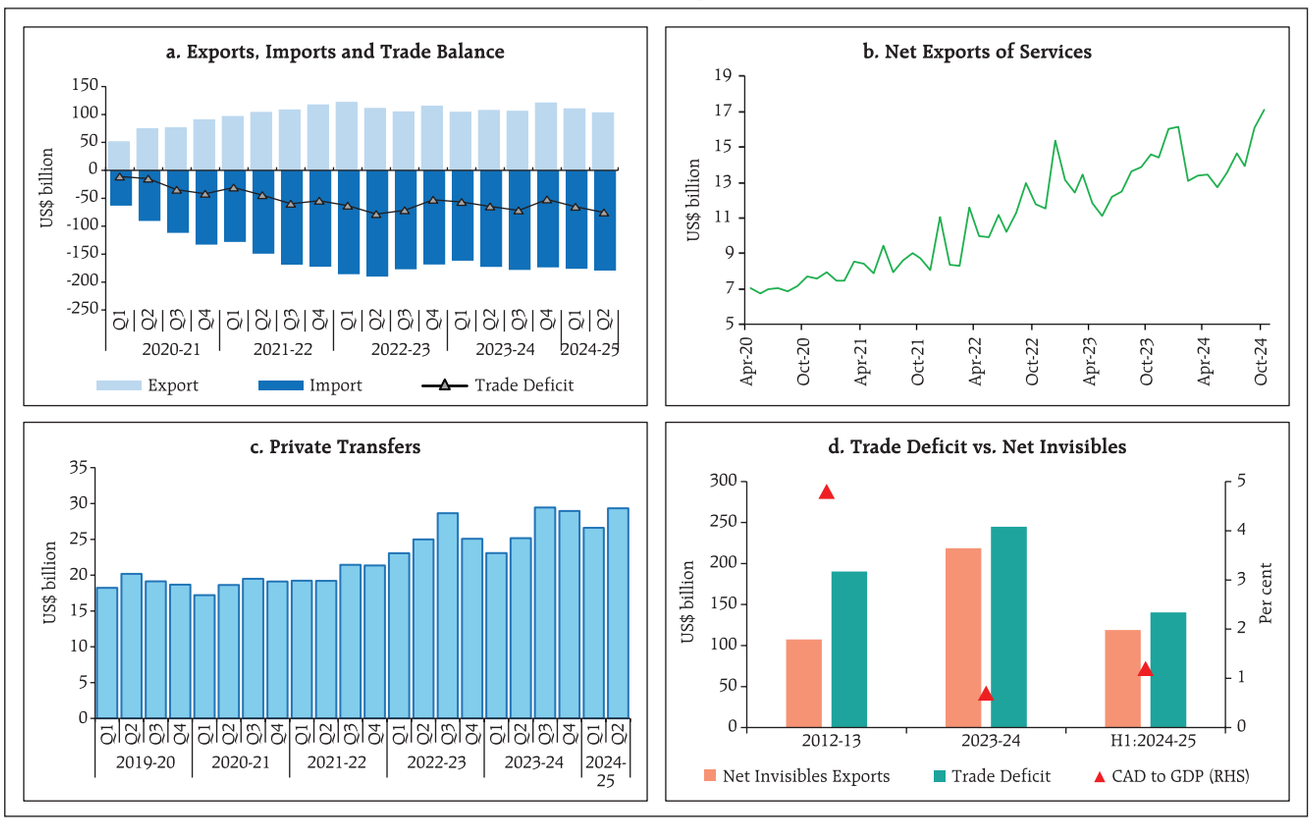


Sources: Refinitiv, IMF Port Watch, Caldara and Iacoviello (2022) and Caldara, Iacoviello, Molligo, Prestipino and Raffo (2020).

I.2.2 External Sector

1.31 Merchandise exports recorded growth of 2.2 per cent (y-o-y) during April-November 2024, whereas merchandise imports rose by 8.3 per cent, led by demand for gold, petroleum, crude and products, and electronic goods. Accordingly, trade deficit increased to US$ 202.4 billion during this period from US$ 171.0 billion a year ago. With the sustained buoyancy in services exports and remittances, widening of the merchandise trade deficit was partly offset, resulting in a current account deficit of 1.2 per cent of GDP in H1:2024-25 (Chart 1.20 a, b, c and d).

Chart 1.20: Trade Deficit, Service Exports and Private Transfers



Sources: Directorate General of Commercial Intelligence & Statistics (DGCI&S) and RBI.

1.32 In the financial account, net foreign direct investment (FDI) inflows moderated y-o-y, while strong foreign portfolio investment (FPI) inflows in the first half of 2024-25 were offset by large outflows subsequently. Overall, net FPI inflow stood at US$ 12.7 billion during 2024-25 so far (up to December 12, 2024), with net debt flows benefiting from India's inclusion in multiple global bond indices. Both external commercial borrowings (ECBs) and non-resident deposit inflows were higher than a year ago (Table 1.2). Overall, capital flows exceeded the current account deficit (CAD) and contributed to accretion to foreign exchange reserves (Chart 1.21). As on December 20, 2024, India's foreign exchange reserves of US$ 644.4 billion are the fourth largest in the world.

1.33 Indicators of external sector sustainability showed improvement: foreign exchange reserves covered 99 per cent of the country's external debt or nearly one year of merchandise imports as at end-September 2024. Moreover, around two-thirds of ECBs remain hedged (Table 1.3). Other metrics, such as external debt to GDP, short-term debt[22] to total external debt and the net international investment position (IIP) also indicated external sector resilience (Chart 1.22).

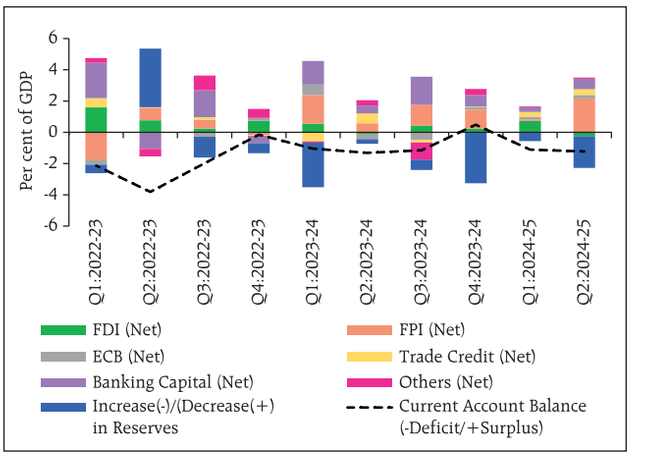
Table 1.2: Capital Flows (US$ billion)

Component	Financial Year so far			Financial Year	
	Period	2024-25	2023-24	2023-24	2022-23
FDI (net)	April-October	2.1	7.7	10.1	28.0
FPI (net)	April-December	12.7	26.0	44.6	-4.8
ECB (net)	April-October	9.2	2.8	3.6	-4.1
Non-resident Deposits (net)	April-October	11.9	6.1	14.7	9.0

Note: Data on FPI to India for financial year so far (December 12, 2024) and corresponding period previous year have been sourced from NSDL, whereas data for 2023-24 and 2022-23 are based on balance of payments (BoP) statistics. ECB (net) comprises external commercial borrowings to India.
Sources: RBI and NSDL.

[22] With original maturity of up to one year.

Chart 1.21: Balance of Payments



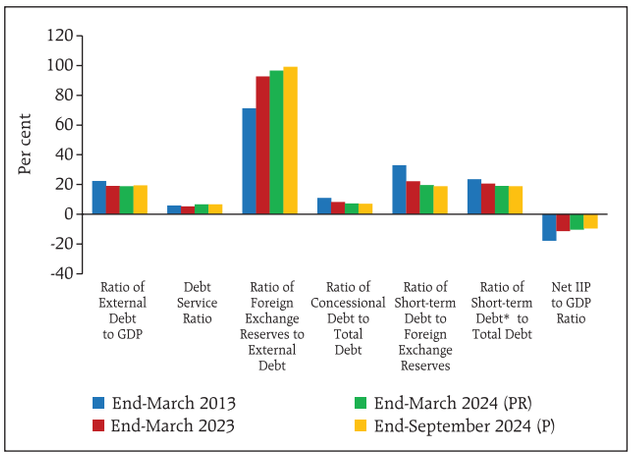
Note: 'Others' includes external assistance, rupee debt service, other capital and errors and omissions.
Source: RBI.

Table 1.3: Hedging Status of ECB Loans - September 2024

Description	Amount (US$ million)
A. ECB – Total outstanding	1,90,397
B. ECB – INR denominated	15,332
C. ECB – FDI Companies' borrowings from foreign parent	32,474
of which:	
(a) INR denominated	12,357
(b) FCY denominated	20,117
D. ECB – Non-Rupee and non-FDI [= A-B-C(b)]	1,54,948
of which:	
(a) Public sector companies	57,365
(b) Private companies and others	97,583
E. Hedging details of non-Rupee non-FDI ECBs (*i.e.*, D above)	
1. Hedging declared on registration from April 2019	67,381
of which:	
(a) Public sector companies	11,879
(b) Private companies and others	55,502
2. Other past loans reported hedged by borrowers	22,079
of which:	
(c) Public sector companies	11,131
(d) Private companies and others	10,948
F. ECB – unhedged {D-(E1+E2)}	65,488
G. Percentage share of unhedged ECB {(F)/(A)*100}	34.4
Memo Item:	
Natural Hedge Under Item F	2,905
G# Percentage share of unhedged ECB {(F-Memo Item)/(A)*100}	32.9

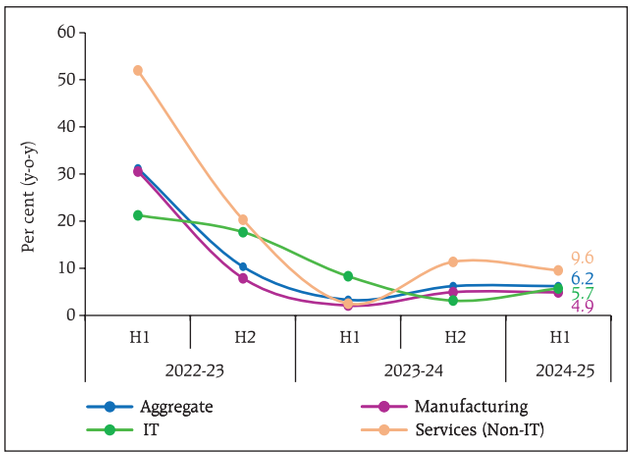
Note: (1) # After adjusting for natural hedge.
(2) Many of the loans under items (C) and (E) also have natural hedge
Source: RBI.

Chart 1.22: External Vulnerability Indicators



Note: *Original Maturity; P: Provisional; PR: Partially Revised.
Sources: RBI and Ministry of Finance.

Chart 1.23: Sales Growth of Listed Private NFCs



Note: Based on 2,839 listed private non-financial companies in H1:2024-25.
Sources: Capitaline and RBI staff calculations.

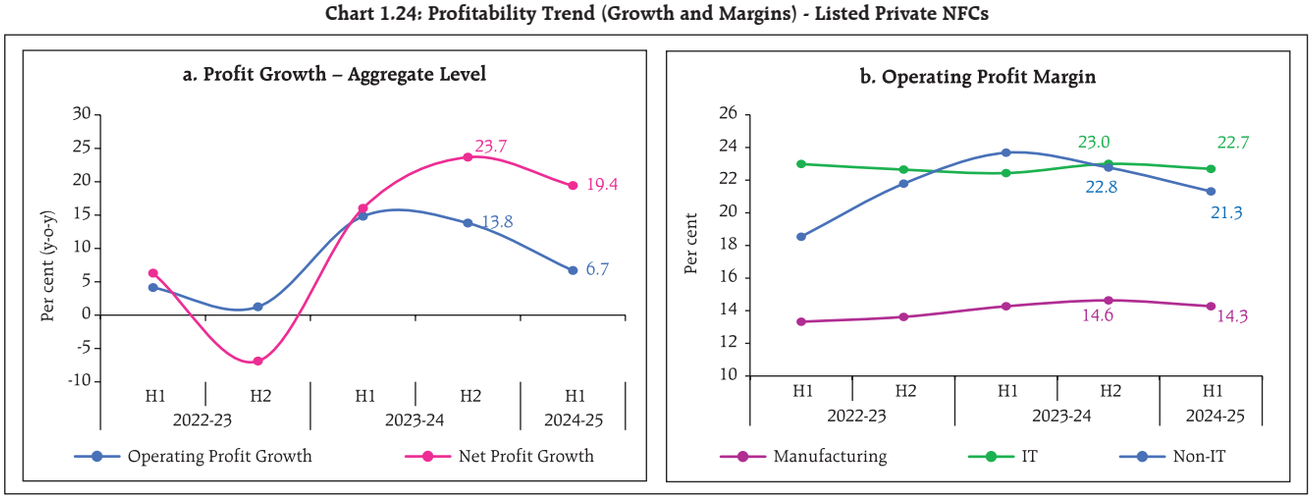
I.2.3 Corporate Sector

1.34 The overall performance of listed private non-financial companies (NFCs) has remained steady this year so far: sales growth (y-o-y) remained stable at 6.2 per cent in H1:2024-25 same as in H2:2023-24. Sales growth of manufacturing companies remained unchanged at 4.9 per cent during H1:2024-25, while for IT and non-IT services sectors, sales rose by 5.7 per cent and 9.6 per cent, respectively (Chart 1.23).

1.35 With rising staff and input costs, operating profit growth (y-o-y) of manufacturing companies moderated to 4.3 per cent during H1:2024-25. As a result, operating profit margin moderated on sequential basis. Within the services sector, operating profit margins moderated during H1:2024-25 for both IT and non-IT services companies, however, they continued to remain at elevated level (Chart 1.24 a and b).

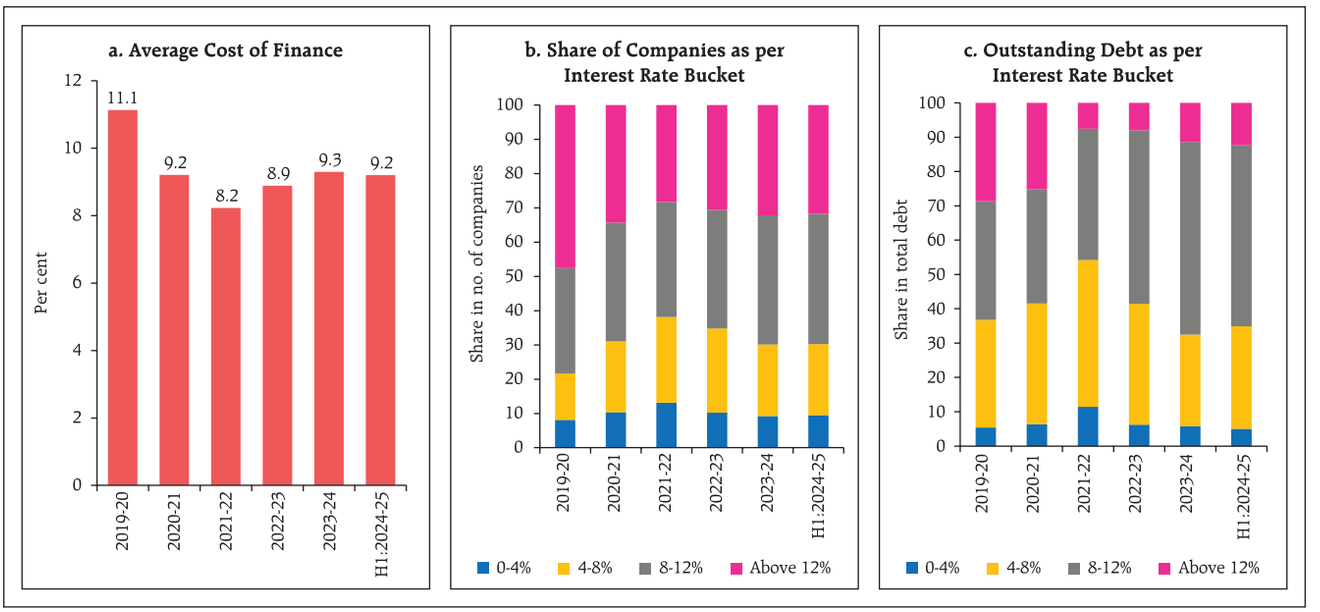
1.36 The average cost of finance for listed private non-financial companies, as measured by the ratio of interest expenses to average of total borrowings from all sources, has risen since March 2022 to 9.2 per cent in September 2024. The distribution of companies and their borrowings according to the

Chart 1.24: Profitability Trend (Growth and Margins) - Listed Private NFCs



Note: Based on 2,839 listed private non-financial companies in H1:2024-25.
Sources: Capitaline and RBI staff calculations.

Chart 1.25: Financing of Listed Private Non-Financial Companies

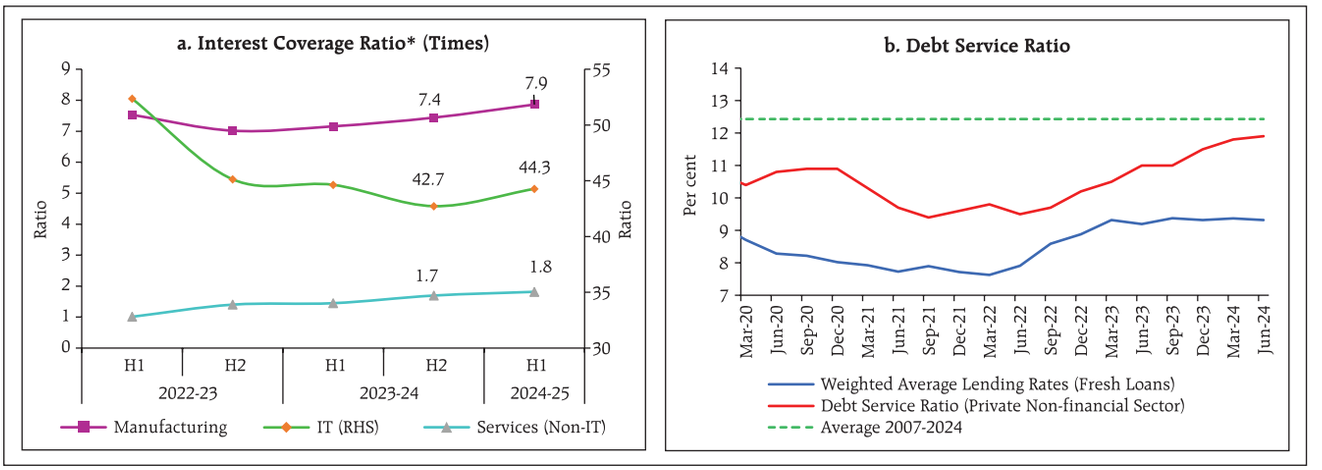


Note: Based on half-yearly balance sheets of 3,618 listed private non-financial companies in H1:2024-25.
Sources: Capitaline and RBI staff calculations.

cost of finance indicates a shift to higher interest rate buckets among companies as well as in their borrowing profiles (Chart 1.25 a, b and c).

1.37 With lower rise in interest cost relative to earnings before interest and taxes, listed private NFCs' debt serviceability[23] improved during H1:2024-25 in all major sectors (Chart 1.26 a). Their debt service ratios[24] remain below average for the period 2007-2024 (Chart 1.26 b).

Chart 1.26: Debt Serviceability of NFCs

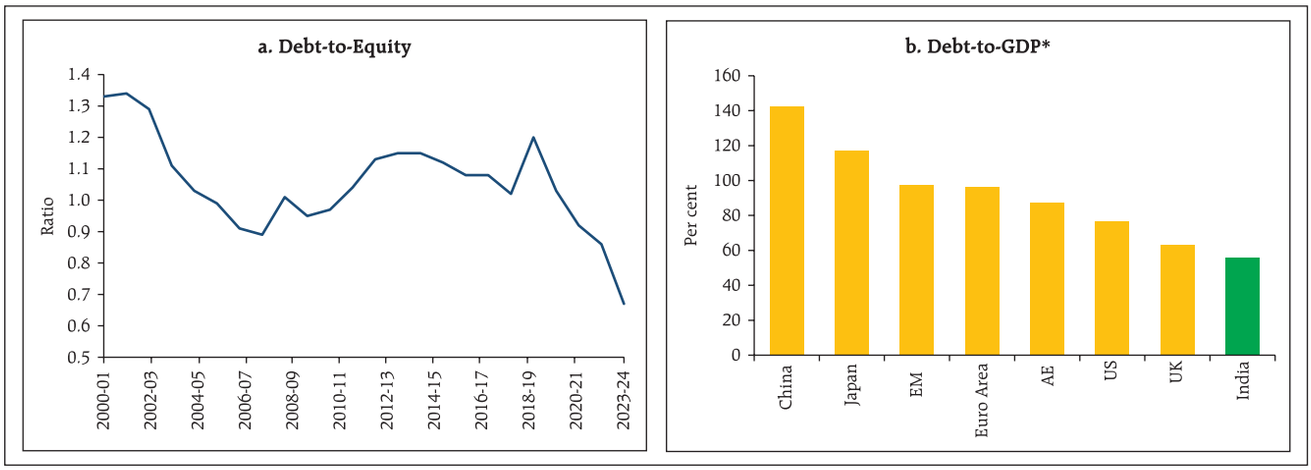


Note: * Based on 2,839 listed private non-financial companies in H1:2024-25.
Sources: Capitaline, BIS and RBI staff calculations

[23] Debt serviceability, as measured by interest coverage ratio (ICR), is defined as the ratio of earnings before interest and taxes (EBIT) to interest expenses.

[24] The debt service ratio (DSR) is defined as the ratio of interest payments plus amortisations to income. As such, the DSR provides a flow-to-flow comparison – the flow of debt service payments divided by the flow of income and as such reflects the share of income used to service debt.

Chart 1.27: NFCs – Debt-to-Equity and Debt-to-GDP Ratios



Note: * Data as on June 30, 2024
Sources: CMIE and BIS.

1.38 At a broader level, the debt-to-equity ratio of NFCs has been steadily declining since 2018-19. India's corporate debt-to-GDP ratio remains low when compared with that of AE and EME peers (Chart 1.27 a and b).

I.2.4 Government Finance

1.39 In the post-pandemic period, India's public finances have been underpinned by a steadfast commitment to fiscal consolidation. As per the provisional accounts (PA) of the central government for 2023-24, the gross fiscal deficit (GFD) was contained at 5.6 per cent (of GDP at current market prices), lower than the budget estimates (BE) of 5.9 per cent. It is projected to go down further to 4.9 per cent in 2024-25 (BE). This improvement in the fiscal position of the central government is primarily due to broad-based growth in revenue receipts. During April-October 2024, the GFD stood at 46.5 per cent of BE *vis-à-vis* 45.0 per cent in the corresponding period last year. Other major deficit indicators (*viz.*, gross primary deficit and revenue deficit) are budgeted to record an improvement during 2024-25 (Table 1.4).

Table 1.4: Central Government Finances - Key Deficit Indicators

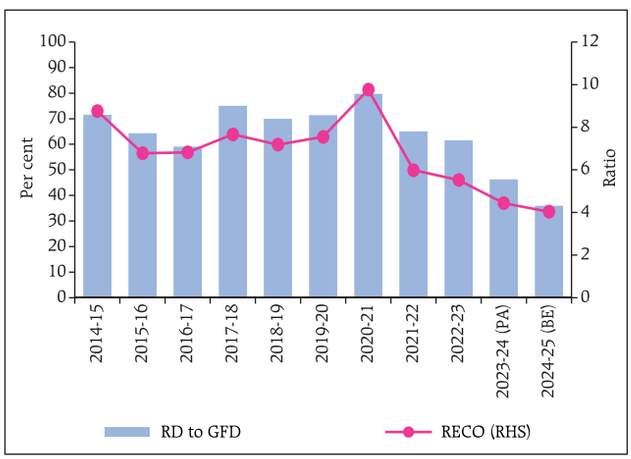
(Per cent of GDP)

Items	2020-21	2021-22	2022-23	2023-24 (PA)	2024-25 (BE)
1. Fiscal Deficit	9.2	6.7	6.4	5.6	4.9
2. Revenue Deficit	7.3	4.4	4.0	2.6	1.8
3. Gross Primary Deficit	5.7	3.3	3.0	2.0	1.4

Note: PA - Provisional Accounts; BE - Budget Estimates.
Sources: Controller General of Accounts (CGA) and Union budget documents.

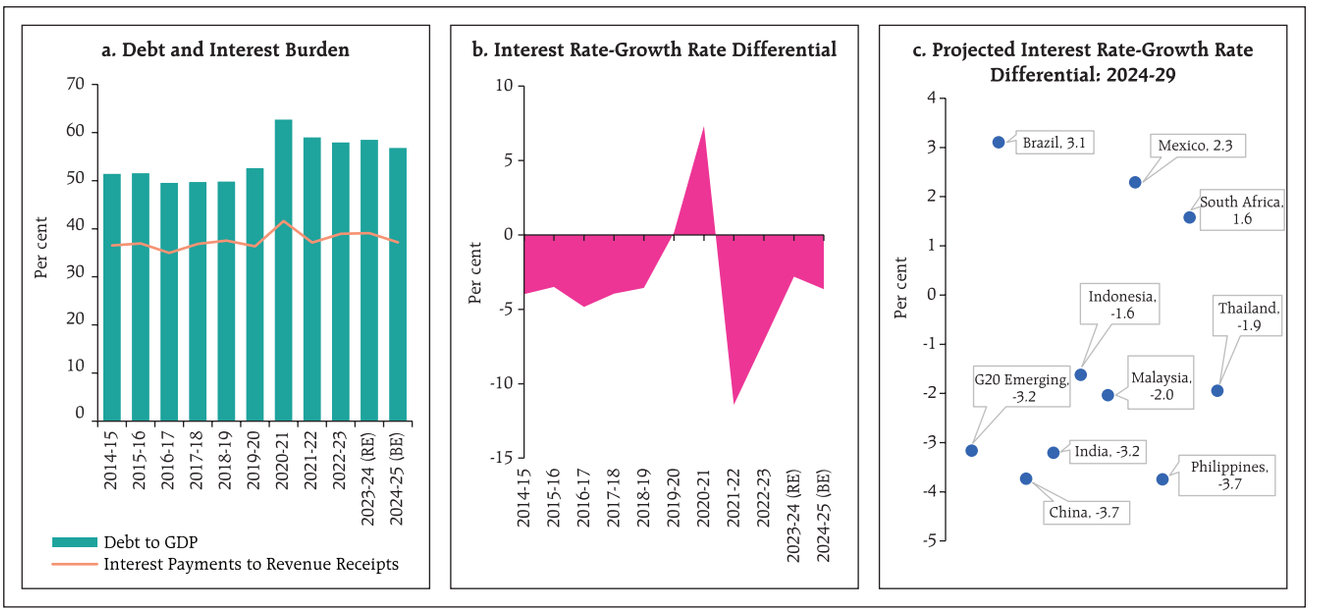
1.40 The focus on capital expenditure to support investment and economic growth has resulted in a consistent improvement in the quality of expenditure (Chart 1.28). Capital outlay (*i.e.*, capital expenditure excluding loans and advances) is

Chart 1.28: Quality of Expenditure – Central Government



Note: PA- Provisional Accounts; BE- Budget Estimates; RD – Revenue Deficit; GFD – Gross Fiscal Deficit.
Sources: CGA; and Union budget documents.

Chart 1.29: Debt Sustainability – Central Government



Note: RE: Revised Estimates; BE: Budget Estimates.
Sources: Union budget documents, IMF and RBI staff estimates.

projected to increase by 16.7 per cent during 2024-25 (BE), taking its share in borrowings to 56.9 per cent. Revenue expenditure is estimated to record a relatively modest rise of 6.2 per cent. As a result, the revenue expenditure to capital outlay ratio (RECO) is projected to fall to an all-time low of 4.0 during 2024-25 (BE).

1.41 Capital expenditure and capital outlay of the union government contracted (y-o-y) by 35.0 per cent and 35.4 per cent, respectively, during Q1:2024-25, largely due to the model code of conduct being in force during the general elections. Subsequently, however, capital expenditure and capital outlay grew by 10.3 per cent and 14.6 per cent (y-o-y), respectively, in Q2:2024-25.

1.42 The ratio of central government debt to GDP, which peaked at 62.7 per cent in 2020-21 due to public policy measures to mitigate the impact of the COVID-19 pandemic, has been moderating subsequently and is estimated at 56.8 per cent in 2024-25 (BE). The ratio of interest payment to revenue receipts is also budgeted to decline to 37.2 per cent from 39.1 per cent in 2023-24 (RE). Improving debt dynamics alongside a favourable interest rate-growth rate differential (r-g) augurs well for fiscal sustainability (Chart 1.29 a, b and c).

1.43 States' consolidated GFD stood at 2.9 per cent of GDP in 2023-24 (PA), which was well within the Centre's prescribed limit of 3.5 per cent. States have projected their revenue deficit to remain unchanged at 0.2 per cent (of GDP at market prices) and their consolidated fiscal deficit to rise marginally to 3.2 per cent in 2024-25 (BE) (Table 1.5).

1.44 States' outstanding liabilities, which peaked at 31.0 per cent of GDP in March 2021, declined subsequently with fiscal consolidation and are budgeted at 28.8 per cent of GDP by end-March 2025. The medium-term objective is to bring it down to the

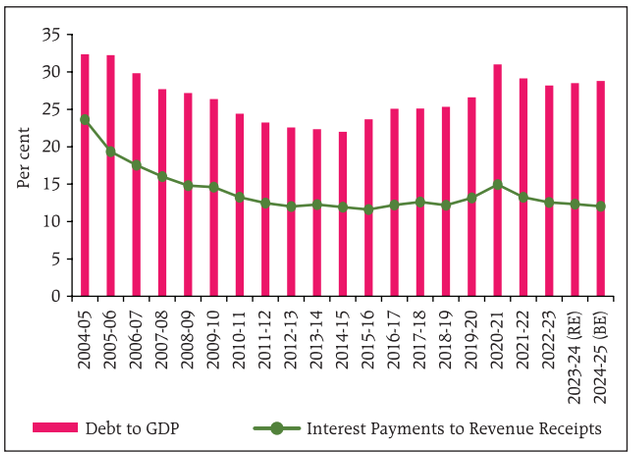
Table 1.5: State Governments - Key Deficit Indicators

(per cent of GDP)

Deficit Indicators	2021-22	2022-23	2023-24 (PA)	2024-25 (BE)
Revenue Deficit	0.4	0.2	0.2	0.2
Gross Fiscal Deficit	2.8	2.7	2.9	3.2
Primary Deficit	1.0	1.0	1.4	1.5

Note: PA: Provisional Accounts; BE: Budget Estimates.
Sources: Budget document of States and CAG.

Chart 1.30: Debt and Interest Burden - State Governments



Note: RE: Revised Estimates; BE: Budget Estimates.
Sources: Budget document of States and CAG.

20 per cent threshold recommended by the Fiscal Responsibility and Budget Management (FRBM) Review Committee (2018). States' debt servicing cost has been on a declining trend since 2020-21 (Chart 1.30). Notwithstanding the overall gains in consolidating state finances, a few larger states have ratios of debt to gross state domestic product (GSDP) exceeding 35 per cent, with implications for their developmental and capital expenditure capacities as well as debt servicing headroom in the medium to long term.

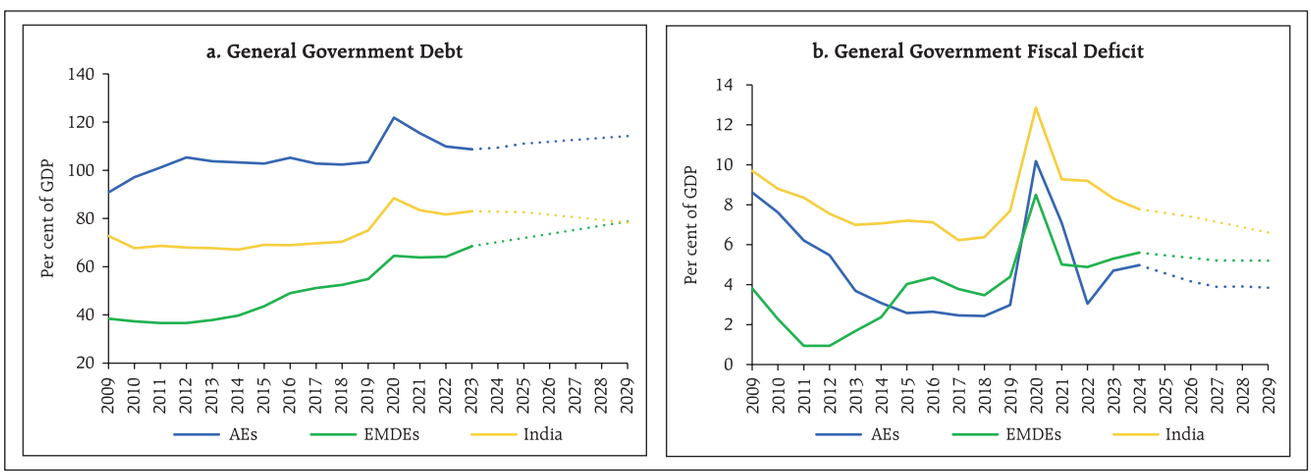
1.45 India's general government debt and fiscal deficit remain higher than those of the peer EMDEs (Chart 1.31 a and b). Supported by ongoing fiscal consolidation, however, they are expected to decline over the medium term and trend towards the EMDE average.

I.2.5 Household Finance

1.46 At 42.9 per cent of GDP (at current market prices) in June 2024, India's household debt is relatively low compared to other EMEs, however, it has increased over the past three years (Chart 1.32 a). Even as household debt is on a rising trend, the increase is driven by a growing number of borrowers rather than an increase in average indebtedness (Chart 1.32 b).

1.47 Borrowing by individuals[25] in the household sector constituted around 91 per cent[26] of the stock of household financial liabilities as at end- March 2024.

Chart 1.31: India, AEs and EMDEs – Debt and Fiscal Deficit

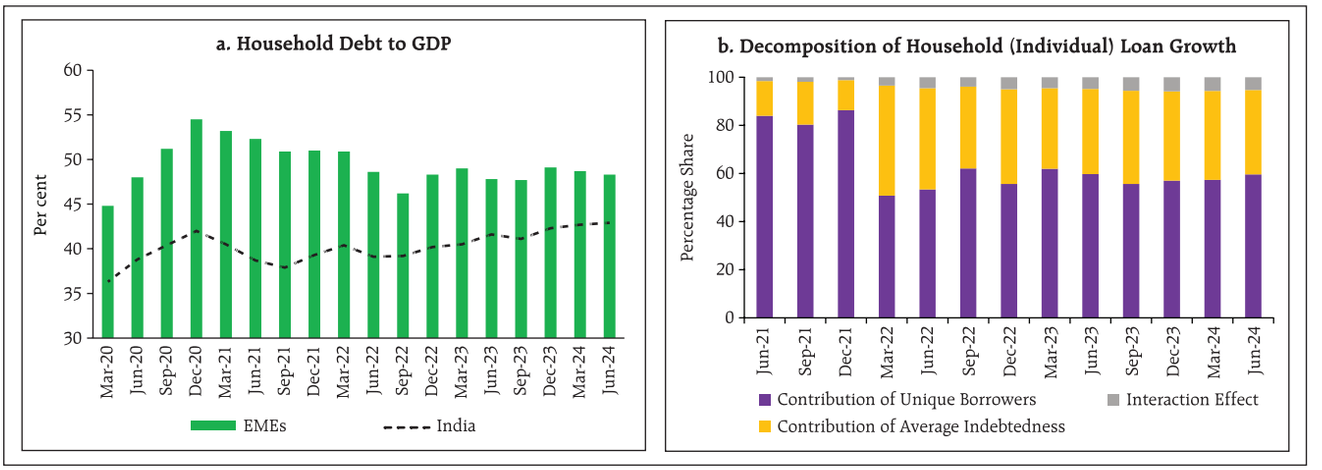


Note: Dotted lines represent forecasts.
Source: IMF.

[25] Excludes loans to other segments of the household sectors {*viz.*, microfinance, household-others, proprietary firms, partnerships concerns, Hindu undivided families (HUF), partnership firms, joint liability groups, non-government organisations (NGOs) and trusts}.

[26] Based on consumer bureau reporting.

Chart 1.32: Household Debt and Decomposition



Note: Unique borrowers are defined as distinct borrowers who have at least one loan account (irrespective of the product) outstanding at the end of respective period (including new to credit borrowers).

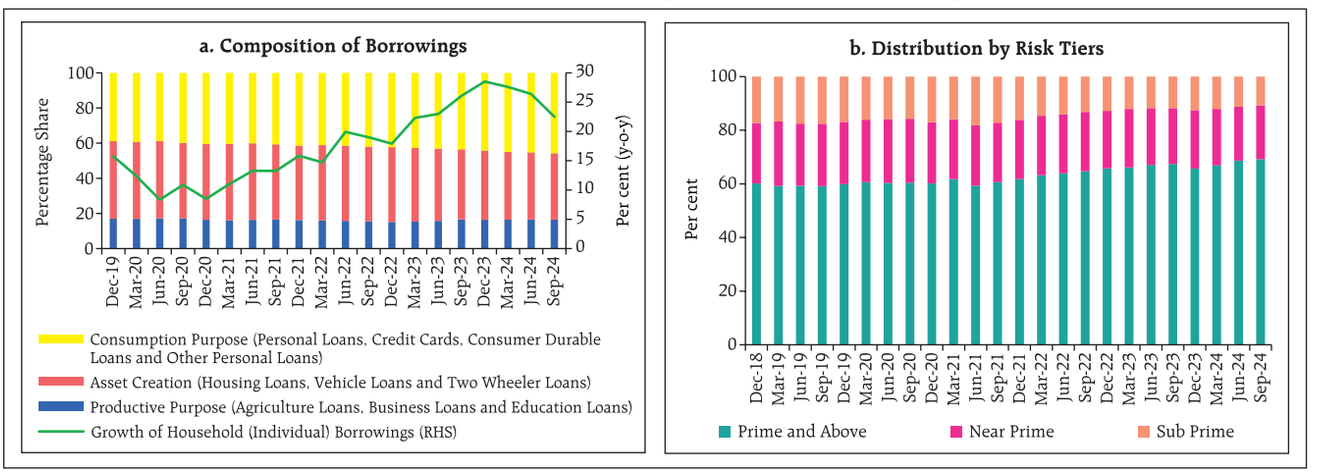
Sources: BIS, TransUnion CIBIL and RBI staff calculations.

Disaggregated analysis of the nature of individuals' borrowings shows that loans are primarily used for consumption (personal loans, credit cards, consumer durable loans and other personal loans), asset creation (mortgage loans and vehicle loans and two-wheeler loans) and for productive purposes (agriculture loans, business loans and education loans) (Chart 1.33 a). Notably, close to two-thirds of the portfolio is of prime and above credit quality (Chart 1.33 b).

1.48 Borrower-type analysis revealed that sub-prime borrowers availed loans primarily for consumption purpose, whereas super-prime borrowers used debt for asset creation, especially housing (Chart 1.34 a and b).

1.49 Per capita debt of individual borrowers[27] has increased sharply for super-prime borrowers in the recent period, while it has remained stable for other risk tiers. From a debt-servicing capacity perspective, the rise in per capita debt only among

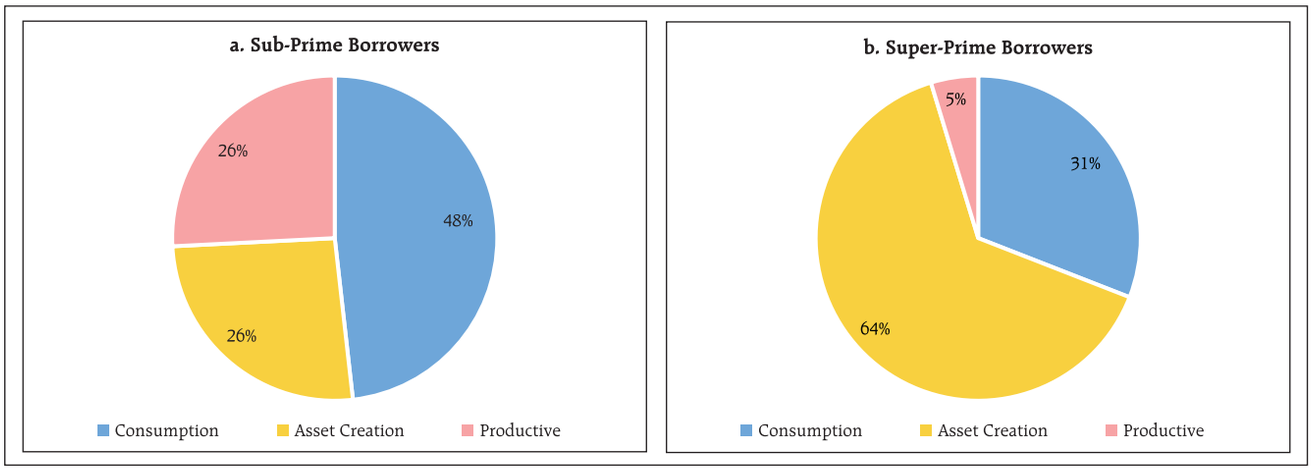
Chart 1.33: Household (Individual) Borrowings from Financial Institutions (by Amount)



Sources: TransUnion CIBIL and RBI staff calculations.

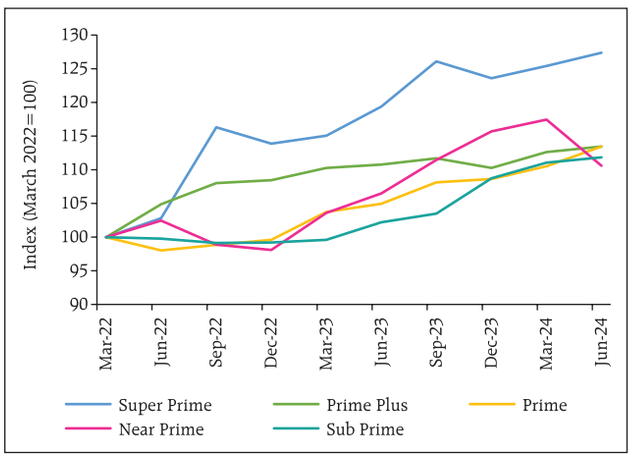
[27] Debt outstanding divided by number of live unique borrowers at the end of each period.

Chart 1.34: Distribution of Debt by Borrower Category (September 2024)



Sources: TransUnion CIBIL and RBI staff calculations.

Chart 1.35: Per Capita Debt of Household (Individual) Borrowers



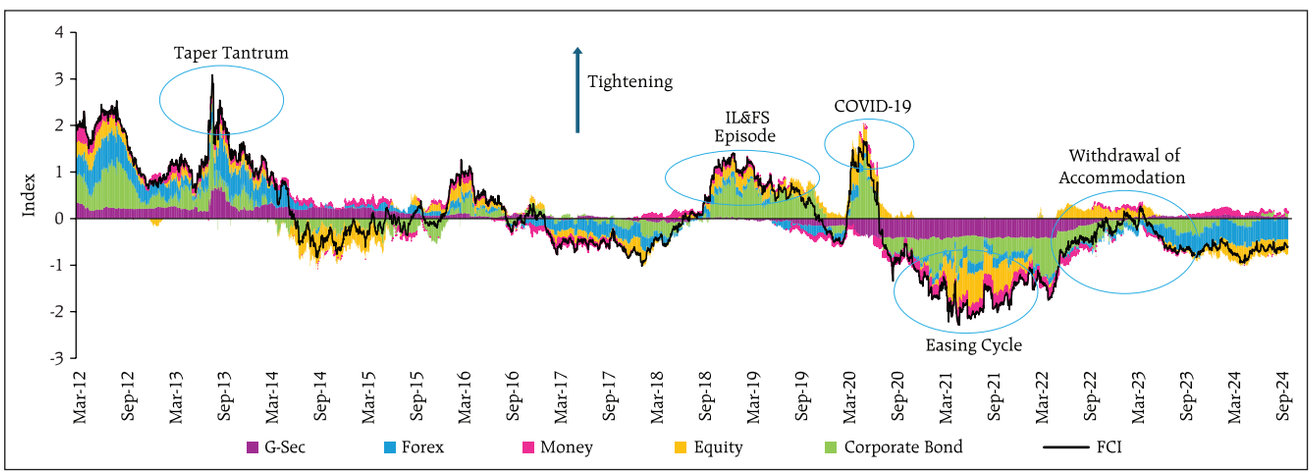
Sources: TransUnion CIBIL and RBI staff calculations.

highly rated borrowers and use of debt for asset creation are credit positive and financial stability enhancing (Chart 1.35).

I.2.6 Financial Markets

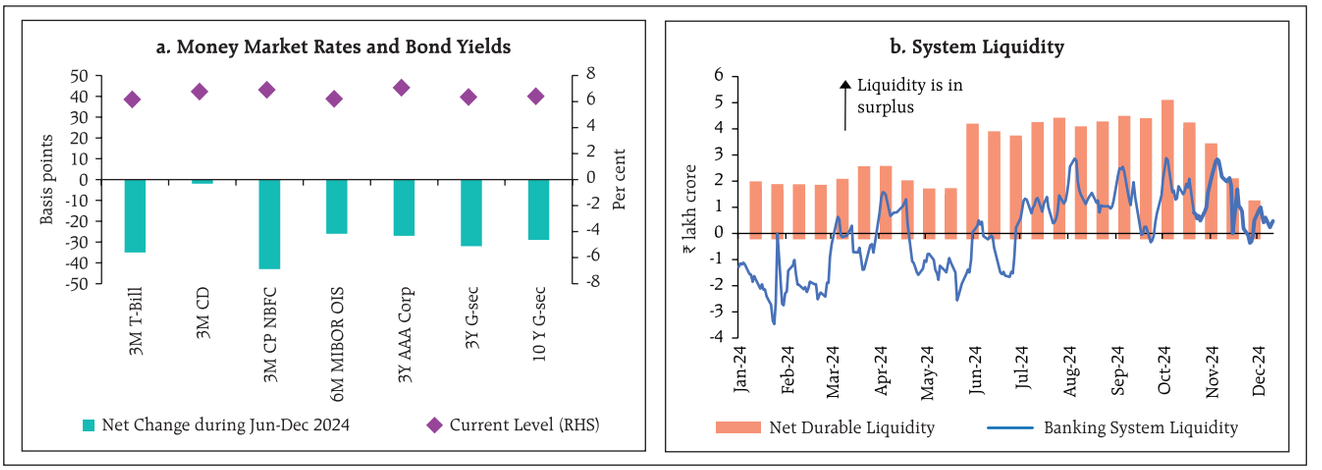
1.50 Since the June 2024 issue of the FSR, financial conditions have eased further on the back of improvement in system liquidity and the shift in monetary policy stance to neutral. This was reflected in the softening of short-term money market rates as well as yields on government securities and corporate bonds (Chart 1.36 and 1.37 a and b).

Chart 1.36: Financial Conditions Index - India



Note: For details, refer to Box IV.2 of the Monetary Policy Report (October 2024).
Source: RBI staff calculations.

Chart 1.37: Money Market Rates, Bond Yields and System Liquidity



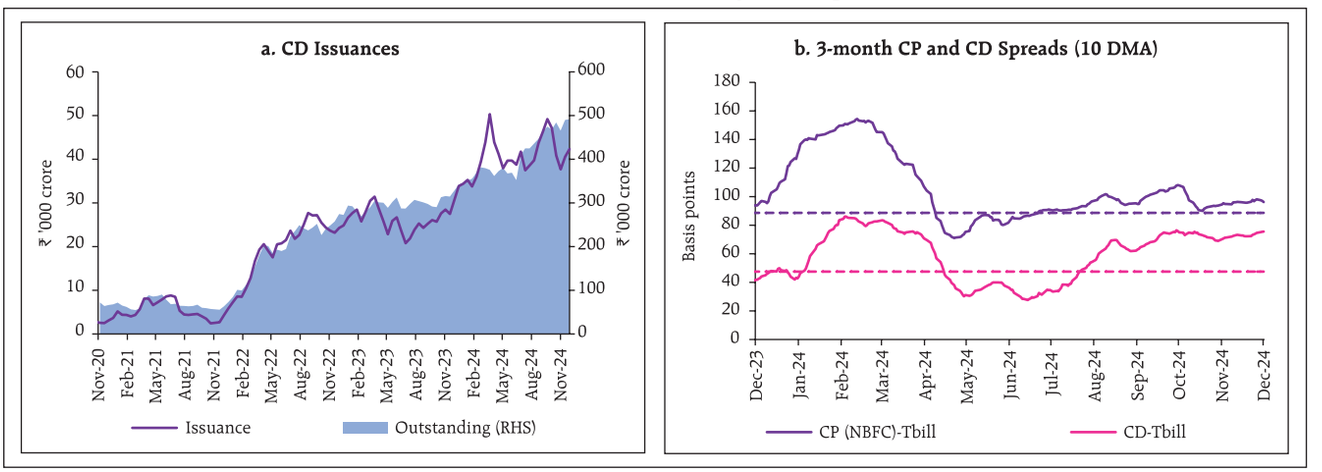
Note: Data as on December 11, 2024.
Source: Bloomberg.

1.51 Banks increasingly relied on issuance of certificates of deposits (CDs) and NBFCs took recourse to issuances of commercial paper (CP) to close their funding gaps. As a result, money market spreads have risen since mid-2024 (Chart 1.38 a and b).

1.52 The sovereign yield curve bull steepened (*i.e.*, short-term rates fell faster than long-term rates), supported by the improvement in system liquidity and change in monetary policy stance. Consequently, the term spread in the G-sec market (*viz.*, 10-year bonds minus 91-day Treasury Bills) rose marginally and averaged 27 bps during July-December (up to December 11, 2024) *vis-à-vis* 18 bps during January-June 2024 (Chart 1.39 a and b).

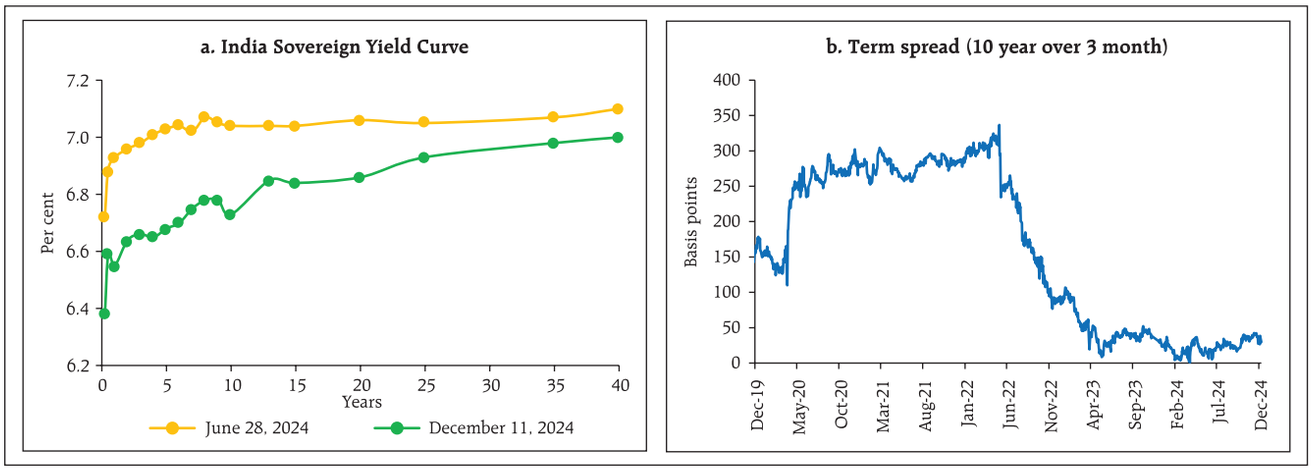
1.53 In the corporate bond market, NBFCs remained the largest issuers, with private placement being the preferred mode for bonds listed on recognised exchanges. Amidst moderation in direct funding from banks, NBFCs attempted to diversify their funding sources through higher issuance of listed non-convertible debentures (NCDs). Banks and corporates together subscribed to nearly two-thirds

Chart 1.38: CD Issuances and Money Market Spreads



Notes: (1) Issuances are rolling average of past 8 fortnights.
(2) Dotted lines indicate average spread from January 01, 2022 to December 11, 2024.
(3) DMA – Daily moving average.
Source: Refinitiv.

Chart 1.39: Sovereign Yield Curve and Term Spread

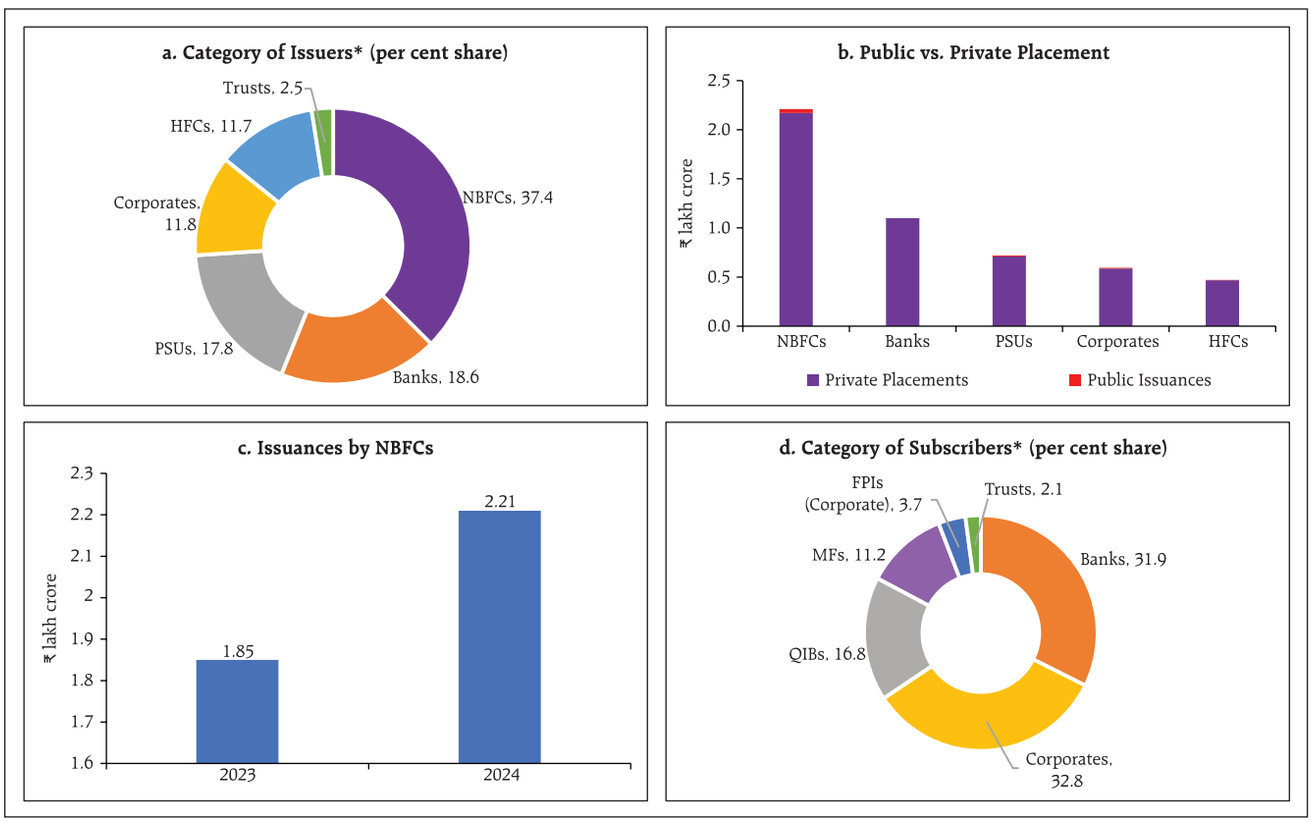


Sources: FBIL and Bloomberg.

of listed corporate bond issuances during 2024-25 (Chart 1.40 a, b, c and d).

1.54 Corporate bond spreads have shown a mixed trend across rating categories. Spreads have widened for AA category since June 2024 even as select lower rated borrowers (below AA) have been able to attract competitive pricing in primary market issuances. Median spreads of NCDs have been higher in 2024

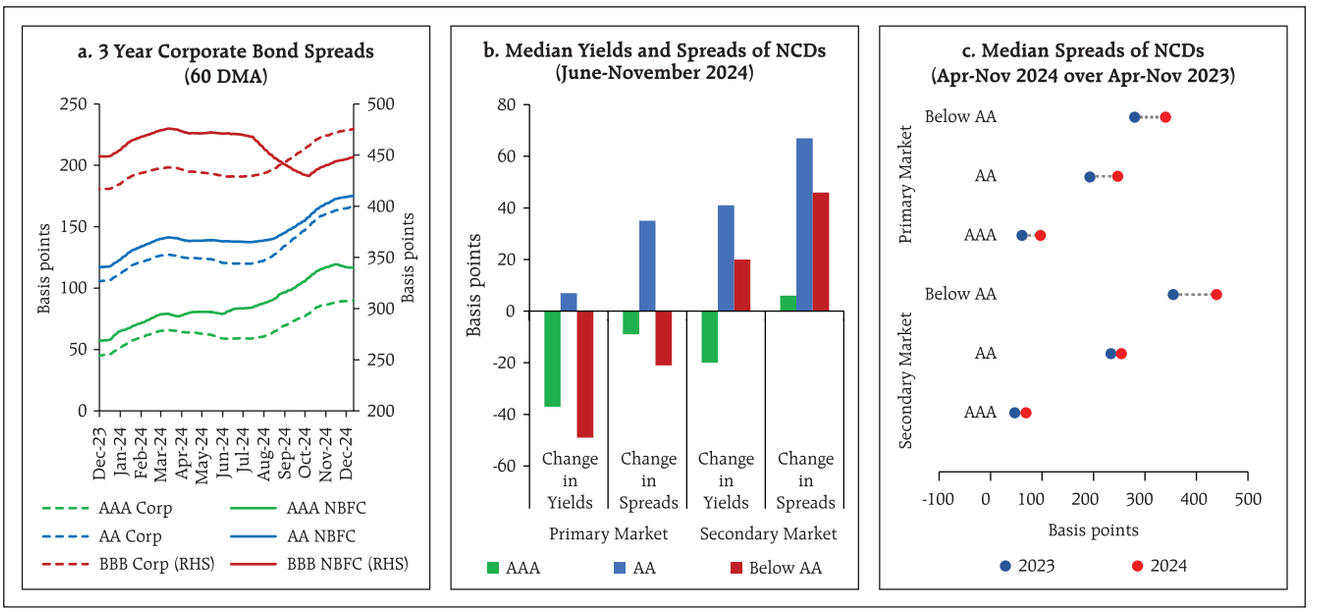
Chart 1.40: Listed Corporate Bond Issuance and Subscription (Apr-Nov 2024)



Notes: (1) * May not add upto 100 per cent as minor categories are not shown.
(2) QIBs: Qualified Institutional Buyers; MFs: Mutual funds; HFCs: Housing Finance Companies.

Sources: NSDL and CDSL.

Chart 1.41: Corporate Bond Spreads



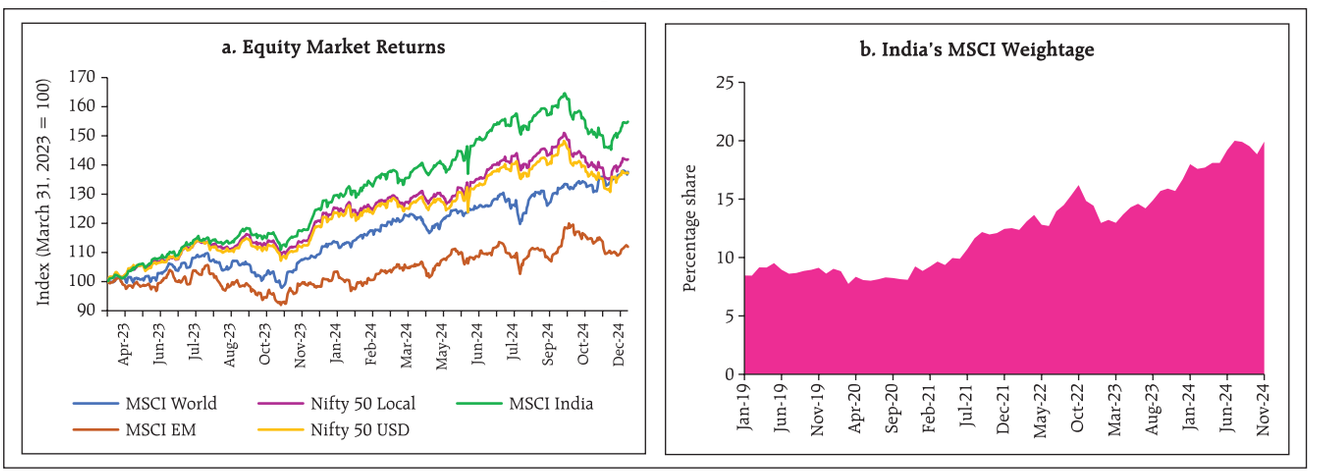
Sources: Bloomberg, NSDL and CDSL.

than a year ago, largely due to the sharper fall in G-sec yields of comparable maturity (Chart 1.41 a, b and c).

1.55 The Indian equity market, which rose to record highs in late-September 2024, has witnessed correction due to deceleration in the pace of corporate earnings and concerns about market valuation. It has, however, outperformed emerging market peers in 2024 so far, with the MSCI India Index recording a return of 19.5 per cent compared to 8.3 per cent for MSCI Emerging Markets Index (MSCI-EMI) as on December 12, 2024. This has led to increase in India's weightage in the MSCI-EMI from 9.2 per cent in March 2019 to 19.9 per cent in November 2024 (Chart 1.42 a and b).

1.56 Midcap, smallcap and microcap stocks yielded returns of over 30 per cent even as the broader Nifty 50 Index posted annualised returns of 17 per cent (Table 1.6). A decomposition of equity returns using a standard discounted cash flow model

Chart 1.42: Equity Market Performance



Sources: Refinitiv, NSE, MSCI, Bloomberg and RBI staff calculations.

Table 1.6: Returns of Nifty Benchmark Indices

(per cent)

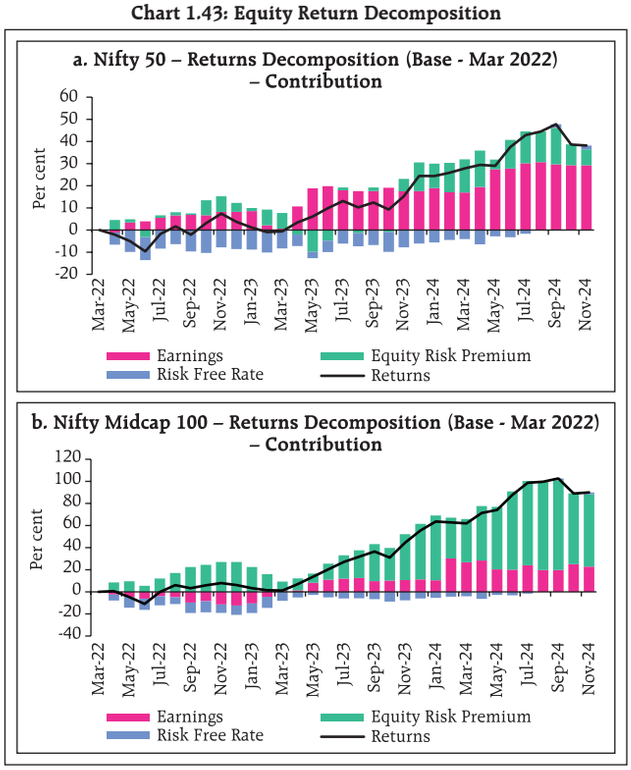
CAGR	Nifty 50	Nifty 100	Nifty Midcap 150	Nifty Smallcap 250	Nifty Microcap 250
1-year	17	21	32	35	44
2-years	15	17	33	37	51
3-years	12	13	23	24	36

Note: CAGR as on December 12, 2024.
Source: NSE.

suggests that higher risk appetite, as reflected in the equity risk premium, has been the major driver of the Nifty Midcap 100 Index in contrast to the Nifty 50 Index, which is supported by earnings growth (Chart 1.43 a and b).

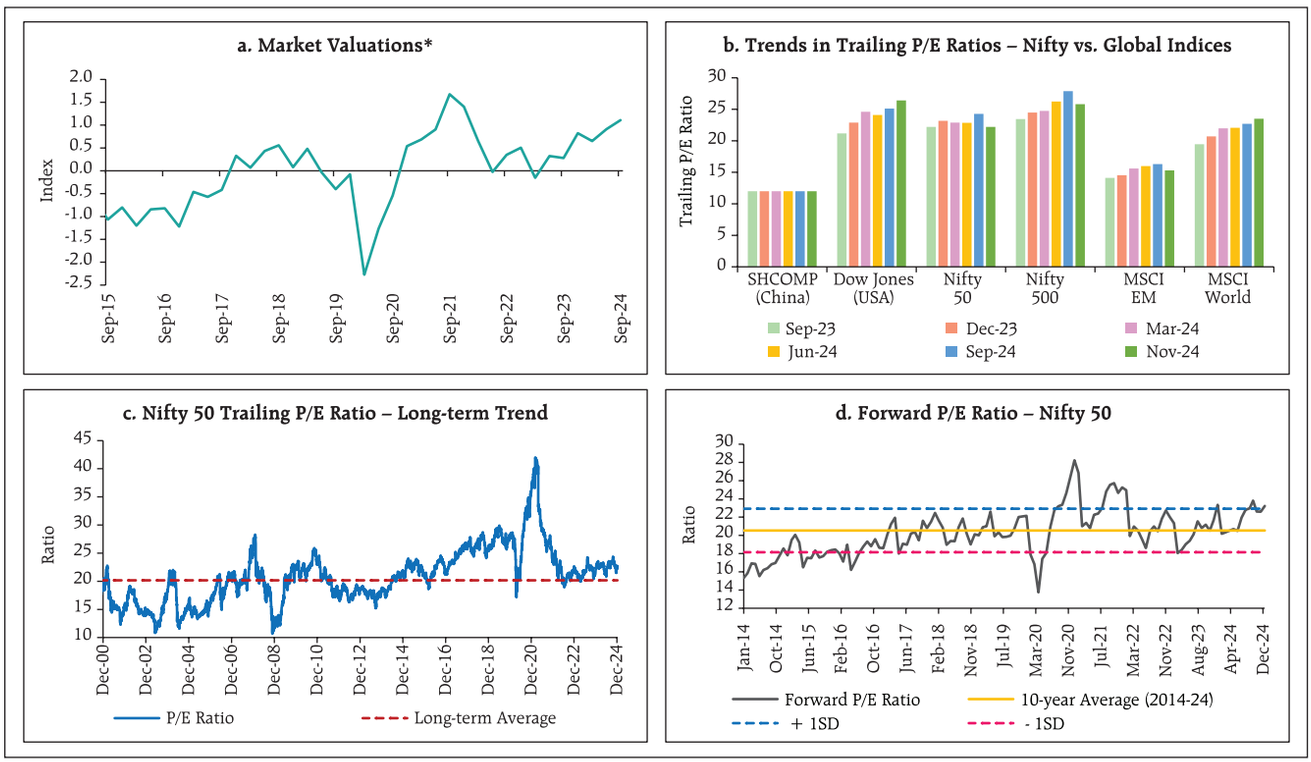
1.57 Despite the recent correction, equity valuations remain elevated across metrics, such as trailing and forward price-to-earnings (P/E) ratios, market capitalisation-to-GDP and earnings yield (Chart 1.44 a, b, c and d).

Chart 1.43: Equity Return Decomposition



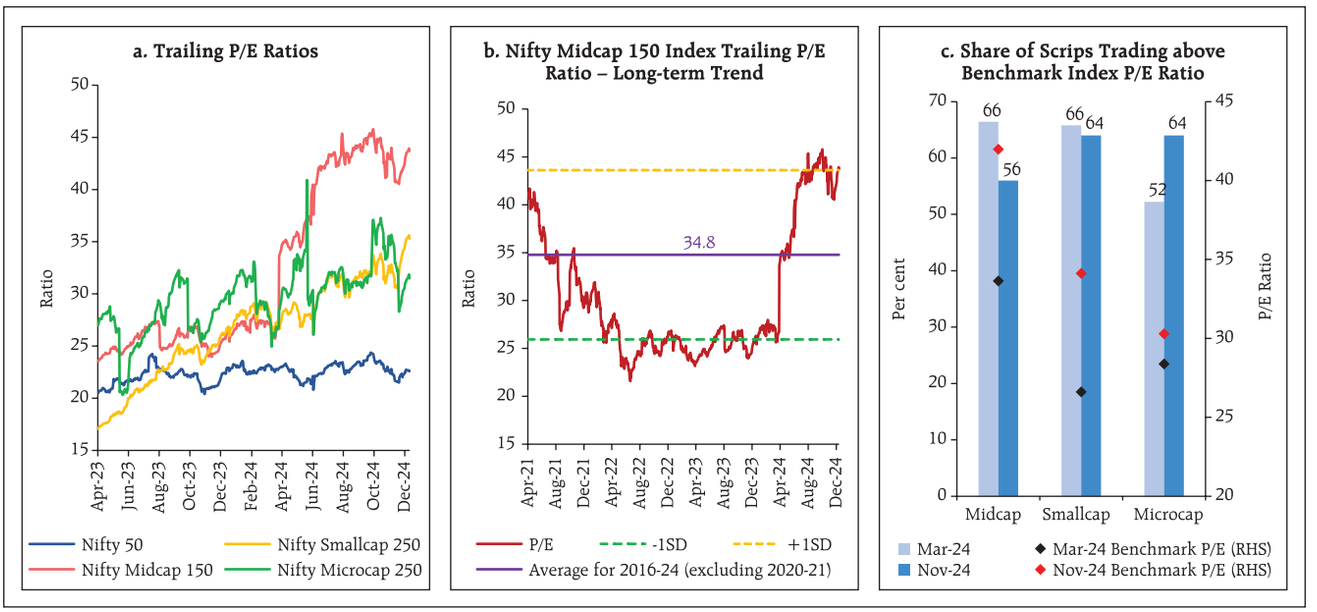
Sources: Bloomberg and RBI staff calculations

Chart 1.44: Broader Equity Market Valuations



Note: * Arithmetic mean of standardised price-to-book, Market Capitalisation-to-GDP, 10-year G-sec yield over Sensex Earnings Yield and Price-to-Earnings ratios. GDP data up to September 2024.
Sources: Refinitiv, NSE, MSCI, Bloomberg and RBI staff calculations.

Chart 1.45: Midcap, Smallcap and Microcap Valuation

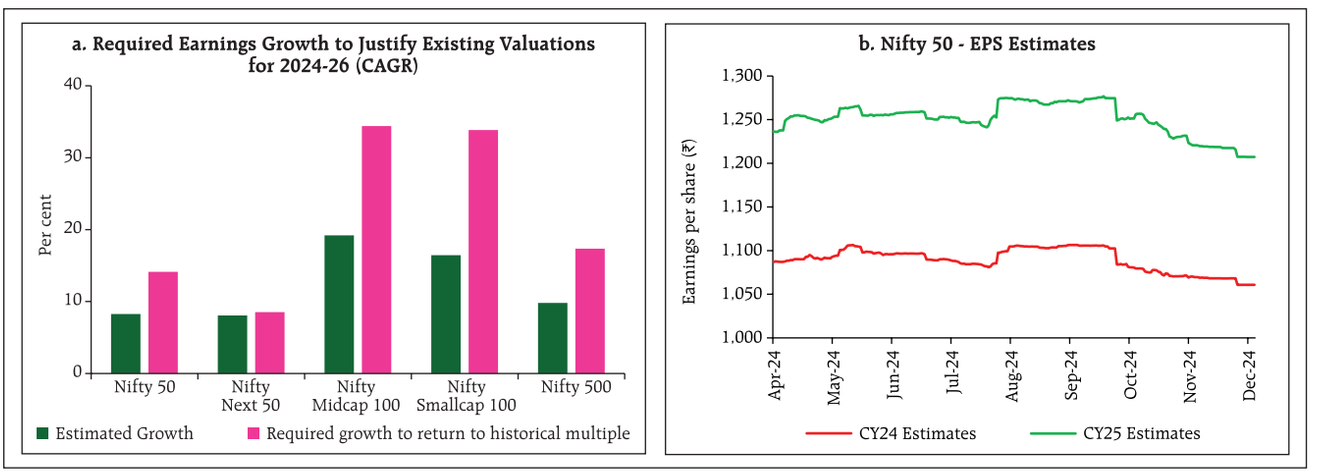


Sources: SEBI, NSE, Bloomberg and RBI staff calculations.

1.58 Stretched valuations are more prominent in midcap and smallcap stocks. Notably, the Nifty Midcap 150 Index was trading at P/E ratios close to 43.7 in mid-December 2024 compared to its long-term average of 34.8 (Chart 1.45 a and b). Moreover, despite a sharp increase in the benchmark P/E ratio from 34 in March 2024 to 42 in November 2024, 56 per cent of stocks in the Nifty Midcap 150 Index were trading higher than the benchmark P/E. Similarly, 64 per cent of both smallcap and microcap scrips traded with a P/E ratio above their respective benchmark P/E ratios (Chart 1.45 c).

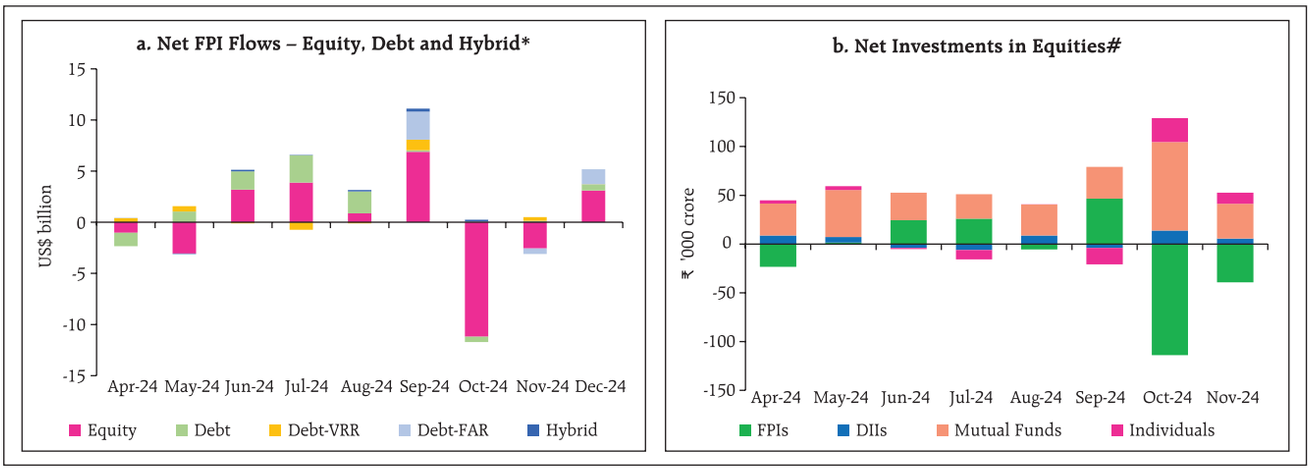
1.59 To justify the current valuations for all indices, the required earnings growth should exceed the expected earnings growth to forestall a large and abrupt market correction. Q2:2024-25 corporate results, however, indicate a slowdown in earnings as reflected in earnings per share (EPS) estimates (Chart 1.46 a and b).

Chart 1.46: Earnings and Valuations



Sources: Bloomberg and RBI staff calculations

Chart 1.47: Trends in Net Investments



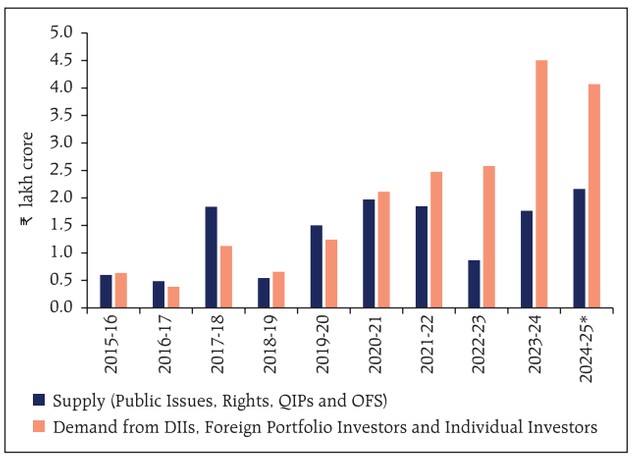
Note: (1) * Data up to December 12, 2024; The format of data reporting by NSDL for FPI flows has changed with effect from September 2024. As a result, figures from September 2024 onwards in the chart exclude flows to mutual funds and AIFs and include flows to Debt-FAR.
(2) # DIIs – Domestic institutional investors.
Sources: NSDL, NSE, BSE and SEBI.

1.60 Foreign portfolio investors sold equities worth US$ 11.2 billion in October 2024, marking the highest recorded FPI monthly outflow. In contrast, domestic investors (institutional investors, mutual funds and individuals combined) remained net buyers of equities for the eleventh consecutive month as well as in 15 of the last 16 months. Foreign portfolio investors were, however, net buyers in the debt market (Chart 1.47 a and b).

1.61 Strong demand for equities, especially from domestic investors, has outpaced supply of primary market issuance through public issues {initial public offerings (IPOs) and follow-on public offerings (FPOs)}, qualified institutional placements (QIPs) and offer-for-sale (OFS) since the pandemic (Chart 1.48).

1.62 The demand-supply mismatch in securities indicates investors' preference for short-term returns through secondary market investments over long-term capital formation. This is reflected in the unprecedented growth in the total number of demat accounts held by individual investors, which rose from four crore at the end of 2019-2020 to fifteen crore in as at end-March 2024. A study conducted by the Securities and Exchange Board of India (SEBI)[28] to analyse trends in intraday trading by individual investors before and after the COVID-19 outbreak found that the number of individuals trading intraday in the equity cash segment has increased by close to five times, from 15 lakh in 2018-19 to 69 lakh in 2022-23, and the share of young intraday traders (aged less than 30 years) has grown to 48 per

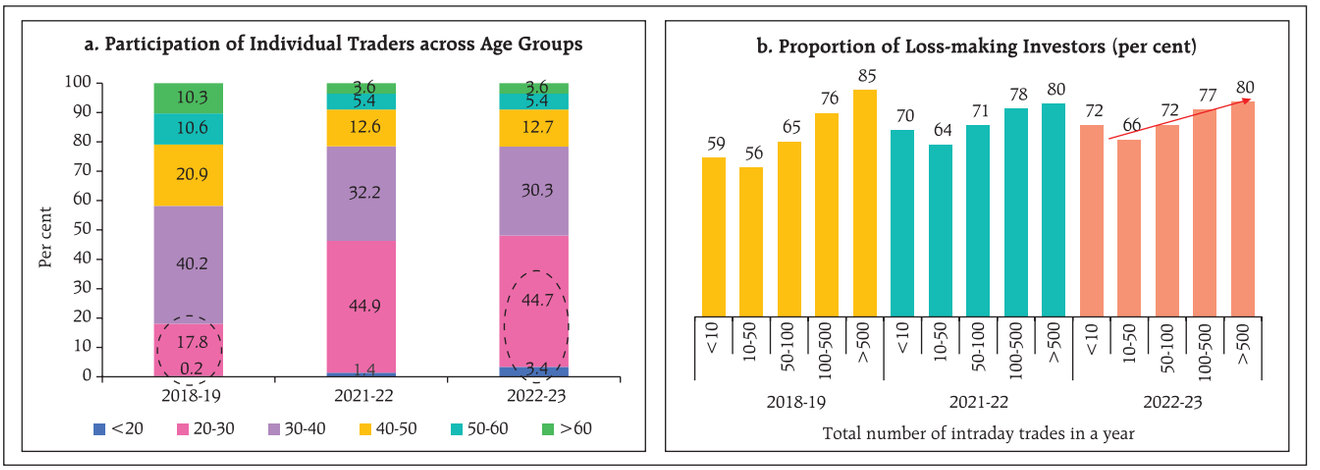
Chart 1.48: Demand for and Supply of Equities



Note: * Data up to October 2024; Foreign Portfolio Investors demand data includes both primary and secondary market investments but for DIIs and Individual investors, only secondary market investments are presented. DIIs includes Banks, Development Financial Institutions, Insurances, New Pension Schemes and MFs.
Sources: SEBI, NSE, BSE, Capitaline, Bloomberg and RBI staff calculations.

[28] SEBI (2024), "Analysis of Intraday Trading by Individuals in Equity Cash Segment", July.

Chart 1.49: Intraday Trading by Individuals in Equity Cash Segment



Source: SEBI.

cent from 18 per cent. Notably, a substantial share of traders has incurred losses and the proportion of loss-making investors rose in tandem with frequency of trading (Chart 1.49 a and b).

1.63 An analysis of investor behaviour in Main Board IPOs by the SEBI[29] corroborated this investment pattern, with individual investors engaging in 'flipping' behaviour, selling 50 per cent of shares allotted to them by value within a week of listing. Moreover, investors exhibited greater propensity to sell IPO shares that posted positive listing gains as compared to those that listed at a loss. Individual investors offloaded more than two-thirds of shares that gave a return of more than 20 per cent within a week.

1.64 Activity in the equity derivatives segment remained strong. As at end-September 2024, there was an increase of 59 per cent (y-o-y) in the turnover in futures contracts and 25 per cent in the options segment (notional turnover). Despite a sizeable share of individual investors making losses, turnover contributed by them in the futures and options (F&O) segment rose by 118 per cent to ₹4,107 lakh crore between September 2022 and September 2024. In a follow-up to the study[30] published in January 2023 by the SEBI, which found that 89 per cent of individual equity F&O traders lost money in 2021-22, the SEBI published another study[31] in September 2024, that showed the aggregate losses of individual traders exceeded ₹1.8 lakh crore over the three-year period between 2021-22 and 2023-24. Moreover, 93 per cent of over 1.13 crore individual F&O traders incurred average losses of around ₹2 lakh per trader. On the other hand, proprietary traders and foreign portfolio investors with sophisticated trading knowledge registered significant profits. The study also revealed that the proportion of young traders (below 30 years) in the F&O segment rose from 31 per cent to 43 per cent during this period. Over 75 per cent of individual F&O traders in 2023-24 had declared an annual income of less than ₹5 lakh and more than three-fourths of loss-making traders

[29] SEBI (2024), "Analysis of Investor Behavior in Initial Public Offerings (IPOs)", September.

[30] SEBI (2023), "Analysis of Profit and Loss of Individual Traders dealing in Equity F&O Segment", January.

[31] SEBI (2024), "Analysis of Profits & Losses in the Equity Derivatives Segment (FY22-FY24)", September.

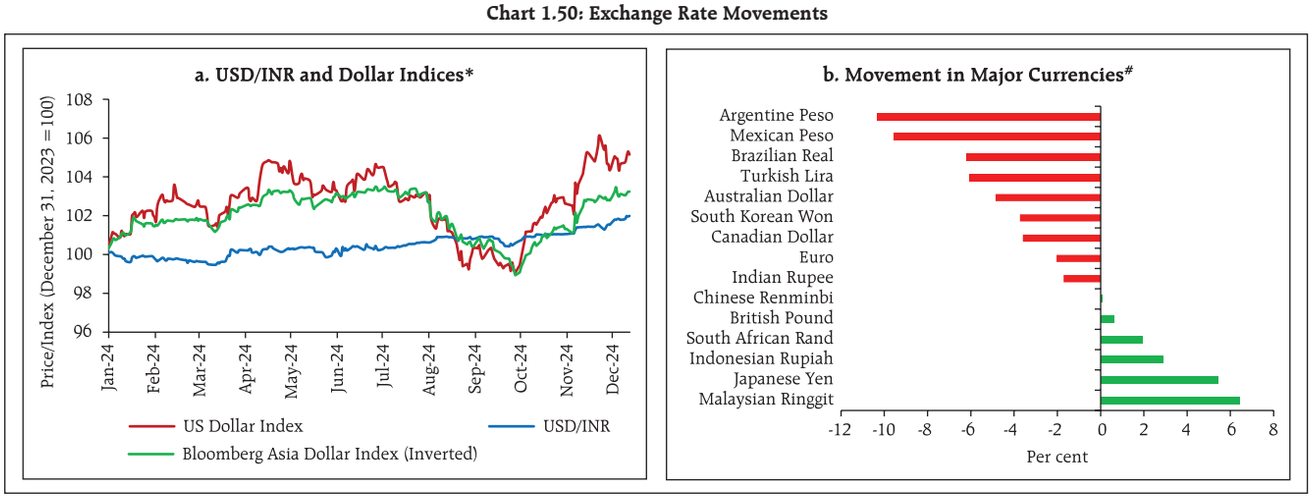
continued trading in F&O market despite making losses in consecutive years. Accordingly, in October 2024, the SEBI took several measures to strengthen the equity index derivatives market for increased investor protection and market stability.

1.65 An emerging area of concern relates to IPOs of small and medium enterprises (SMEs). There has been a sharp increase in demand for SME IPOs, with several IPOs oversubscribed 100 times or more on account of rising participation from retail investors. In many cases, there appears to be no direct correlation between company fundamentals and the sharp rise in stock prices of SMEs. The SEBI has observed that some SME companies and/or their promoters engaged in practices that present an overly optimistic or unrealistic view of their operations following their listing on exchanges, which are often followed by corporate actions, such as bonus issues, stock splits, preferential allotments and similar measures, to influence stock prices. Accordingly, the SEBI has issued orders against certain entities engaging in such activities and also issued advisory urging investors to remain vigilant and cautious when considering investments in SME securities.

1.66 Amidst periods of volatility in international foreign currency markets and the strengthening of the US dollar relative to other currencies, the domestic foreign exchange market has stayed steady, supporting overall macroeconomic stability. The Indian Rupee (INR) remains one of the most stable currencies among emerging market currencies (Chart 1.50 a and b).

1.67 Several indicators, such as the real effective exchange rate (REER), the exchange market pressure (EMP) index[32], implied volatility derived from option prices and onshore-offshore spreads also

Chart 1.50: Exchange Rate Movements



Note: (1) * Bloomberg Asia Dollar Index (Inverted) aims to replicate the performance of USD against nine Asian currencies.
(2) # Change between end-June 2024 and December 12, 2024.

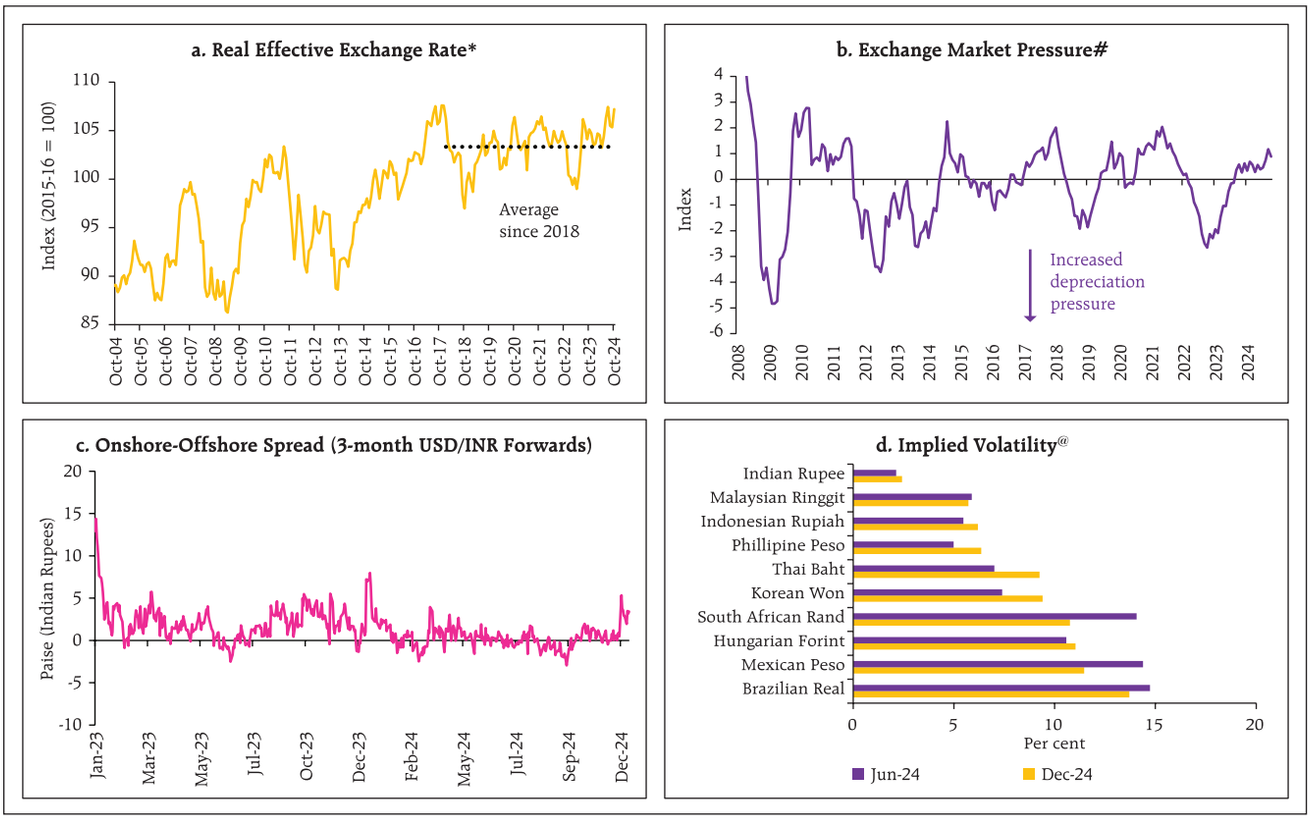
Sources: Bloomberg, RBI and staff calculations.

[32] EMP index is used to measure external pressures on the currency and is constructed as a weighted average of exchange rate movements and changes in forex reserves.

$$EMP_t = \frac{1}{\sigma_{\Delta e_t}} \Delta e_t + \frac{1}{\sigma_{\Delta r_t}} \Delta r_t$$

where Δe_t is the y-o-y percentage change in exchange rate relative to the U.S. Dollar at time t, and Δr_t is the y-o-y percentage change of foreign exchange reserves at time t as a fraction of the monetary base (M3). $\sigma_{\Delta e_t}$ and $\sigma_{\Delta r_t}$ are the historical standard deviations of the two variables, respectively. For more details, see Appendix 3.1 of IMF World Economic Outlook April 2007.

Chart 1.51: Exchange Rate Stability Indicators



Notes: (1) * Trade weighted REER index is based on 40 currency basket (monthly average)
(2) # The EMP index uses standardised changes in exchange rates and forex reserves to measure the net pressure on an exchange rate. Negative numbers indicate increased depreciation pressure.
(3) @ Implied volatility is derived from At-the-Money 1-month Option prices. Data as on December 12, 2024.

Sources: Bloomberg and RBI staff calculations.

underscore the stability of the USD-INR exchange rate (Chart 1.51 a, b, c and d).

1.68 Global developments constitute a major channel for spillovers in EMEs affecting financial conditions, broader financial system and the economy. Vulnerability to external shocks have risen even as financial integration has increased. Thus, the resilience of EMEs is tested time and again in episodes involving global financial turmoil with the degree of impact determined by the extent of transmission of spillovers (Box 1.1).

Box 1.1 - Transmission of Global Spillovers to Domestic Financial Conditions

Monetary policy decisions in systemic advanced economies have a spillover effect on emerging market economies through their impact on bond yields, equity prices, capital flows, and exchange rate movements (IMF, 2015). Accordingly, risks from global spillovers to domestic financial stability remain a key concern.

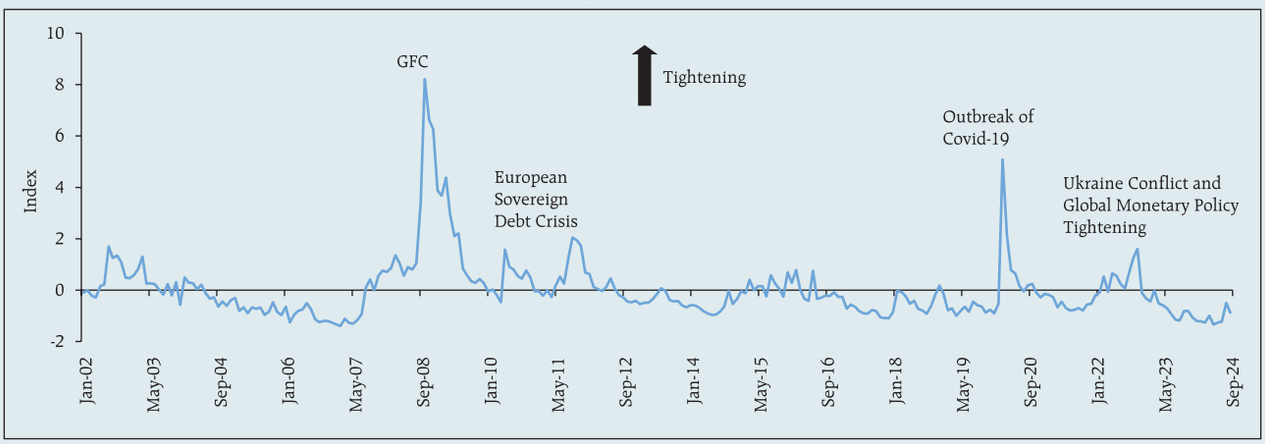
In order to assess the impact of global spillovers on domestic financial conditions, a two-step procedure is adopted. First, a global spillover index is constructed by using a set of financial variables based on a Dynamic Factor Model[33] (Patra *et al.*, 2016). The global spillover index traces all major events that capture adverse global macro-financial developments, including wars and COVID-19 (Chart 1). The dynamic correlations show greater sensitivity to certain components of the domestic financial conditions index (FCI)[34] such as equity and foreign exchange markets. The equity market shows the strongest correlation with the global spillover index, indicating its central role in transmitting global spillovers to domestic financial conditions (Table 1).

Table 1: Dynamic Correlation between FCI, Sub-components of FCI and Global Spillover Index

	Lead in Global Spillover Index (t = months)			
	0	**1**	**2**	**3**
FCI	0.23	0.26	0.24	0.16
Sovereign Risk	-0.14	-0.16	-0.16	-0.15
Risk Premium	0.09	0.17	0.16	0.02
Foreign Exchange Market	0.33	0.32	0.29	0.27
Equity Market	0.46	0.47	0.42	0.36
Money Market	0.01	0.02	0.02	-0.06

Sources: Bloomberg and RBI staff calculations.

Chart 1: Global Spillover Index (Standardised)



Sources: Bloomberg and RBI staff calculations.

(Contd.)

[33] Global Spillover Index (VIX, US Dollar Index, term premium, risk premium and LIBOR-OIS spread) has been constructed using the DFM methodology. Global Spillover Index utilises the 3-month LIBOR-OIS spread up to June 2023 and transitions to the 3-month SOFR-OIS spread from July 2023 onwards. It is assumed that each standardised variable $Y_{t,i}$ can be decomposed into an unobserved common component F_t and a disturbance term $\epsilon_{t,i}$ This relationship can be mathematically represented as follows:

$Y_{t,i} = \gamma_i * F_t + \epsilon_{t,i}$ (Factor Loadings)

$F_t = \beta * F_{t-1} + \omega_t$ (auto-correlated factors)

$\varepsilon_{t,i} = \alpha * \varepsilon_{t-1,i} + \delta_{t,i}$ (auto correlated errors)

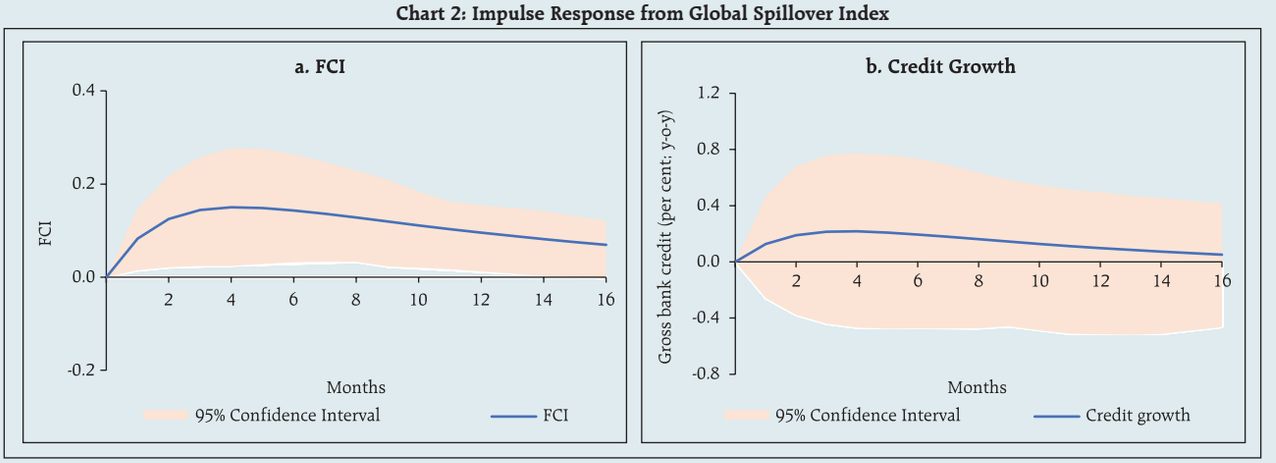
F_t is a vector of common factors that follows a VAR(p) process; γ_i is the factor loading of F_t, showing the relevance of each variable $Y_{t,i}$ in the Spillover Index and $\varepsilon_{t,i}$ represents idiosyncratic shocks specific to the ith variable at time 't'. The parameters are obtained by maximum likelihood estimation using Kalman filter.

[34] FCI for India is estimated using twenty financial market indicators, with chosen indicators representing five market segments, namely (i) the money market; (ii) the G-sec market; (iii) the corporate bond market; (iv) the forex market; and (v) the equity market. For details, refer Box IV.2 of the Monetary Policy Report (October 2024).

Second, a three-variable Vector Autoregression (VAR) model is used to assess the impact of the global spillover index on domestic financial conditions and bank credit growth. The impulse response function (IRF) plot for the FCI (Chart 2 a) demonstrates a statistically significant response to spillover shocks, although the magnitude of the impact remains moderate and is seen primarily in equity and foreign exchange markets.

In contrast to financial conditions, the IRF for credit growth (Chart 2 b) reveals an insignificant response to spillover shocks, suggesting global spillovers have little impact on the bank lending channel.

Chart 2: Impulse Response from Global Spillover Index



Sources: Bloomberg and RBI staff calculations.

References:

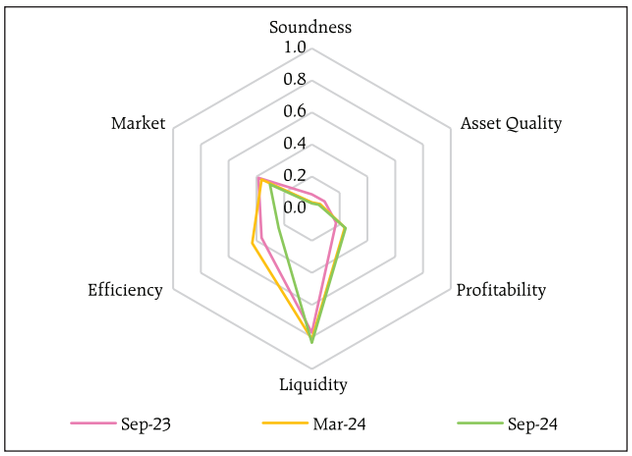
1. International Monetary Fund (2015), "2015 Spillover Report", December.
2. Patra, M. D., Pattanaik, S., John, J., Behera, H. K. (2016), "Monetary policy transmission in India: Do global spillovers matter?", *Reserve Bank of India Occasional Papers*, 37(1), 1-34.

I.2.7 Banking Stability Indicator

1.69 The banking stability indicator (BSI)[35], which provides an assessment of the resilience of the domestic banking system, showed further improvement during H1:2024-25. While stronger capital buffers boosted the soundness dimension, declining NPAs and improved provisioning bolstered asset quality. Despite improvement in return on assets (RoA) and earnings before provisions and taxes, the profitability dimension remained unchanged, weighed down by a sequential decline in the net interest margin (NIM) abetted by shift of deposits to higher interest rate buckets. The efficiency dimension strengthened, with reduction in cost-to-income ratio as well as staff cost. The market dimension of the BSI also improved due to a fall in risk weighted assets (RWAs) for market risk. A decline in the liquidity coverage ratio (LCR) and the liquid asset ratio weakened the liquidity dimension, although banks have sufficient liquidity buffers relative to the regulatory minimum (Chart 1.52).

[35] The BSI has been revised from this issue of the FSR. Methodology and variables used for compiling each BSI dimension are provided in Annex 2.

Chart 1.52: Banking Stability Map



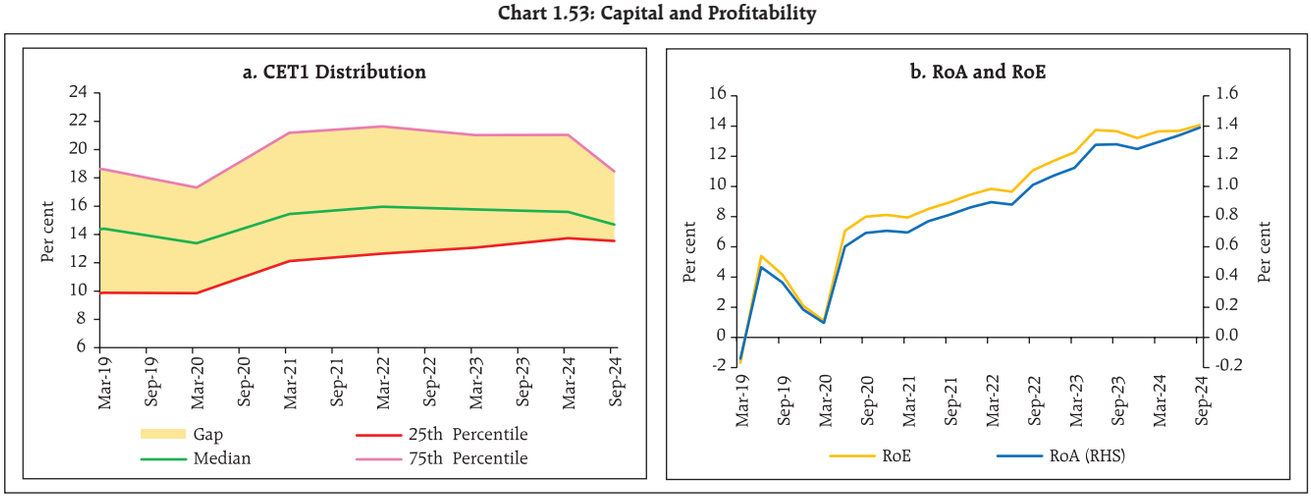
Note: Away from the centre indicates increase in risk.
Sources: RBI supervisory returns and staff calculations.

I.2.8 Banking System[36]

1.70 The resilience of the domestic banking system has been bolstered by robust capital buffers, strong earnings and sustained improvement in asset quality. The common equity tier 1 (CET1) ratio, which represents the highest quality of regulatory capital, stood at 14.0 per cent, well above the regulatory requirement of 8 per cent (including the capital conservation buffer). The banks' net interest margins (NIM) and profitability also remained solid. Consequently, their returns on assets (RoA) and returns on equity (RoE) rose to 1.4 per cent and 14.1 per cent, respectively, in September 2024 (Chart 1.53 a and b).

1.71 Buoyed by falling slippages, higher write-offs and steady credit demand, the gross non-performing assets (GNPA) ratio[37] of scheduled commercial banks (SCBs) fell to a multi-year low of 2.6 per cent. Alongside, net non-performing assets (NNPA) ratio declined to 0.6 per cent, aided by strong provisioning. Additionally, the special mention accounts – 2 (SMA-2) ratio[38], which is a lead indicator of asset quality, is also displaying low potential impairment (Chart 1.54 a, b and c).

Chart 1.53: Capital and Profitability



Source: RBI supervisory returns.

[36] The analyses done in this section are based on domestic operations of SCBs (excluding SFBs), unless otherwise stated.

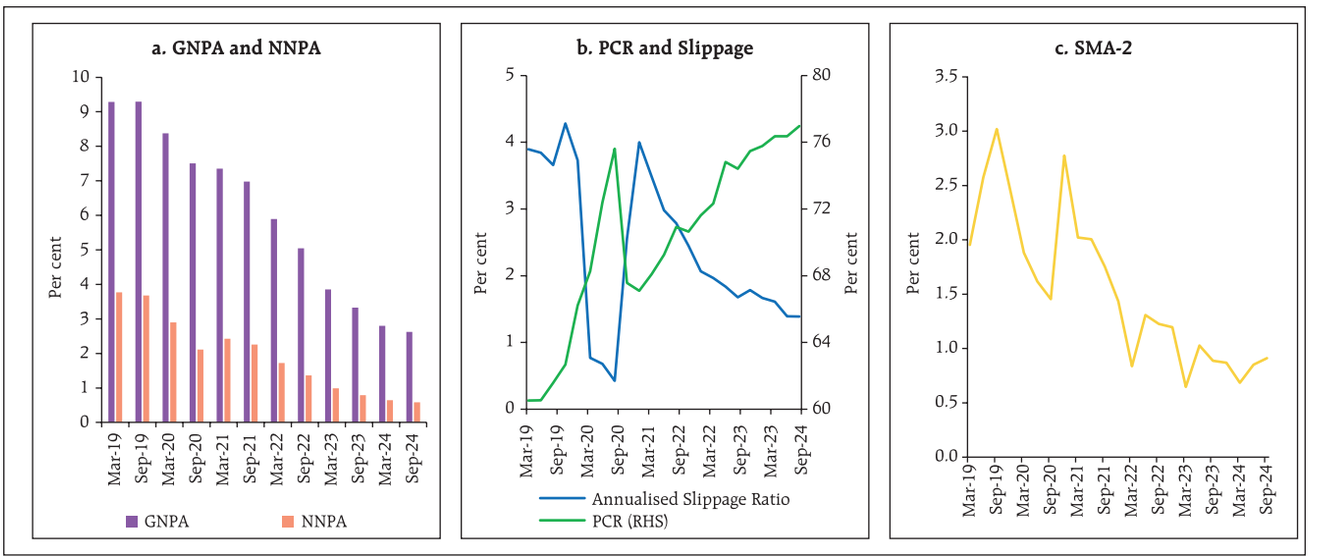
[37] GNPA ratio is the share of gross non-performing assets in gross loans and advances.

[38] Special mention account (SMA) is defined as:

a) For loans with revolving facilities (e.g. cash credit/ overdraft): if outstanding balance remains continuously more than the sanctioned limit or drawing power, whichever is lower, for a period of 31-60 days - SMA-1; 61-90 days - SMA-2.

b) For loans other than revolving facilities: if principal or interest payment or any other amount wholly or partly overdue remains outstanding up to 30 days - SMA-0; 31-60 days - SMA-1; 61-90 days - SMA-2.

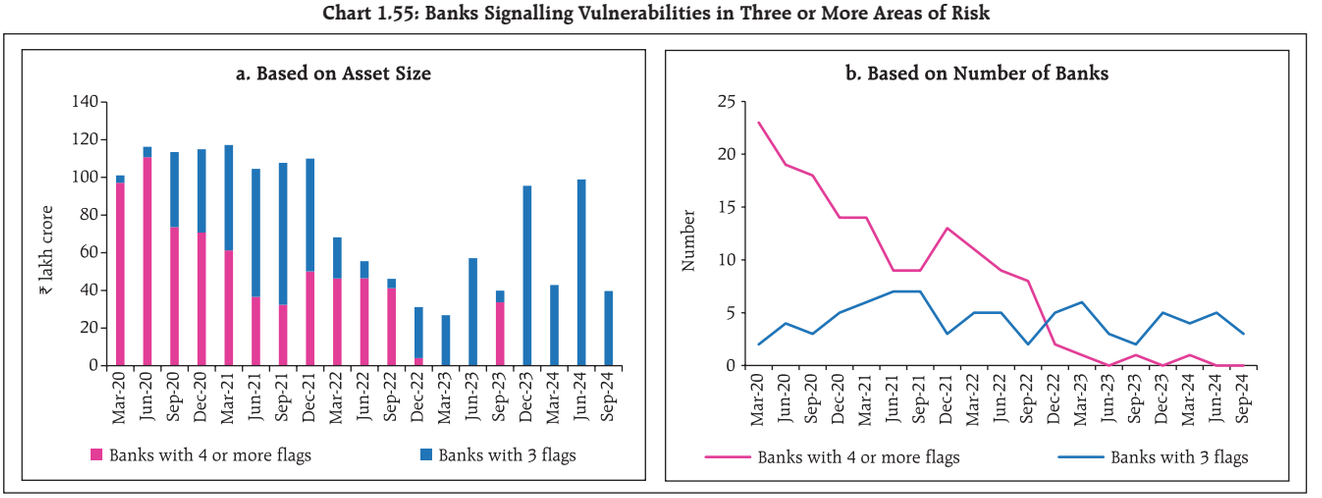
Chart 1.54: Asset Quality



Source: RBI supervisory returns.

1.72 While the banking sector is assessed to be broadly resilient, a few banks are found vulnerable, when measured under the key risk indicators (KRIs)[39] framework. Outlier banks are flagged when they are found to be deficient across multiple risk indicators (11 risk indicators[40] over five risk dimensions). At the beginning of the current decade, three-fourths out of 33 public and private sector banks analysed under the KRI framework were found deficient in three or more KRIs. In terms of asset size, this represented two-thirds. In September 2024, however, only three banks forming 15 per cent of total banking system assets have been found to be deficient in three KRIs and none are flagged deficient in more than three KRIs (Chart 1.55 a and b).

Chart 1.55: Banks Signalling Vulnerabilities in Three or More Areas of Risk

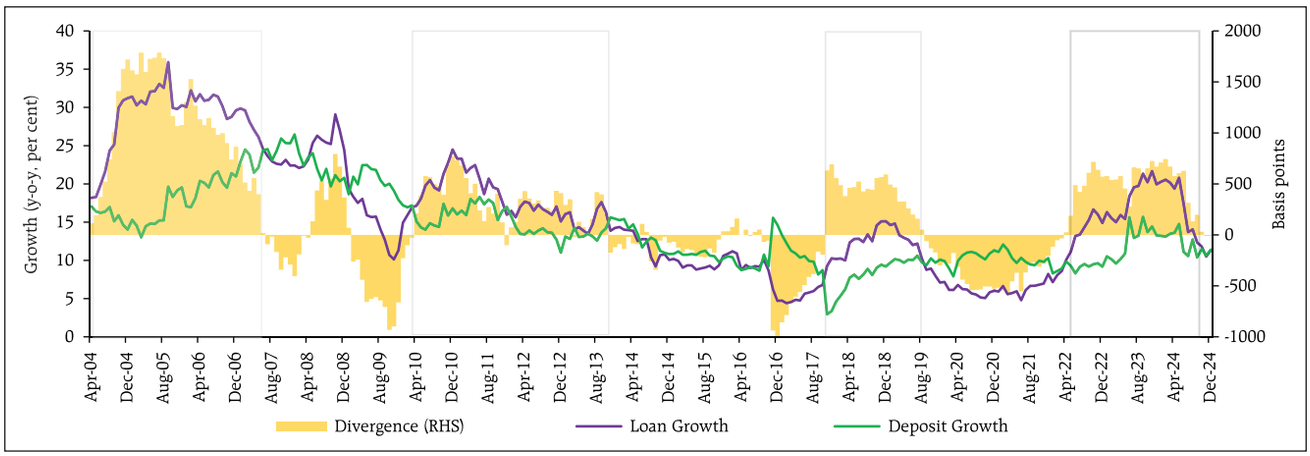


Sources: CMIE, RBI supervisory returns and staff calculations.

[39] KRI framework developed by the IMF measures vulnerability of banks by integrating the CAMELS supervisory framework with market-based metrics and flags institutions based on specified thresholds that vary by jurisdictions. For more details, refer to Chapter 2 of Global Financial Stability Report (October 2023); https://www.imf.org/en/Publications/GFSR/Issues/2023/10/10/global-financial-stability-report-october-2023.

[40] Out of the 12 indicators prescribed by the IMF, all indicators, except dividend growth forecast, have been used for this analysis. The KRI thresholds are those prescribed for Asia.

Chart 1.56: Loan-Deposit Divergence – Long Term Dynamics

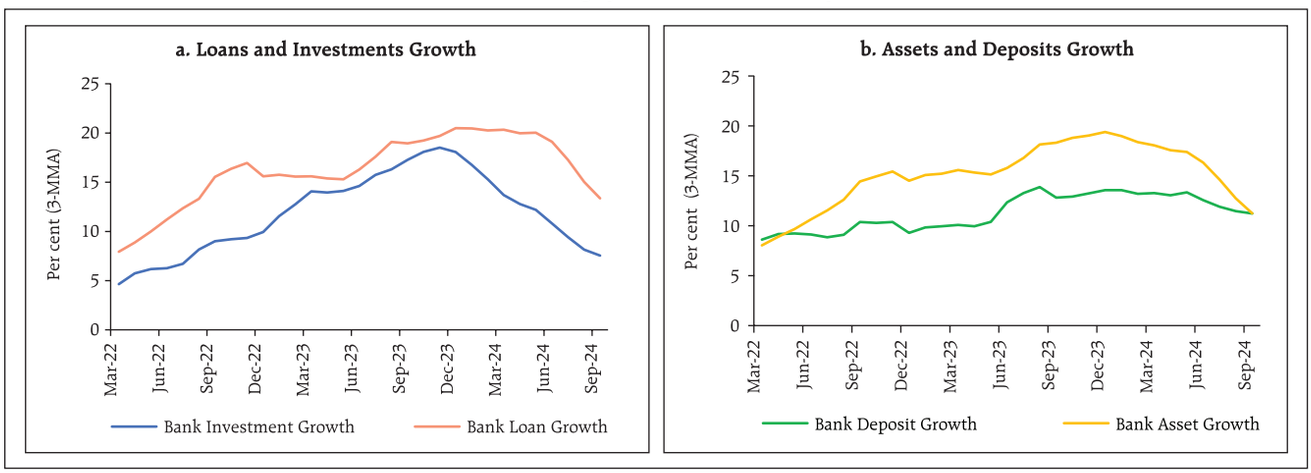


Note: (1) Updated till December 13, 2024. Data for November and December updated from Weekly Statistical Supplement (WSS).
(2) Credit growth includes the impact of merger of a non-bank with a bank.
Sources: RBI and staff calculations.

1.73 Growth in bank loans and deposits moderated during H1:2024-25 and the wedge between them narrowed further. As noted in the June 2024 issue of the FSR, there have been multiple episodes of gaps between loan and deposit growth (ranging from 2 to 4 years), but there has been eventual convergence (Chart 1.56).

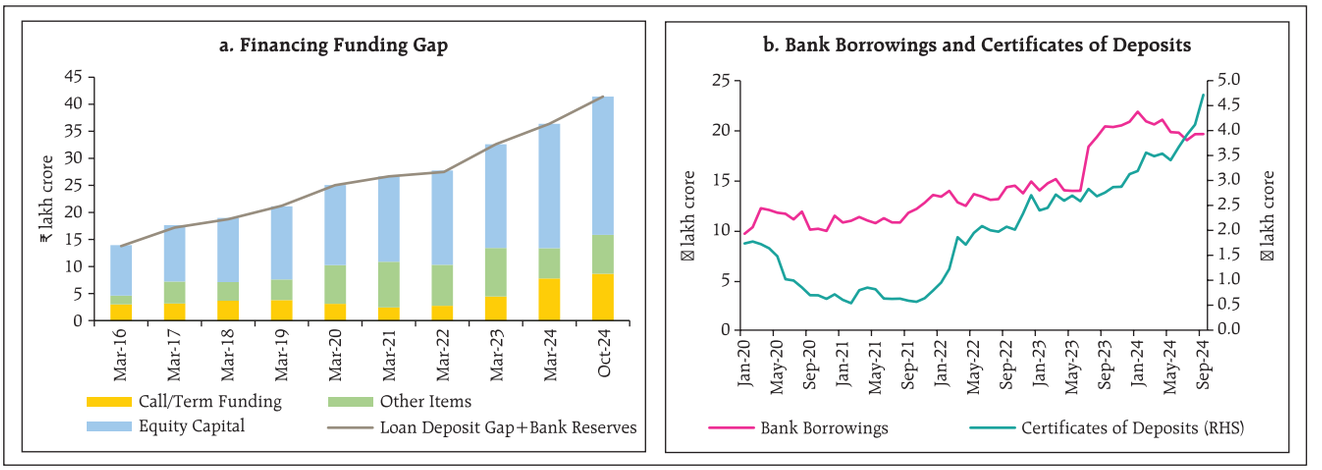
1.74 An analysis of the loan-deposit gap reveals the following: (1) while the loan growth has been running at 13.4 per cent {3-month moving average (3-MMA)} in September 2024, investments recorded lower growth of 7.6 per cent (3-MMA), resulting in 11.2 per cent growth (3-MMA) in the combined assets (loan + investment), same as deposit growth of 11.2 per cent (3-MMA) (Chart 1.57 a and b); (2) increase in profits and resultant rise in equity capital has been a significant additional source of funds, which contributed to an increase in loan-deposit ratio (Chart 1.58 a); and (3) banks' reliance

Chart 1.57: Banking System – Balance Sheet Dynamics



Sources: RBI supervisory returns and staff calculations.

Chart 1.58: Banks' Funding Gap



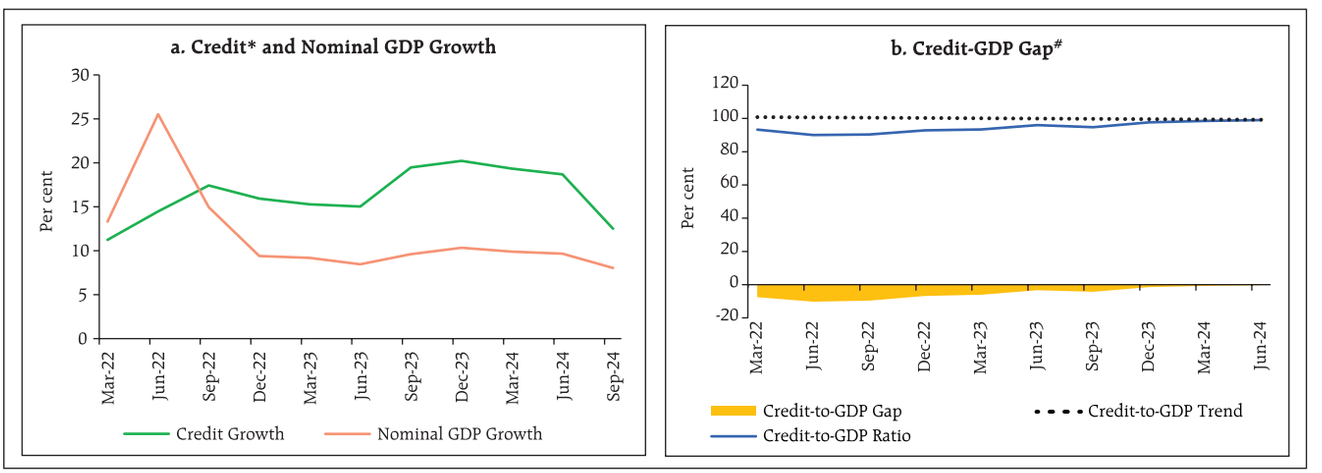
Sources: RBI supervisory returns and staff calculations.

on borrowings for bridging the financing gap rose as loan growth outpaced deposit growth leading to an increase in loan-deposit ratio (Chart 1.58 b).

1.75 With credit[41] growth outpacing nominal GDP growth for two successive years, the credit-GDP gap (*i.e.*, the difference between the credit-GDP ratio and its long-term trend) narrowed to (-) 0.7 per cent in Q4:2023-24 from (-) 10.3 per cent in Q1:2022-23 (Chart 1.59 a and b).

1.76 Banks' deposit profile has been changing, with a decline in the share of low-cost CASA deposits in favour of term deposits, especially for higher interest rate buckets (Chart 1.60 a), indicating growing competition for savings and investor preference for financial products offering higher

Chart 1.59: Credit and GDP Growth and Credit-GDP Gap

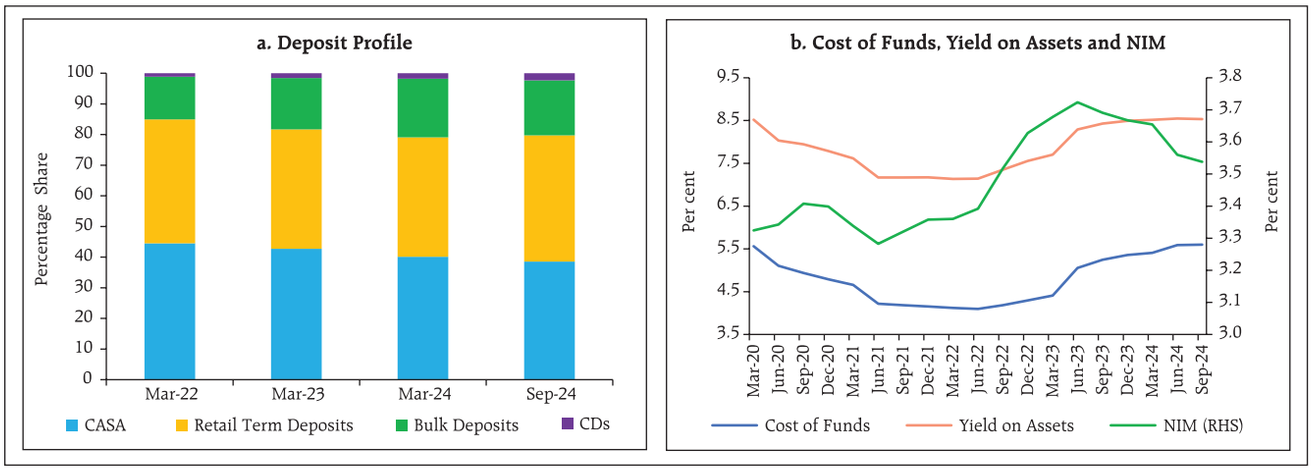


Notes: (1) * Credit growth includes the impact of merger of a non-bank with a bank.
(2) # Credit-GDP gap has been estimated with one sided Hodrick-Prescott Filter and Lambda = 400,000. Credit refers to loans and advances.

Sources: BIS, RBI and staff calculations.

[41] Credit refers to loans extended by banks and excludes investments.

Chart 1.60: Deposit Profile and Profitability



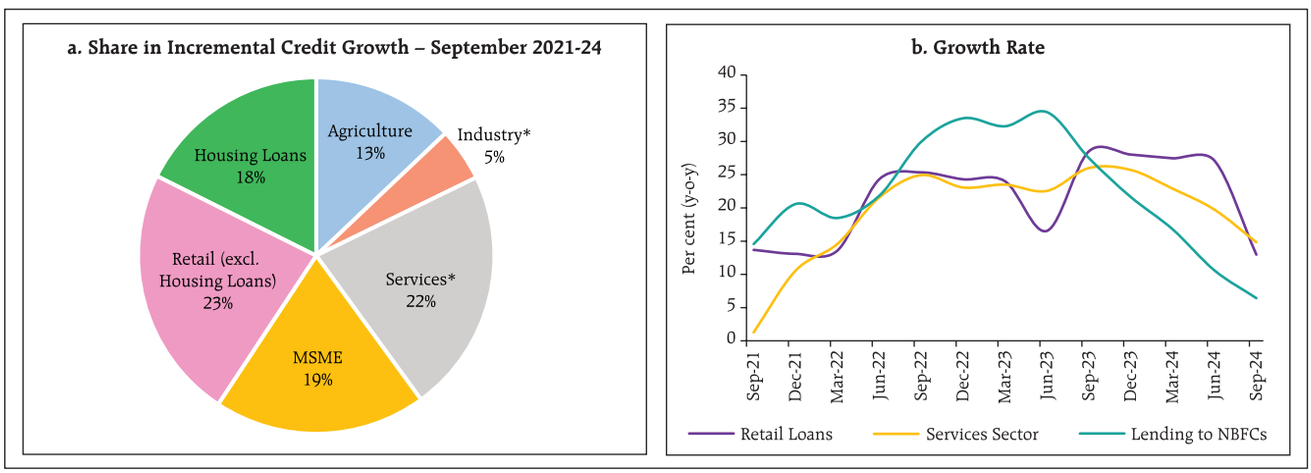
Sources: RBI supervisory returns and staff calculations.

returns. For instance, term deposits formed 82 per cent of incremental deposits mobilised in H1:2024-25. Banks also raised more funds through higher cost certificates of deposits (CDs). Consequently, banks' cost of funds rose by 148 bps since March 2022. As a result, banks' NIM and profitability face pressure from stiffer competition for funds (Chart 1.60 b).

1.77 Regulatory measures taken in November 2023 in the form of raising risk weights on certain segments of consumer credit by banks and NBFCs as well as bank credit to NBFCs, especially unsecured loans, are fructifying. There has been a noticeable slowdown in both retail loans and bank lending to NBFCs from CAGR of 26.9 per cent and 28.7 per cent between September 2021 and September 2023 (when headline credit growth was 18.6 per cent) to 13.0 per cent and 6.4 per cent (y-o-y), respectively, in September 2024 (Chart 1.61 a and b). Unsecured retail lending growth also fell from 27.0 per cent to 15.6 per cent over this period.

1.78 Banks' retail loan quality has remained stable so far: the GNPA ratio stood at 1.2 per cent in

Chart 1.61: Incremental Credit and Growth Rate in Select Sectors

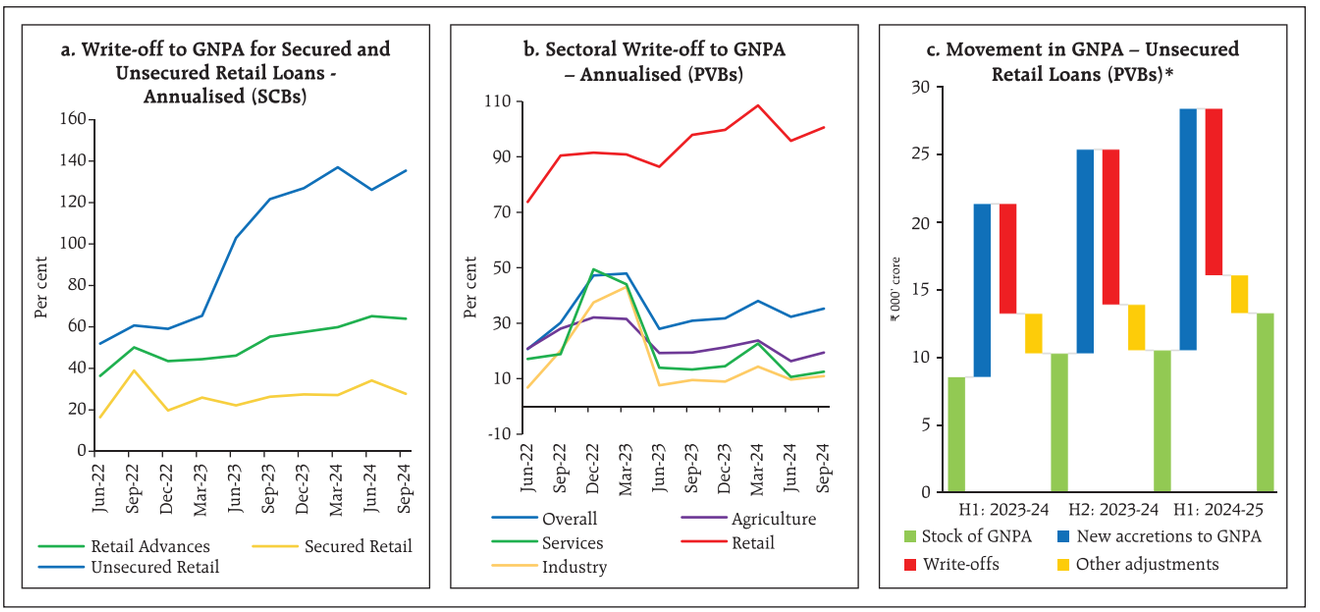


Notes: (1) *Excludes MSME

(2) Retail loans refer to loans given to individuals and consist of (a) consumer credit (b) education loan (c) loans given for creating/enhancement of immovable assets (*e.g.* housing, *etc.*) and (d) loans given for investment in financial assets (shares, debentures, *etc.*)

Sources: RBI supervisory returns and staff calculations.

Chart 1.62: Write-offs and Movements in GNPA



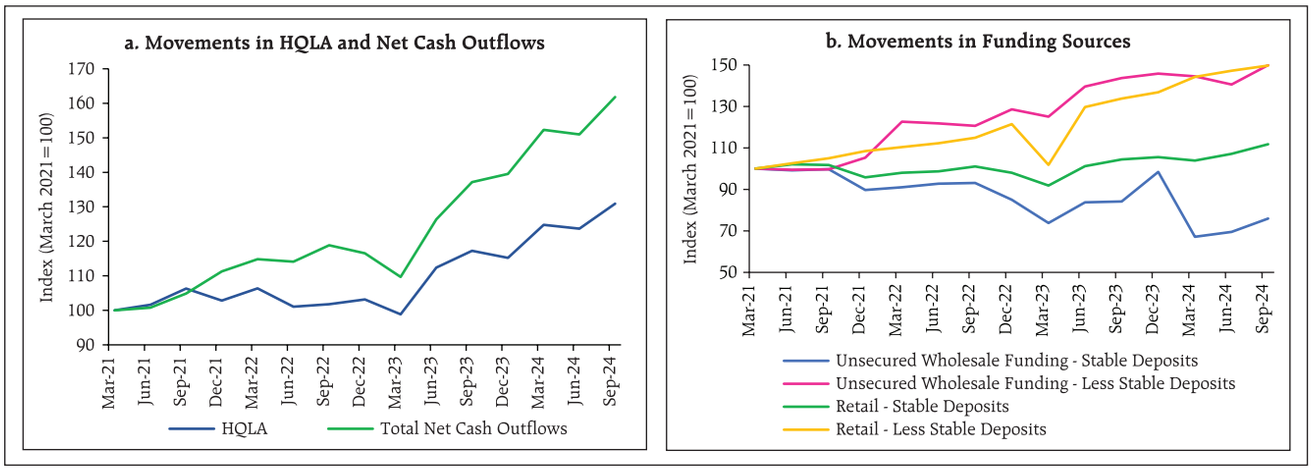
Notes: * Other adjustments include reduction of NPA due to upgradation, actual recoveries, *etc.*
Sources: RBI supervisory returns and staff calculations.

September 2024. Moreover, the SMA (1+2) ratio, a lead indicator of incipient stress, has also declined to 2.5 per cent in September 2024 from 3.0 per cent a year ago. The GNPA ratio for unsecured lending was marginally higher at 1.7 per cent. An area of concern, however, is the sharp rise in write-offs, especially among private sector banks (PVBs), which could be partly masking worsening asset quality in this segment and dilution in underwriting standards (Chart 1.62 a, b and c). Fresh accretion of NPAs in retail loan portfolios was also dominated by slippages in the unsecured loan book, with 51.9 per cent from unsecured loans as at end-September 2024. Among bank groups, small finance banks (SFBs) are witnessing larger impairment in their retail lending portfolio with the GNPA ratio at 2.7 per cent, the SMA (1+2) ratio at 3.6 per cent and the unsecured GNPA ratio at 4.7 per cent.

1.79 Banks had 66.9 per cent of their investments under the held-to-maturity (HTM) category, which is exempt from mark-to-market (MTM) valuation. The decline in government bond yields has ensured no MTM loss on these investments.

1.80 The banking system liquidity coverage ratio (LCR) declined from 135.7 per cent in September 2023 to 128.5 per cent in September 2024, driven by increase in net cash outflows, which, in turn, is influenced by a rise in less stable sources of funding. LCR of public sector banks (PSBs) declined sharply from 142.1 per cent in September 2023 to 127.4 per cent in September 2024, whereas LCR of PVBs stood marginally lower at 126.1 per cent (Chart 1.63 a and b).

Chart 1.63: Liquidity Coverage Ratio



Source: RBI supervisory returns.

I.2.9 Emerging Technology Risks

1.81 In an era defined by rapid technological advancements, the financial sector stands at the forefront of innovation, embracing emerging technologies, which offer opportunities for fostering innovation and growth. At the same time, their careful implementation and management is critical to obviate the associated risks impinging on financial stability, including cyber vulnerability and third-party dependency, in addition to possible introduction of biases in financial intermediation and risks of unauthorised access. Indian banks are clearly sensitive to the benefits of adoption of these technologies as well as the potential risks associated with them (Box 1.2).

Box 1.2: Emerging Technologies in Indian Banks

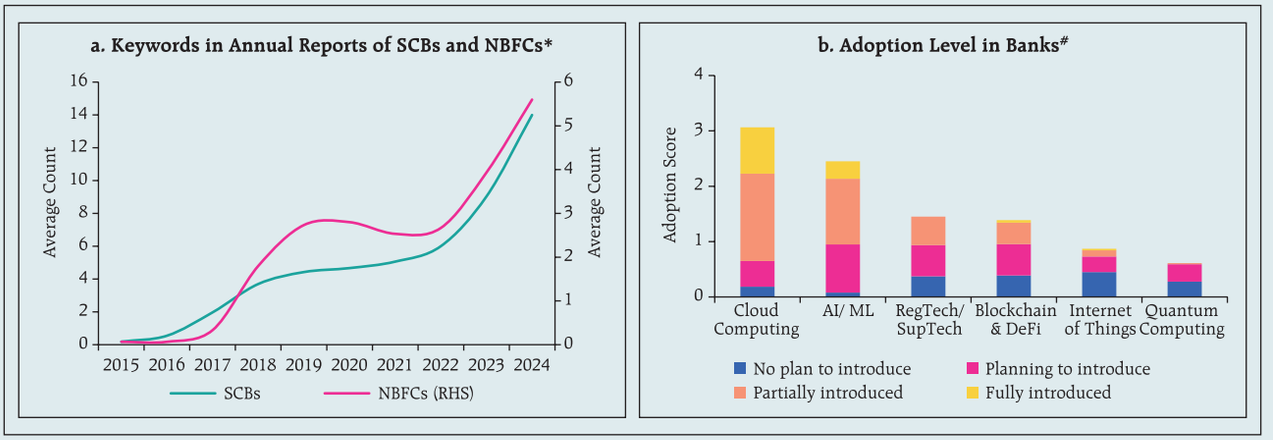
Emerging technologies have unlocked new frontiers of opportunity for financial institutions, with a wide range of avenues to streamline workflow and services, enhance operational efficiency, improve customer experience, reduce cost, strengthen risk management and gain competitive advantage. In the Indian financial sector, the focus on emerging technologies has grown rapidly during the post-pandemic period as reflected in the state of progression as well as acknowledgement and commitment expressed in the annual reports of major banks and NBFCs (Chart 1 a). While these technologies have the potential to spur innovation and drive efficiency in the financial sector, it is essential to ensure that oversight mechanisms stay ahead of the risks posed to the financial system (FSOC, 2023).

A quick survey of major Indian banks on emerging technologies[42], conducted by the Reserve Bank in November 2024 to assess the level of adoption and associated risks to the domestic financial sector found that cloud computing and artificial intelligence/ machine learning (AI/ML) were the two most widely adopted emerging technologies among banks (Chart 1 b). Cloud computing helps to reduce the cost of financial services by allowing easier access to infrastructure and facilitates economies of scale (Koh and Prenio, 2023). AI/ML is being implemented by respondents primarily for customer service, sales and marketing, risk management and know your customer (KYC) related processes. Notably, they are relying on outsourcing for emerging technologies, likely due to IT expertise and

(Contd.)

[42] Survey on emerging technology adoption and risks in Indian banks across 12 PSBs and 19 PVBs.

Chart 1: Emerging Technology Adoption in India



Note: (1) * Based on 33 select SCBs and 15 NBFCs. Keywords considered are related to cloud computing, AI/ ML, regtech/ suptech, blockchain and DeFi, internet of things and quantum computing.
(2) # Adoption score is compiled as the average of scores, ranging from 0 to 5, based on the level of adoption reported by individual banks. Bar breakup represents share of survey respondents.

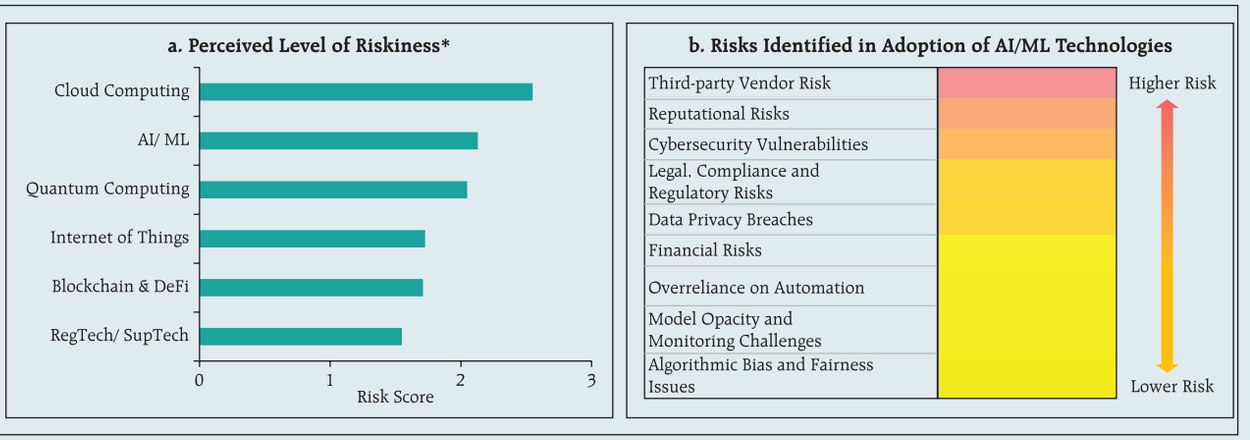
Sources: ProwessIQ and RBI staff calculations based on survey responses.

cost efficiency, with internal resources more focussed on core competencies. In terms of spending, 61 per cent of the respondent banks have allocated less than 10 per cent of their IT budget on such initiatives during the current financial year.

Respondents in the survey felt that cloud computing and AI/ML have emerged as technologies with the highest level of risk in relative terms (Chart 2 a). In response to specific question on threats posed by AI/ML, respondents identified third-party vendor risk, cybersecurity vulnerabilities and reputational damage as key risks (Chart 2 b). Quantum computing is perceived to be another emerging technology in the hierarchy of risks due to its ability to potentially break encryption algorithms (Auer *et al*, 2024). Importantly, over 80 per cent of the respondent banks have fully or partially outsourced at least one emerging technology.

In terms of risk mitigation, banks have demonstrated relatively better preparedness in maintaining backup of critical data. Larger banks are proactive in adopting mitigation measures due to availability of adequate resources and expertise (Chart 3). Regular compliance audits and training of IT/ security personnel, however, are two important areas that require improvement as per the respondents. Forensic preparedness and

Chart 2: Risks Related to Emerging Technologies

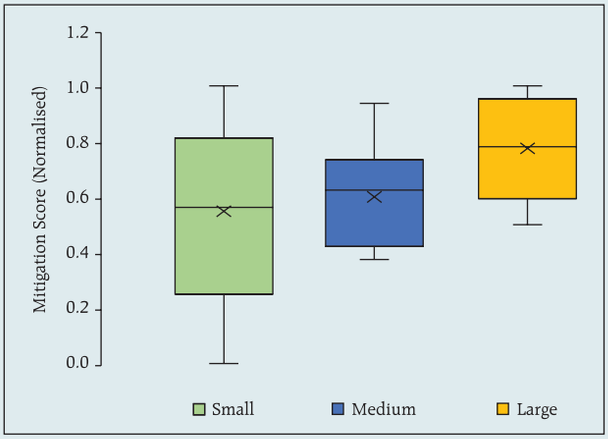


Note: * Risk score is compiled as the average of scores, ranging from 1 to 4, based on the level of risk reported by individual banks.

Source: RBI staff calculations based on survey responses.

(Contd.)

Chart 3: Relationship between Risk Mitigation and Size of Bank



Note: (1) Mitigation score is based on the steps taken by the respondents to mitigate risks associated with emerging technologies.
(2) Respondent banks categorised into small, medium and large buckets based on 3-year average asset size.
Source: RBI staff calculations based on survey responses.

business continuity plans also need improvement to strengthen resilience against emerging technology related incidents.

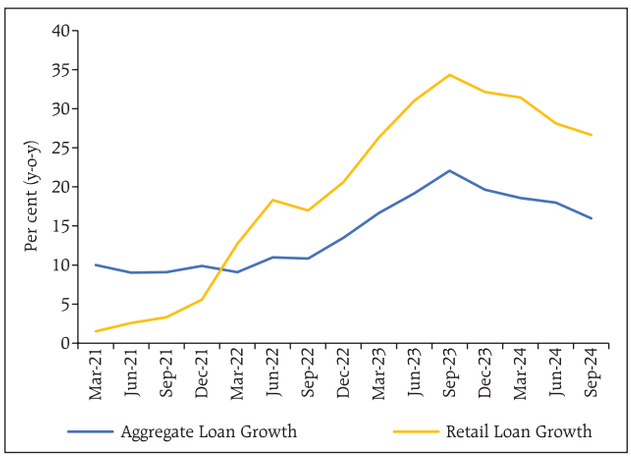
References:

1. Financial Stability Oversight Council (2023), "Annual Report", US Department of Treasury, December.
2. Koh, Ting Yang and Prenio, Jermy (2023), "Managing cloud risk – some considerations for the oversight of critical cloud service providers in the financial sector", BIS, FSI Insights on policy implementation No 53, November.
3. Auer, Raphael, Dupont, Angela, Gambacorta, Leonardo, Park, Joon Suk, Takahashi, Koji, and Valko, Andras (2024), "Quantum computing and the financial system: opportunities and risks", BIS Paper No 149, October.

I.2.10 Non-Banking Financial Companies (NBFCs)[43] [44]

1.82 As prudential increases in risk weights on NBFC lending to certain consumer credit categories as well as on bank lending to NBFCs took fuller effect, NBFCs' loan growth moderated further during H1:2024-25 to 6.5 per cent (h-o-h) in September 2024 (Chart 1.64). The impact was particularly visible in the upper-layer NBFCs (NBFC-UL) segment, which comprise primarily of NBFC-ICCs[45] with high share of retail lending (63.8 per cent) in their loan book. Middle-layer NBFCs (NBFC-ML), excluding government-owned NBFCs, however, maintained robust loan growth, especially in retail loan portfolios.

Chart 1.64: NBFCs' Loan Growth



Source: RBI supervisory returns and staff calculations.

[43] The analyses done in this section are based on NBFCs in upper and middle layers but excludes housing finance companies (HFCs), core investment companies (CICs) and standalone primary dealers (SPDs), unless otherwise mentioned; data based on provisional data available as of November 25, 2024.

[44] The effect of mergers and reclassifications, if any, has not been considered for recasting historical data.

[45] Non-Banking Financial Company - Investment and Credit Company.

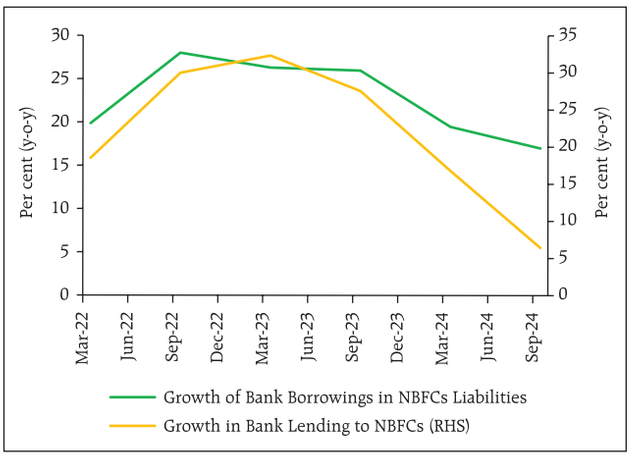
1.83 The growth of bank borrowings in NBFCs' liabilities also declined from 26.0 per cent to 17.0 per cent (Chart 1.65); reliance on non-bank sources raised their cost of funds.

1.84 NBFCs increased their foreign currency borrowings to diversify their sources of funds and contain overall costs. The rise in foreign currency borrowings could pose currency risks to these NBFCs to the extent they are unhedged (Chart 1.66).

1.85 Equity capital recorded growth (y-o-y) of 26.5 and 17.9 per cent for non-government NBFC-MLs and NBFC-ULs, respectively, in September 2024, forming 34.2 per cent and 18.4 per cent of their total liabilities, respectively. Non-government NBFC-MLs are also witnessing rise in foreign equity. The augmentation of equity has supported their retail lending.

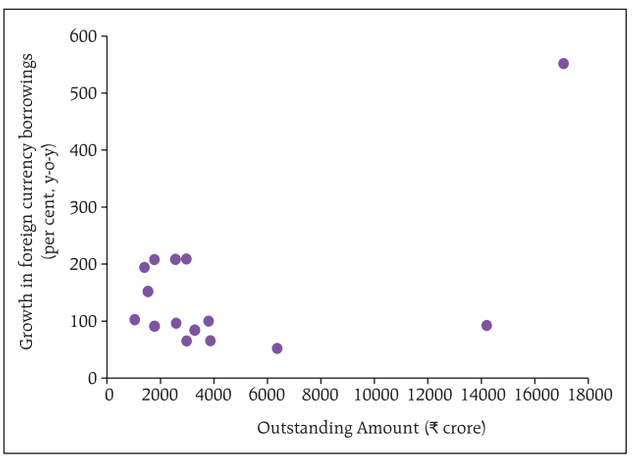
1.86 Overall, the NBFC sector remains healthy with sizable capital buffers (CRAR stood at 26.1 per cent in September 2024), robust interest margins and earnings (NIM at 5.1 per cent and RoA at 2.9 per cent) and improving asset quality (GNPA at 3.4 per cent of gross loans and advances and SMA-(1+2) at 3.5 per cent). Write-offs, however, show a rising trend, with a few outlier NBFCs showing significantly higher write-offs (Chart 1.67 a and b).

Chart 1.65: Bank Lending to NBFCs and Bank Borrowings in NBFCs' Liabilities



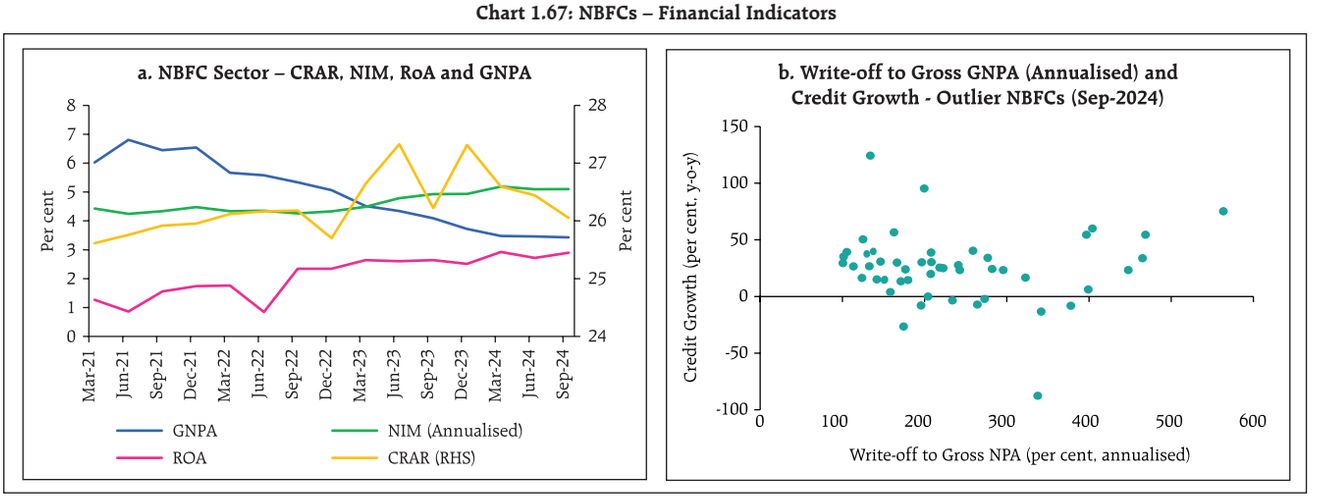
Sources: RBI supervisory returns and staff calculations.

Chart 1.66: Foreign Currency Borrowings by Outlier NBFCs – September 2024



Sources: RBI supervisory returns and staff calculations.

Chart 1.67: NBFCs – Financial Indicators



Sources: RBI supervisory returns and staff calculations.

I.2.11 Non-Banking Stability Indicator (NBSI)

1.87 The NBFC sector over the years have assumed critical importance in the domestic financial system both in terms of their role in providing credit to diverse sectors of the economy and their growing interlinkages with the other parts of the financial system. Accordingly, an NBSI, like the BSI, and a stability map are developed to assess the stability of the NBFC sector and to provide a snapshot of key risk dimensions (Box 1.3).

Box 1.3: Non-Banking Stability Indicator

The Reserve Bank regularly publishes the BSI, a barometer to assess the stability of the banking sector, and the financial system stress indicator (FSSI), a composite indicator to monitor the aggregate stress level in the Indian financial system, on a half-yearly basis in the FSR. On similar lines, to make an overall assessment of the risk factors that have a bearing on the stability of the NBFCs, a non-banking stability indicator (NBSI) has been developed. With their asset size in the financial system being second to the banking sector[46] alongside the gradual rise in their credit intensity (credit to gross domestic product (GDP) ratio)[47], it is important to have a single snapshot of the health of the NBFC sector.

In line with the scale-based regulatory structure[48], NBFCs falling in the upper and middle layers {excluding the core investment companies (CICs), standalone primary dealers (SPDs) and housing finance companies (HFCs)} have been considered for construction of Non Banking Stability Map and NBSI. The indicator constitutes five composite indices representing risks in five dimensions – soundness, asset quality, profitability, liquidity and efficiency. Each composite index is constructed using multiple financial ratios (Table 1) which are first normalised for the sample period using the following formula:

$$Y_t = \frac{X_t - \min(X_t)}{\max(X_t) - \min(X_t)}$$

Where X_t is the value of the financial ratio at time t. If a variable is negatively related to risk, then it is normalised using 1-Y_t. Composite index of each dimension is then calculated as a simple average of the normalised ratios in that dimension. Finally, the non-banking stability indicator is constructed as a simple average of the five composite indices. Thus, NBSI ranges from zero to unity and its higher value denotes higher stress.

As the NBSI shows, the NBFC sector witnessed several instances of stress during the last eight years. Slowdown in economic activity, regulatory changes with respect to asset classification, failure of a large NBFC and subsequent liquidity stress, the COVID-19 pandemic and monetary policy tightening were some of

Table 1: Ratios used for constructing the Non-Banking Stability Map and Indicator

Dimension	Financial Ratios		
Soundness	CRAR #	Non-performing Loans net of Provisions to Capital	Tier 1 Capital to Assets #
Asset Quality	Gross NPAs to Total Advances	Provisions to Non-performing Loans #	Sub-Standard Advances to Gross NPAs#
Profitability	Return on Assets #	Net Interest Margin #	Return on Net Owned Funds #
Liquidity	Short-term Liability to Total Assets	Long Term Assets to Total Assets	Dynamic Liquidity#
Efficiency	Cost-to-Income Ratio	Staff Expense-to-Total Expense	Business-to-Staff Expense #

Note: # Negatively related to risk.

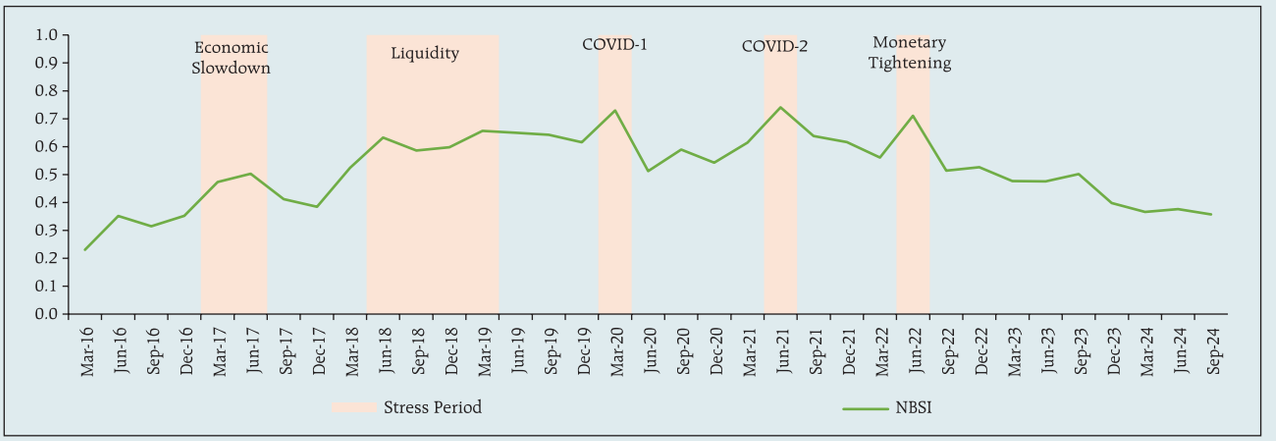
(Contd.)

[46] Harsh, A., et al (2024), "Peeling the Layers: A Review of the NBFC Sector in Recent Times", Reserve Bank of India Bulletin - September 2024

[47] RBI. (2023). Report on Trend and Progress of Banking in India, 2022-23.

[48] Master Direction – Reserve Bank of India (Non-Banking Financial Company – Scale Based Regulation) Directions, 2023 (RBI/DoR/2023-24/106 DoR. FIN.REC.No.45/03.10.119/2023-24)

Chart 1: Non-Banking Stability Indicator (NBSI)



Note: Increase in value indicates increase in risk.
Sources: RBI supervisory returns and staff calculations.

Chart 2: Non-Banking Stability Indicator (NBSI) – Dimensions

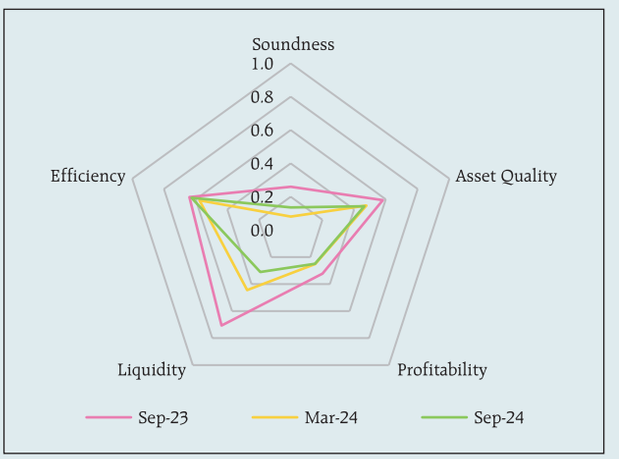
Note: (1) Increase in value indicates increase in risk.
(2) Due to unavailability of ratios, liquidity and efficiency indicators are calculated from March 2020.
Sources: RBI supervisory returns and staff calculations.

the factors that contributed to stress in the NBFC sector (Chart 1).

The stress in the NBFC sector, however, has abated in the last few years as the NBSI returned to levels witnessed prior to the 2018 crisis period. The improvement is seen across all dimensions (Chart 2). Capital buffers have consistently risen since 2019; asset quality, which was the worst preforming risk dimension during the COVID-19 pandemic, is showing steady improvement; profitability remains strong; and liquidity buffers have strengthened.

The Non Banking Stability Map also reflects improvement in the NBFC sector stability both in H2:2023-24 and H1:2024-25, with all risk dimensions exhibiting receding levels of risk (Chart 3).

Chart 3: Non Banking Stability Map



Note: Away from the centre indicates increase in risk.
Sources: RBI supervisory returns and staff calculations.

I.2.12 Microfinance

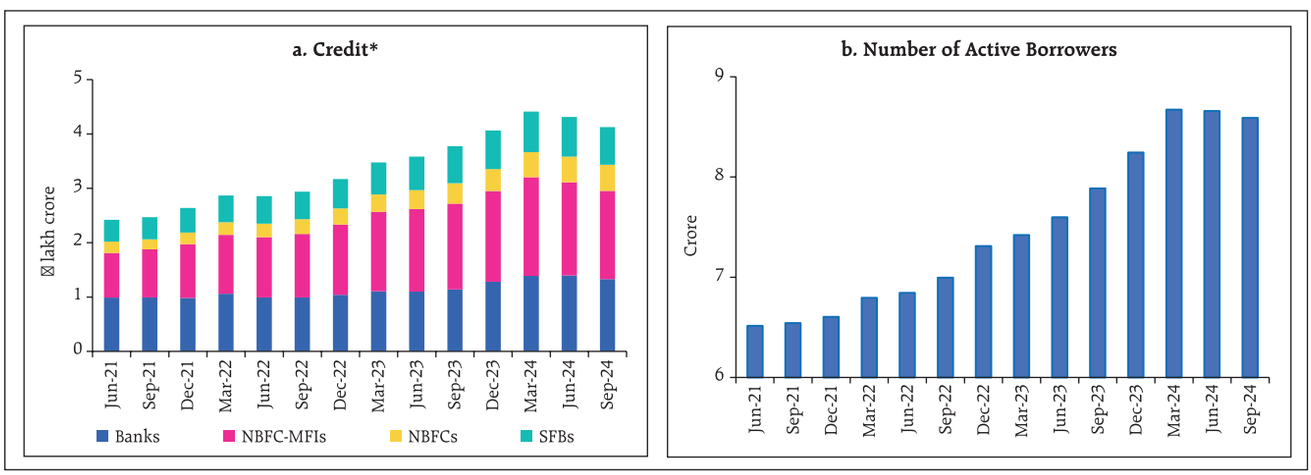
1.88 Credit to the microfinance sector by banks (including SFBs), NBFC-MFIs and other NBFCs has decelerated during the current financial year so far after witnessing rapid growth during the last three years. In terms of CAGR, credit to the microfinance sector grew by 24.4 per cent between June 2021 and March 2024 (11.0 per cent in terms of number of borrowers) in which lending by NBFC-MFIs and other (non-MFI) NBFCs had risen by 33.5 per cent and 33.4 per cent, respectively (Chart 1.68 a and b).

1.89 The microfinance sector is showing signs of stress, with rising delinquencies across all types of lenders and ticket sizes. During H1:2024-25, share of stressed assets increased, with 31-180 days past due (dpd) rising from 2.15 per cent in March 2024 to 4.30 per cent in September 2024 (Chart 1.69 a and b). Importantly, among borrowers who had availed loans from multiple lenders and those with higher credit exposure, impairment remained high (Chart 1.69 c and d).

1.90 Alongside rising delinquencies, borrower indebtedness has risen notably: the share of borrowers availing loans from four or more lenders has increased from 3.6 per cent to 5.8 per cent during the last three years (September 2024 over September 2021). Also, the quarterly average ticket size of microfinance loans disbursal has risen by 43 per cent over this period (₹35,299 in Q2:2021-22 to ₹50,430 in Q2:2024-25). A comparison across select Indian states indicates that indebtedness levels are unevenly distributed, with some regions exceeding the overall average (Chart 1.70 a and b).

1.91 As credit to the microfinance sector surged in the post-pandemic period, select NBFC-MFIs and other NBFCs were found charging exceedingly high

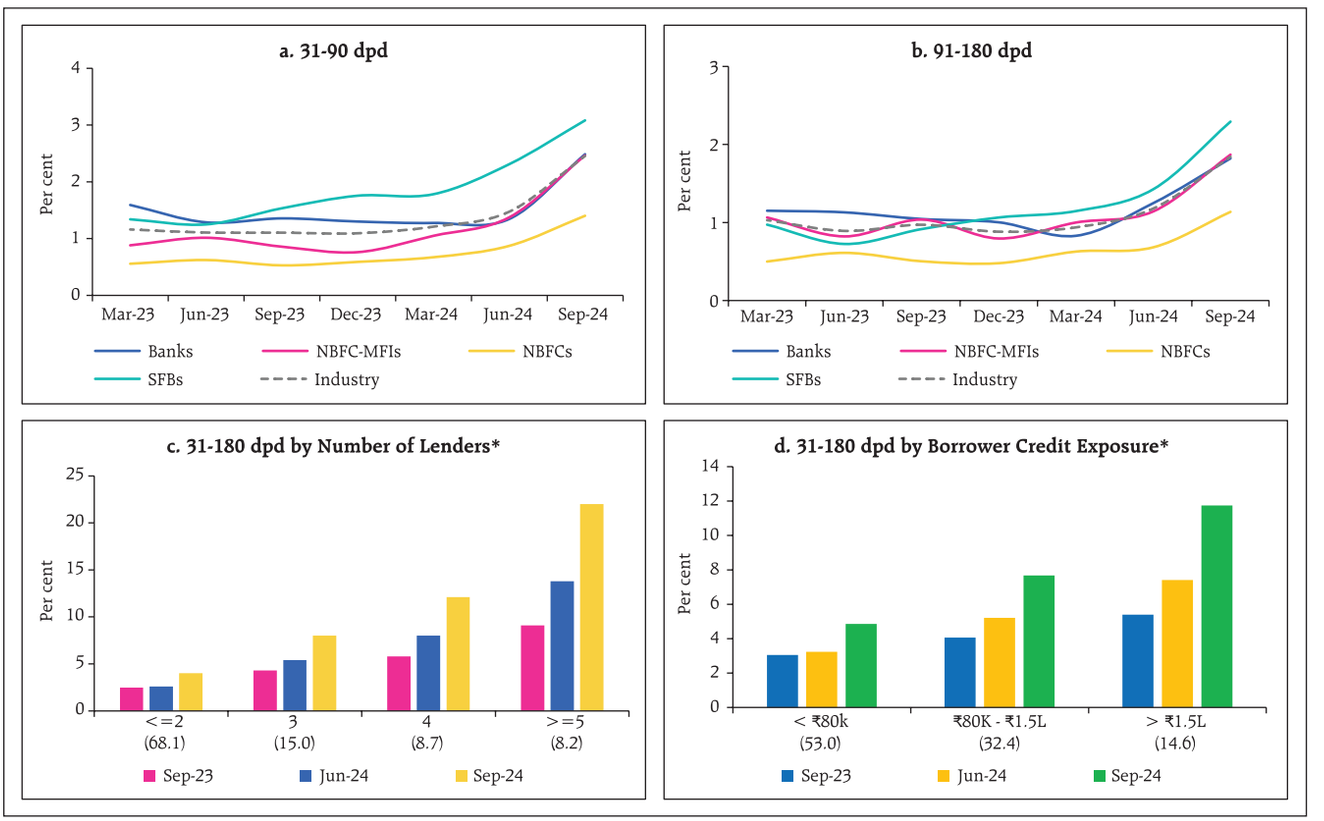
Chart 1.68: Microfinance Sector – Credit and Borrowers



Notes: (1) * Represents 99.7 per cent of total lending to microfinance segment.
(2) NBFC-MFI is a non-deposit taking NBFC which has a minimum of 75 per cent of its total assets deployed towards microfinance loans.
(3) NBFCs are those that do not qualify as NBFC-MFI and can extend microfinance loans up to 25 per cent of their total assets.

Source: CRIF High Mark Credit Information Services Pvt. Ltd.

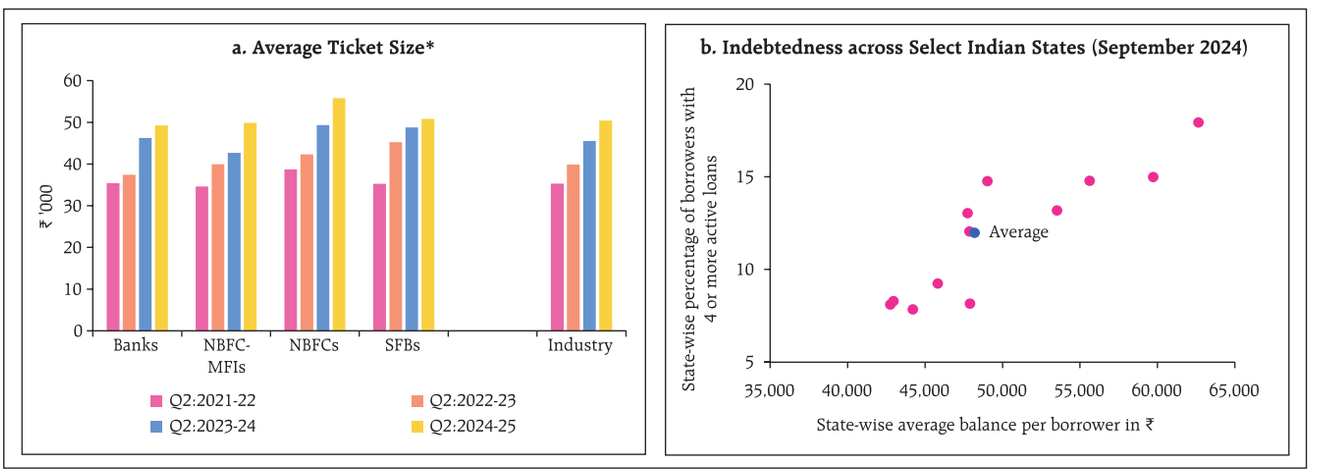
Chart 1.69: Stress in the Microfinance Sector



Note: * Based on borrower-level worst dpd. Numbers given in parentheses are the percentage share of loan portfolio outstanding in respective categories as at end-September 2024.
Source: CRIF High Mark Credit Information Services Pvt. Ltd.

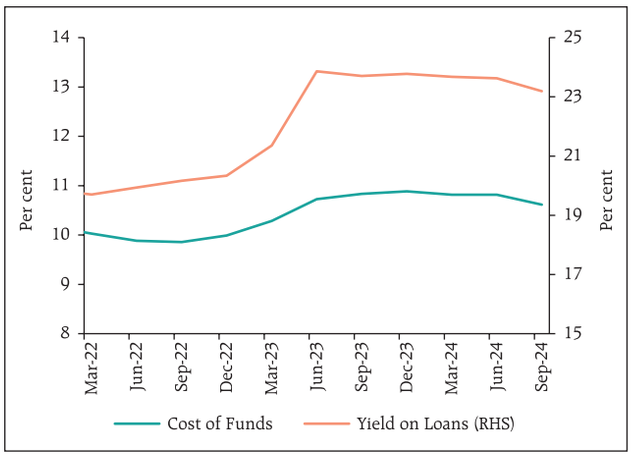
interest rates, which invoked supervisory actions by the Reserve Bank in October 2024. The yield on NBFC-MFI loans remains elevated especially since June 2023 (Chart 1.71).

Chart 1.70: Indebtedness in the Microfinance Sector



Note: * Average ticket size = Total amount disbursed during the quarter/ Total number of loans sanctioned during the quarter.
Source: CRIF High Mark Credit Information Services Pvt. Ltd.

Chart 1.71: Cost of Funds and Yield on Loans for NBFC-MFIs



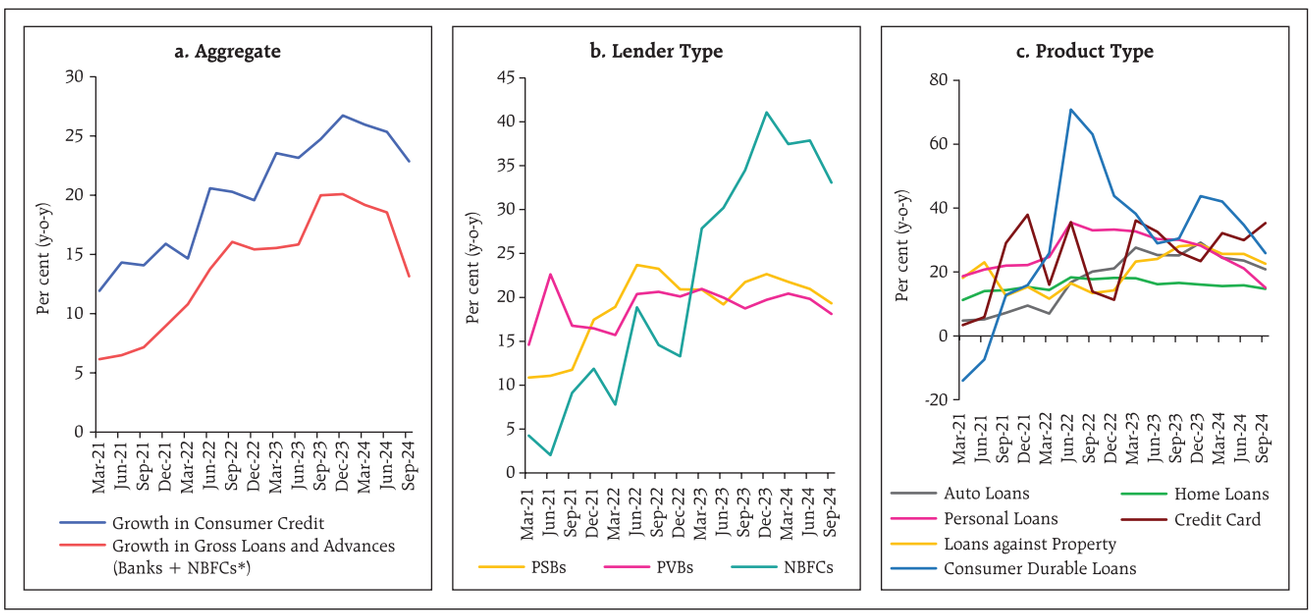
Note: (1) Based on a common sample of select middle-layer NBFC-MFIs.
(2) Cost of Funds = Annualised Interest Expense and Other Financing Cost/ Average Total Borrowing.
(3) Yield on Loans = Annualised Interest Income/ Average Gross Loans.
Sources: RBI supervisory returns and staff calculations.

I.2.13 Consumer Credit

1.92 Post-pandemic, consumer credit has been a key driver of loan growth. In CAGR terms, it increased by 20.6 per cent as compared with 14.8 per cent growth in overall credit (banks and upper- and middle-layer NBFCs) between March 2021 and December 2023. The regulatory measures implemented during Q3:2023-24 to curb excessive growth in this segment, however, slowed its pace both at an aggregate level as well as across product and lender types (Chart 1.72 a, b and c).

1.93 The moderation in consumer credit is reflected in both credit inquiry volumes and approval rates[49]. The former fell across most product categories, with the largest decrease in the unsecured retail loan portfolio, *viz.*, personal loans and credit cards segments, for which the risk weights were increased in November 2023 (Chart 1.73 a). Despite the decline in loan approval rates, the share of premium borrowers (super-prime and prime-plus) in loan originations has risen sequentially during Q2:2024-25, suggesting that lenders are exercising caution and underwriting standards are getting tighter (Chart 1.73 b and c).

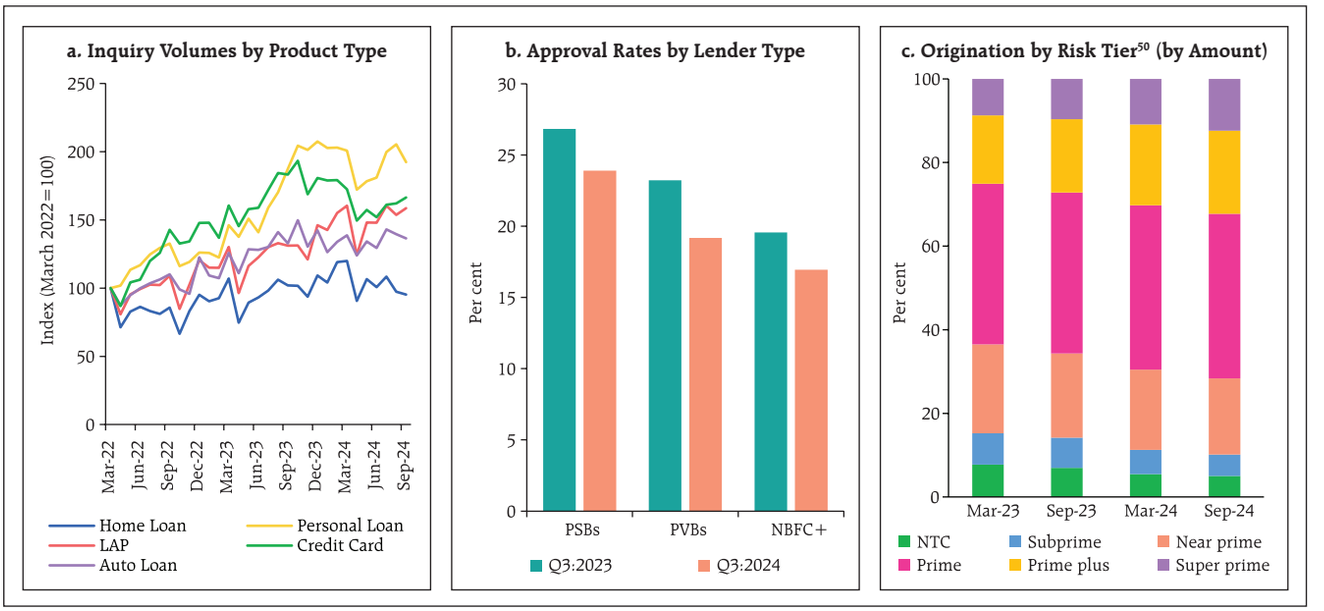
Chart 1.72: Consumer Credit Growth



Note: * Upper-layer and Middle-layer NBFCs
Sources: TransUnion CIBIL and RBI supervisory returns

[49] Approval rate is calculated as the percentage of accounts, which were opened within the next 90 days of the enquiry for home loans, property loans, auto loan, commercial vehicle, construction equipment and education loans; and within the next 30 days of enquiry for all other loans. Approval rate month is 30 – 90 days post the enquiry month.

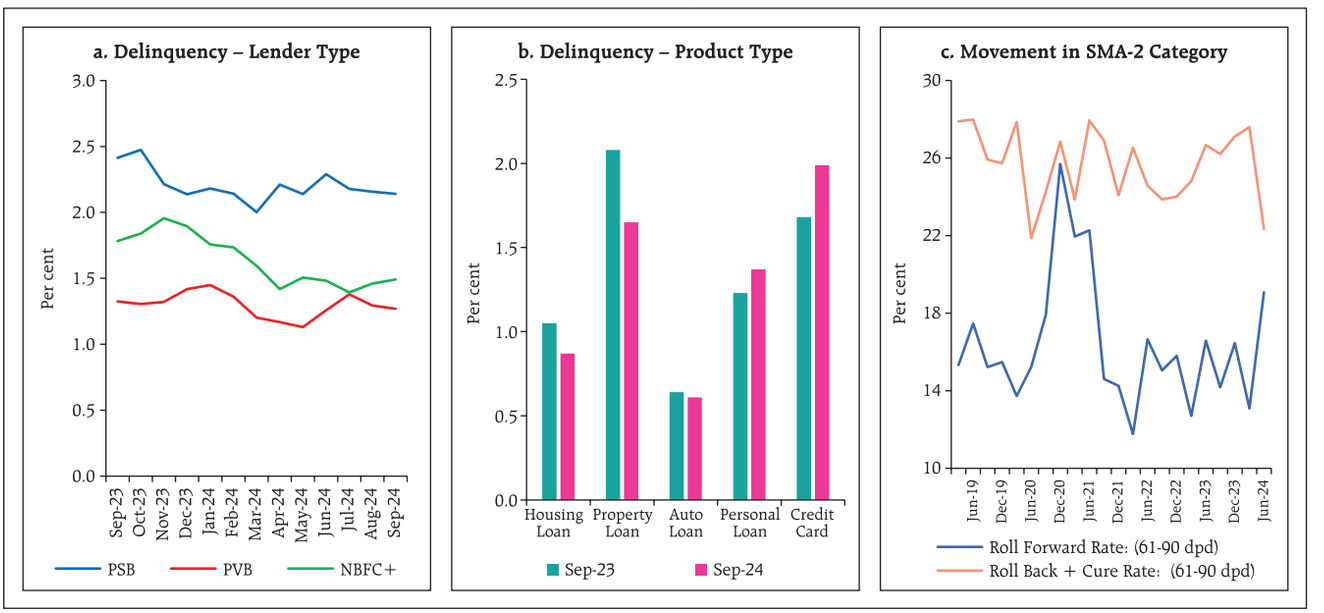
Chart 1.73: Inquiry Volumes and Approval Rates



Note: LAP: Loan against property; NTC: New to credit; NBFC+: NBFCs including HFCs.
Source: TransUnion CIBIL.

1.94 Delinquency levels in consumer credit remained stable for banks and NBFCs. However, rising impairment was seen in the unsecured retail loan portfolios. Moreover, upgradation is declining and slippage from SMA-2 to NPAs are on the rise (Chart 1.74 a, b and c).

Chart 1.74: Asset Quality of Retail Loans



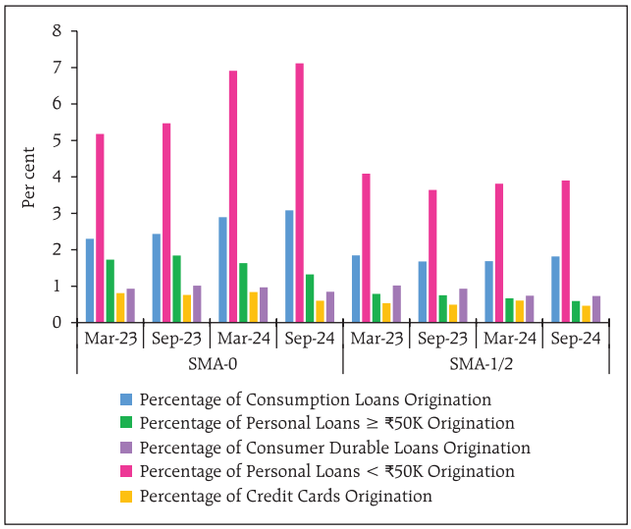
Notes: (1) Roll Forward rate is the percentage change (by amount) from SMA-2 category (61-90 dpd) in the current month, which moved to NPA category (90+dpd) in the next month (aggregated quarterly).
(2) Rollback + Cure rate is the percentage change (in amount) in SMA-2 category in the current month, which rolled back to SMA-1/ SMA-0/ 0 dpd in the next month (aggregated quarterly).
Source: TransUnion CIBIL.

[50] The segregation of risk tiers based on CIBIL scores is as follows-Super Prime:791-900; Prime Plus: 771-790, Prime:731-770; Near Prime:681-730; and Sub Prime: 300-680.

1.95 Nearly half of the borrowers availing credit card and personal loans have another live retail loan outstanding, which are often high-ticket loans (*i.e.*, housing and/or vehicle loan). Given that a default in any loan category results in other loans of the same borrower being treated as non-performing by the lending financial institution, these larger and secured loans are at risk of delinquency from slippages in relatively smaller personal loans. First default is mostly observed in unsecured advances; among the borrowers at risk of default (*i.e.*, advances in SMA category), risk of delinquency is trending high amongst borrowers who in addition to a personal loan or credit card outstanding have availed other retail loans (Chart 1.75 a and b).

1.96 11.0 per cent of the borrowers originating a personal loan under ₹50,000 had an overdue personal loan and over 60 per cent of them had availed more than three loans during 2024-25 so far. Moreover, nearly three-fifths of customers who have availed personal loan in Q2:2024-25 had more than three live loans at the time of origination (Chart 1.76).

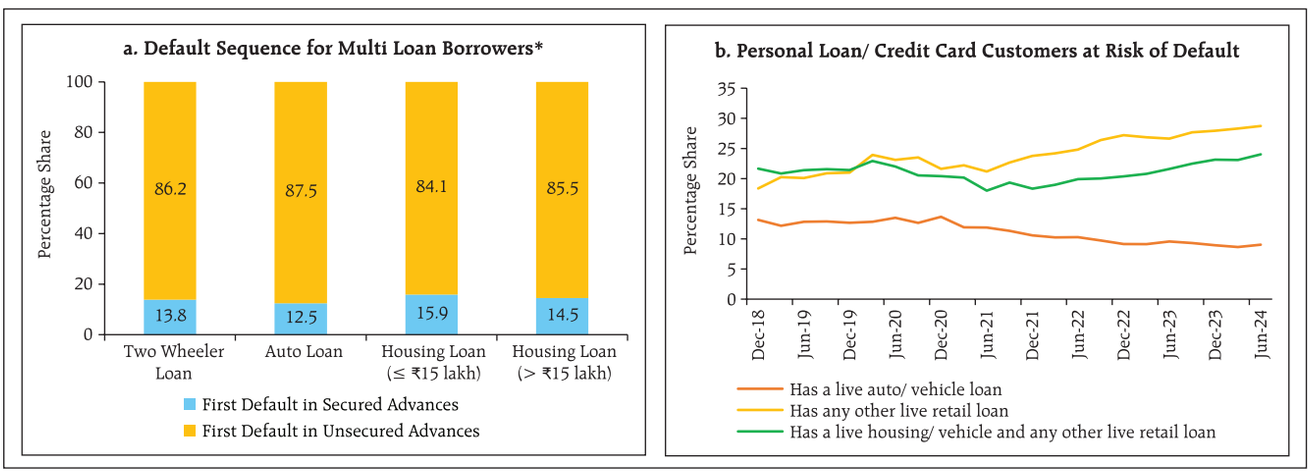
Chart 1.76: Category-wise Loan Originated with an Overdue Personal Loan



Source: TransUnion CIBIL.

1.97 Lenders are, nevertheless, exercising prudence as the shares of below prime customers across lender and product types have been

Chart 1.75: Retail Loans at Risk



Notes: * Customers defaulted first time during April 2022 and June 2024 and having multiple products at the time of default.
Source: TransUnion CIBIL.

Chart 1.77: Consumer Loan Distribution by Risk Tier

Note: Numbers in parentheses indicate the share of each category of loan in total consumer credit as at end-September 2024.
Source: TransUnion CIBIL.

marginally lower when compared to a year ago (Chart 1.77 a and b).

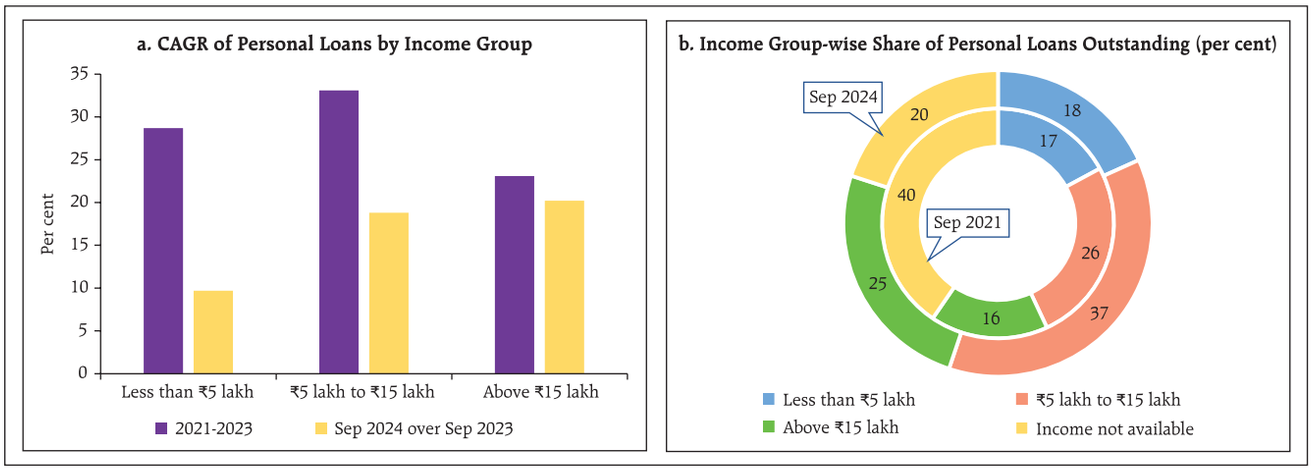
1.98 The decomposition of personal loans[51] by income categories[52] showed that after the high growth phase during 2021-23, loan growth has moderated across all income categories between September 2023 and September 2024, with sharper deceleration in the group with less than ₹5 lakh annual income. During the same period, the above ₹15 lakh income category recorded the highest growth. In terms of outstanding loans, the ₹5 lakh - ₹15 lakh income category had the largest share as at end-September 2024 (Chart 1.78 a and b).

1.99 Unsecured personal loans dominated borrowings by borrowers with less than ₹5 lakh income; higher income borrowers availed more secured loans, including housing loans (Chart 1.79 a and b).

[51] Personal loans refer to loans given to individuals and consist of (a) consumer credit (b) education loan (c) loans given for creating/enhancement of immovable assets (*e.g.* housing, *etc.*) and (d) loans given for investment in financial assets (shares, debentures, *etc.*).

[52] Based on survey responses from eight banks forming around 69 per cent of the personal loans of SCBs as of September 2024 and three upper-layer NBFCs.

Chart 1.78: Profile of Personal Loans by Income Group



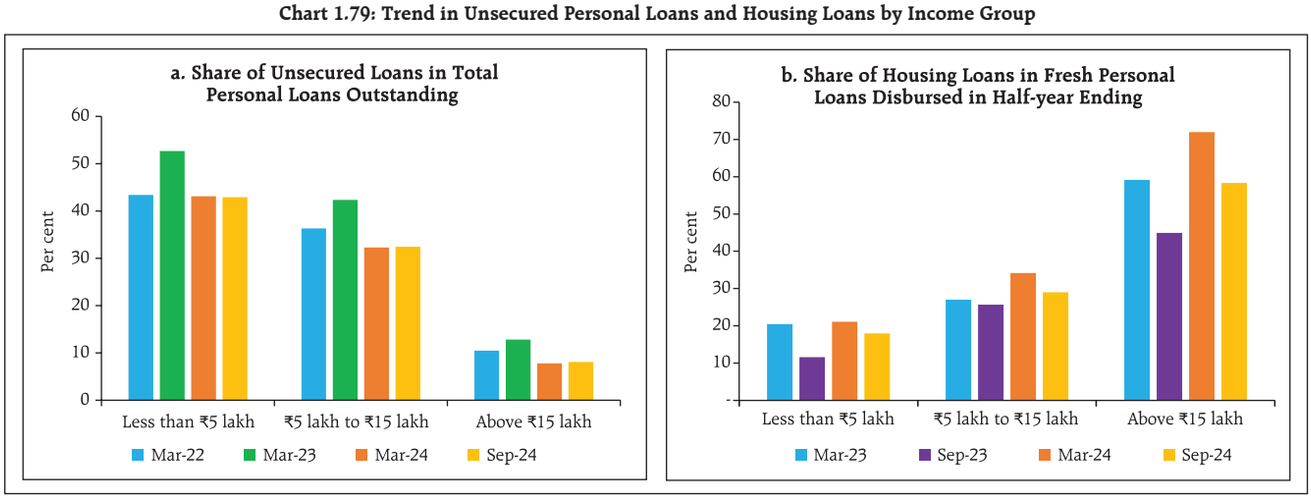
Sources: Individual submissions by financial institutions and RBI staff calculations.

I.2.14 Mutual Funds

1.100 Backed by a surfeit of new fund offers (NFOs) and continued active participation of households, the mutual fund (MF) sector experienced robust growth in 2024-25 (up to November 2024). Total assets under management (AUM) rose by 38.8 per cent (y-o-y), touching an all-time high of ₹68.1 lakh crore in November 2024 (Table 1.7). The AUM rise was driven by equity schemes (sectoral/ thematic schemes in particular), with annual growth nearly 1.5 times the rise in non-equity schemes.

1.101 Systematic investment plans (SIPs) have been a key driver of the recent growth in AUM of MFs. SIPs offered by MFs have been contributing to financialisation of household savings. By enabling periodic small investments, they have steadily increased even amidst periods of higher market volatility. Both outstanding SIP accounts as well as gross SIP contributions have reached record highs, with the latter crossing ₹25,000 crore in October 2024 (Chart 1.80).

Chart 1.79: Trend in Unsecured Personal Loans and Housing Loans by Income Group



Sources: Individual submissions by financial institutions and RBI staff calculations.

Table 1.7: Assets under Management of the Domestic Mutual Fund Industry

(₹ thousand crore)

As at end	B30 AUM			T30 AUM			Industry AUM		
Month	Equity	Non-Equity	B30 Total	Equity	Non-Equity	T30 Total	Equity	Non-Equity	Total
Nov-23	551	357	908	1,486	2,511	3,997	2,037	2,868	4,905
Mar-24	639	376	1,015	1,714	2,611	4,325	2,353	2,987	5,340
Jun-24	758	416	1,174	2,015	2,927	4,942	2,772	3,343	6,115
Sep-24	864	449	1,313	2,252	3,145	5,397	3,115	3,594	6,709
Nov-24	846	454	1,300	2,194	3,313	5,508	3,040	3,768	6,808

Note: T30 refers to the top 30 geographical locations in India and B30 refers to the locations beyond the top 30 cities.
Source: AMFI.

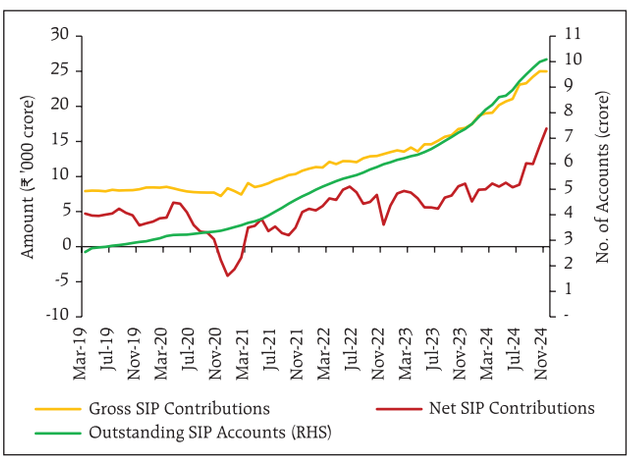
1.102 Among different categories of MFs, smallcap, midcap and largecap funds have witnessed net positive inflows for the last three quarters (Chart 1.81), despite bouts of outflows over frothy valuation concerns in respect of midcap and smallcap stocks.

1.103 Stress tests results and liquidity analysis of midcap and smallcap equity schemes of all MFs, published by AMFI, reveal that in November 2024, the number of days to liquidate 25 per cent of the portfolio for the top 5 schemes ranged from 5 to 17 days in midcap schemes and 11 to 33 days in smallcap schemes (Table 1.8).

1.104 MFs are increasingly offering sectoral and thematic funds, which are attracting large inflows from investors. In 2024-25 (up to November 2024), inflows to these funds witnessed a seven-fold increase (y-o-y) to ₹1,16,426 crore (Chart 1.82). As a result, net AUM of equity-oriented schemes recorded a growth of 49.3 per cent (y-o-y) as at end-November 2024.

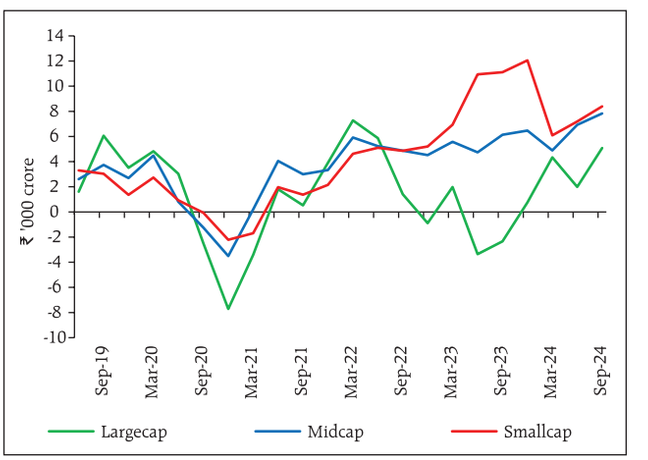
1.105 Debt schemes have also attracted significant investments of ₹3.46 lakh crore in 2024-25 (up to November 2024); money market, liquid and low duration funds together formed 75 per cent of these inflows (Chart 1.83). Overall, the AUM of debt schemes grew by 24.1 per cent (y-o-y) in November 2024.

Chart 1.80: Monthly SIP Contributions and Outstanding SIP Accounts



Source: SEBI.

Chart 1.81: Net Inflows into Different Equity Schemes of Mutual Funds



Source: SEBI.

Table 1.8: Summary of Stress Tests and Liquidity Analysis of Midcap and Smallcap MF Schemes

Schemes/Month		Midcap Schemes					Smallcap Schemes				
		Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24
No. of days to liquidate 25 per cent of portfolio- Range for top 5 schemes w.r.t. AUM		4 to 14	4 to 15	4 to 15	4 to 17	5 to 17	10 to 23	10 to 27	9 to 24	10 to 28	11 to 33
Concentration-Assets side (AUM held in per cent)	Largecap	12.3	12.2	12.4	12.3	12.8	7.0	6.9	7.1	7.2	7.8
	Midcap	67.3	67.4	68.1	68.6	68.0	11.5	11.3	10.8	10.7	10.6
	Smallcap	15.9	15.3	14.9	14.6	14.5	75.5	75.7	75.6	75.5	75.0
	Cash	4.5	5.1	4.5	4.4	4.5	6.0	6.1	6.5	6.6	6.6

Source: AMFI.

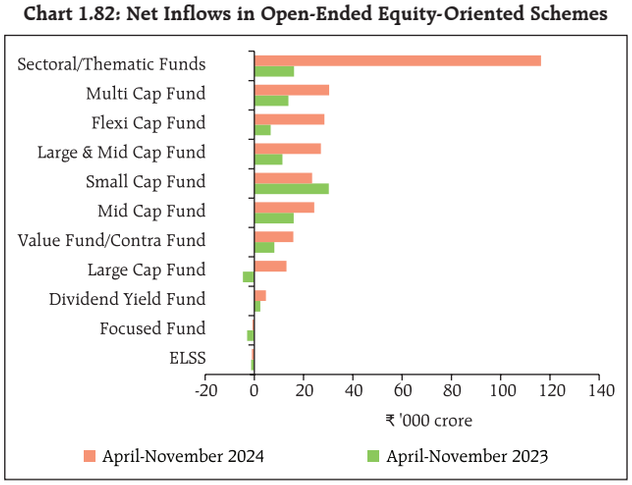
I.2.15 Financial System Stress Indicator (FSSI)

1.106 The FSSI, a comprehensive indicator of the aggregate stress level in the Indian financial system, eased to a record low in H1:2024-25. There was broad-based decline in most components of the FSSI. Easing of financial market conditions and improvements in balance sheets of financial intermediaries were key contributors to the easing of stress. Higher foreign portfolio debt inflows provided comfort to the government debt market and was reflected in declines in both short-term and long-term yields. In the money market, stress levels rose marginally as spreads of CPs, CDs and the overnight index swap (OIS) *vis-à-vis* T-bill rates widened. A rise in forex premium led to a mild uptick in stress in the forex market, whereas softening of BBB bond yields compressed stress in the corporate debt market. Banking and NBFC sectors reported improvement in asset quality and robust capital buffers. The real sector's financials remained largely unaltered (Chart 1.84 and 1.85).

I.2.16 Systemic Risk Survey

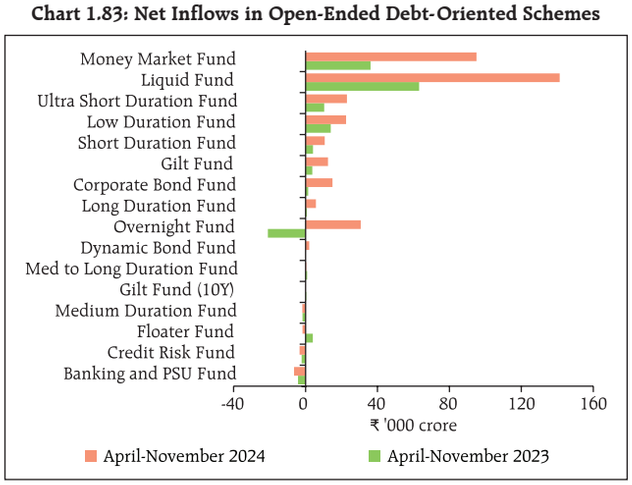
1.107 The latest round of the Reserve Bank's systemic risk survey (SRS) conducted during November 2024 reflected a sanguine outlook, with respondents categorising all major risk groups in the 'medium' risk category. Among global risks, geopolitical conflicts/geo-economic fragmentation emerged as a 'high' risk category, even as risks

Chart 1.82: Net Inflows in Open-Ended Equity-Oriented Schemes



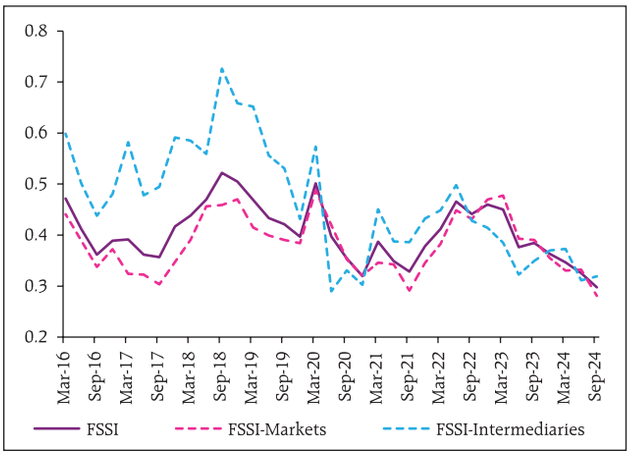
Source: SEBI.

Chart 1.83: Net Inflows in Open-Ended Debt-Oriented Schemes



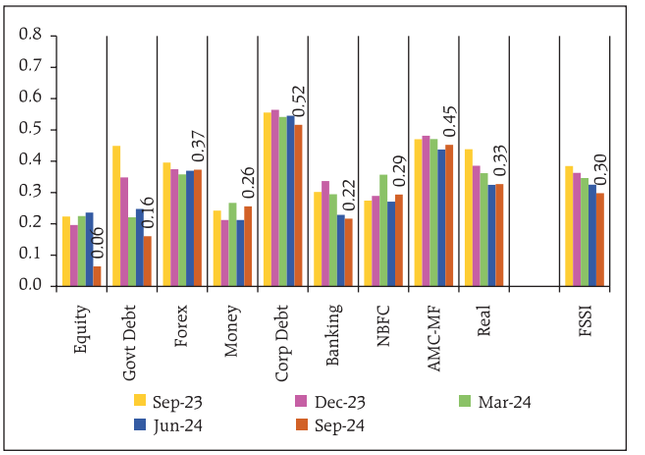
Sources: SEBI.

Chart 1.84: FSSI and its Broad Components



Sources: DBIE, Bloomberg, RBI supervisory returns and staff calculations.

Chart 1.85: Components of FSSI

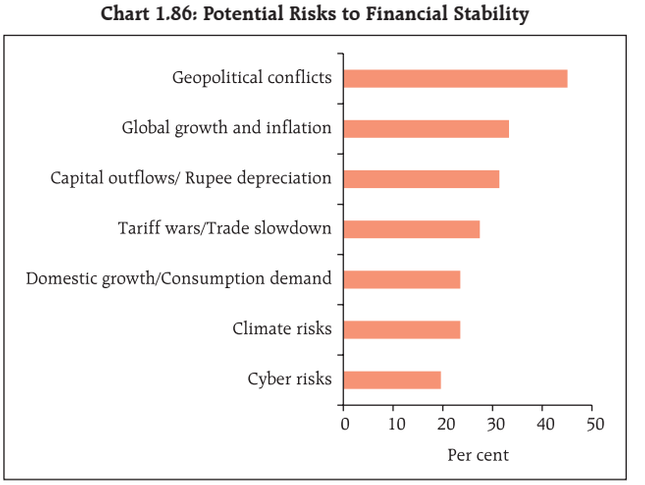


Sources: DBIE, Bloomberg, RBI supervisory returns and staff calculations.

from commodity prices and monetary tightening in advanced economies appear to have receded, compared to the May 2024 round of the survey. Macroeconomic risks were perceived to have inched up, driven by growth and inflation concerns, volatility in capital flows and a weak consumption demand outlook. Climate risk remained in the 'high' risk category even as its risk score fell marginally. Over half of the respondents perceived that the revival of private capex cycle is unlikely to materialise in the near term. Financial market risks saw a slight dip in risk perception, while institutional risks were assessed to be at similar levels as in the previous round of the survey. Among drivers of financial risk, foreign exchange risk inched up and risk from equity price volatility remained in the 'high' risk category. Among institutional risks, risks from asset quality deterioration and profitability were perceived to have moved up slightly, while cyber risk remained in the 'high' risk category. The majority of the respondents expressed confidence in the overall stability of the global and domestic financial system. Over 80 per cent of the respondents expressed higher/ similar level of confidence in the resilience of the Indian financial system. The survey participants assessed geopolitical conflicts, evolution of global growth and inflation, and capital outflows/rupee depreciation as major near-term risks (Chart 1.86).

1.108 60 per cent of the respondents assessed better or similar prospects for the Indian banking sector over a one-year horizon and expected asset quality to remain stable or improve owing to strong domestic growth and the possibility of softening of interest rates. Higher delinquencies in select sectors (*viz.*, microfinance and personal loans), however, remain key downside risks to overall asset quality. Subdued consumption demand, regulatory focus on unsecured loan growth and stricter underwriting

Chart 1.86: Potential Risks to Financial Stability



Source: Systemic Risk Survey, November 2024.

standards amid rising delinquency levels in select loan segments were perceived to weigh down credit growth in the next six months, with 40 per cent of the respondents seeing a 'marginal' deterioration in credit demand prospects.

1.109 In response to a question on their views on probable spillovers of a global shock on India's macroeconomic and financial stability, nearly 95 per cent of the respondents perceived 'medium' to 'limited' near-term impact on domestic financial stability. On the other hand, about 60 per cent of the respondents expected 'high' to 'medium' impact of global economic uncertainty on domestic macroeconomic stability. Detailed survey results are provided in Annex 1.

Summary and Outlook

1.110 The global economy and the financial system are exhibiting resilience despite bouts of volatility and heightened uncertainty. With inflation moderating, major central banks are gradually normalising monetary policy and financial conditions remain easy. While near-term risks have ebbed, medium-term vulnerabilities such as stretched asset valuations, rising and elevated levels of public debt, prolonged geopolitical tensions and perils of emerging technologies could pose risks to financial stability. Volatility spillovers from AEs can be even more disruptive through the conduit of financial markets, highlighting the importance of proactive macroprudential policies and adequate buffers to shield the financial system against these rapidly propagating negative externalities.

1.111 In this challenging global macroeconomic environment, the Indian economy remains on a strong growth trajectory underpinned by robust macroeconomic fundamentals. While risks from global spillovers remain, the Indian financial system, supported by further improvement in balance sheet of banks and NBFCs, and strong buffers, is expected to remain sound and vibrant.

Chapter II

Financial Institutions: Soundness and Resilience

The Indian banking system has remained resilient with robust capital buffers, strong operational performance, and declining asset impairment. Macro stress tests indicate that banks' aggregate capital would remain above the regulatory minimum even under adverse scenarios. The NBFC sector witnessed robust credit growth while maintaining strong balance sheet and profitability. In terms of bilateral exposures, interconnectedness among financial sector entities continued to rise. Mutual funds remain the largest fund providers in the financial system, whereas NBFCs are the largest receivers of funds.

Introduction

2.1 Financial intermediation by banks and other financial institutions supports private sector funding needs as well as public finance requirements in a growing economy. Even as banking business has expanded at a strong pace, asset quality and profitability have both witnessed sustained improvement, and capital positions have been strengthened. After the post-pandemic acceleration, however, credit by both banks and non-banking financial companies (NBFCs) in India has recorded some moderation across major sectors during 2024 so far.

2.2 This chapter presents stylised facts and analyses on latest developments in the domestic financial sector. Section II.1 outlines the performance of SCBs in India through various parameters, *viz.*, business mix; asset quality; concentration of large borrowers; capital adequacy; earnings; and profitability. Macro stress tests and sensitivity analyses are also performed to evaluate the resilience of SCBs under adverse scenarios. Sections II.2 and II.3 examine the financial parameters of urban cooperative banks (UCBs) and NBFCs, respectively, including their resilience under various simulations of stress. Sections II.4, II.5 and II.6 examine the soundness and resilience of mutual funds, clearing corporations and insurance sector, respectively. Section II.7 concludes the chapter with a detailed analysis of the network structure and connectivity of the Indian financial system, with contagion analysis under adverse scenarios.

II.1 Scheduled Commercial Banks (SCBs)[1][2][3][4]

2.3 Against the backdrop of the recent monetary policy tightening cycle in India, bank deposits continue to exhibit double digit growth but their profile has gradually shifted towards schemes offering higher returns (Chart 2.1 a). While term deposit growth moderated for both PSBs and PVBs, they continue to outpace current and savings account (CASA) deposit growth (Chart 2.1 b). As on December 13, 2024, aggregate deposits of SCBs rose (y-o-y) by 11.4 per cent.

[1] Analyses are mainly based on RBI's supervisory returns which cover only domestic operations of SCBs, except in the case of data on large borrowers, which are based on banks' global operations. For this exercise, SCBs include public sector banks, private sector banks and foreign banks.

[2] The analyses done in the chapter are based on the data available as on December 12, 2024 which are provisional.

[3] Personal loans refer to loans given to individuals and consist of (a) consumer credit, (b) education loan, (c) loans given for creating/enhancement of immovable assets (*e.g.* housing, *etc.*), and (d) loans given for investment in financial assets (shares, debentures, *etc.*).

[4] Private sector bank data for September 2023 quarter onwards are inclusive of merger of a large housing finance company with a private bank and therefore, the data may not be comparable to past periods before the merger (applicable for all charts and tables).

2.4 The growth in bank credit has converged towards deposit growth – as on December 13, 2024, bank credit increased by 11.3 per cent (y-o-y). Bank group-wise break-up shows a moderation in credit growth for both PSBs and PVBs in September 2024; foreign banks (FBs) recorded a rise after a period of low growth (Chart 2.1 c). Industrial credit has been accelerating from low levels but remains below the growth in loans to other major sectors, *viz.*, agricultural, services and personal loans segments (Chart 2.1 d and e). Services and personal loans led the overall credit growth; within personal loans, credit card receivables continued to post robust growth. Growth in personal loans has halved from high levels on the back of both high base and lower originations, but its expansion continued to be broad-based, with housing loans as the standout contributor (Chart 2.1 e, f, g and h).

Chart 2.1: Deposit and Credit Profile of SCBs *(Contd.)*

Chart 2.1: Deposit and Credit Profile of SCBs *(Concld.)*

Notes: Transfer of retail business of a foreign bank to a PVB in March 2023 has impacted the growth rates of PVBs and FBs. The spurt in housing loans of PVBs in Sep-23 and Mar-24 is attributable to the merger of a large housing finance company with a private bank.
Sources: RBI supervisory returns and staff calculations.

II.1.1 Asset Quality

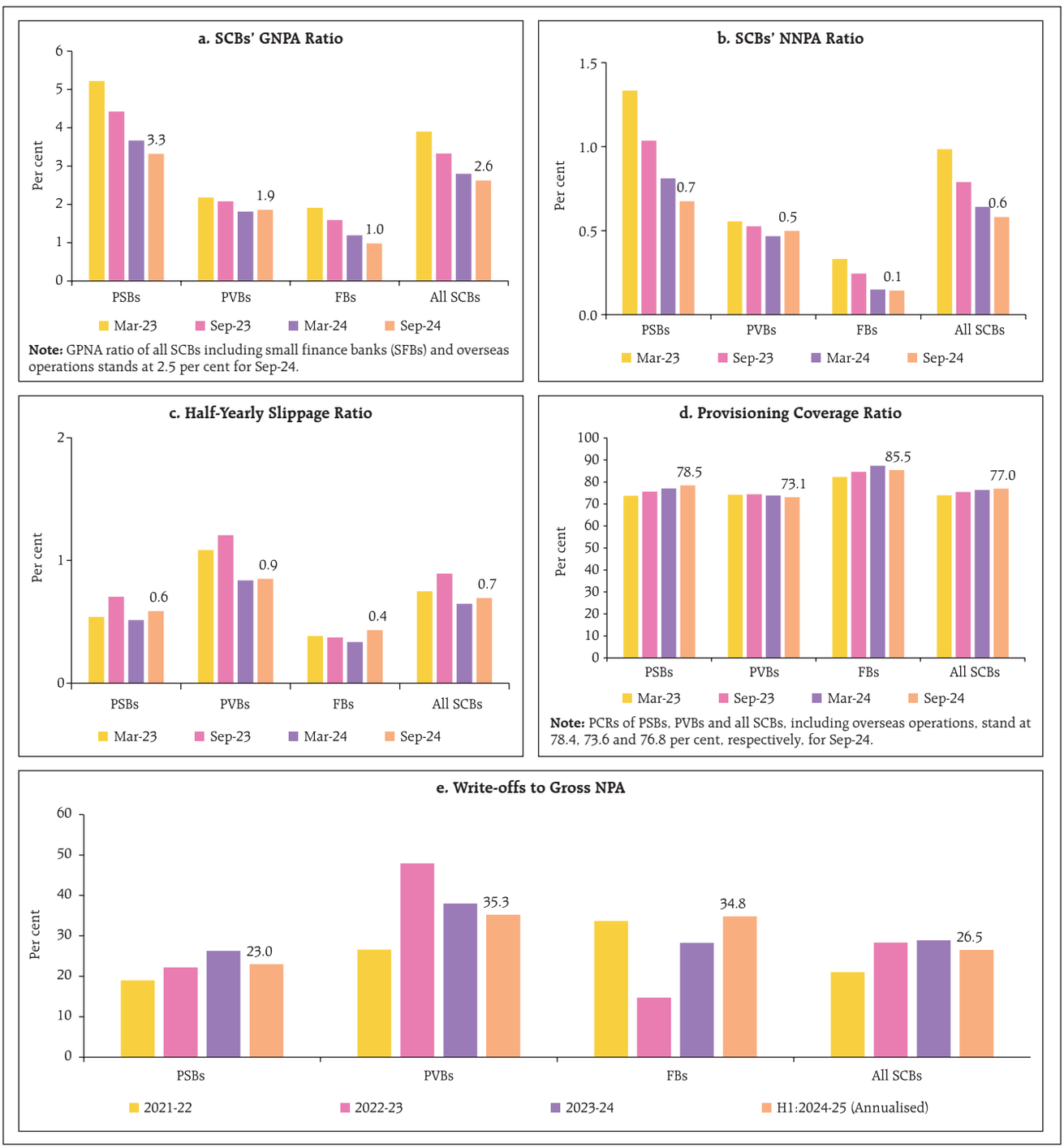
2.5 Asset quality of SCBs improved further, with their GNPA ratio declining to a 12-year low of 2.6 per cent in September 2024 (Chart 2.2 a). The NNPA ratio[5] remained at around 0.6 per cent (Chart 2.2 b). The half-yearly slippage ratio, measuring new accretions to NPAs as a share of standard advances at the beginning of the half-year, increased marginally to 0.7 per cent (Chart 2.2 c). The provisioning coverage ratio (PCR)[6] of SCBs improved further to 77.0 per cent in September 2024, largely due to proactive

[5] NNPA ratio is the proportion of net non-performing assets in net loans and advances.

[6] PCR is the proportion of provisions (without write-offs) held for NPAs to GNPA.

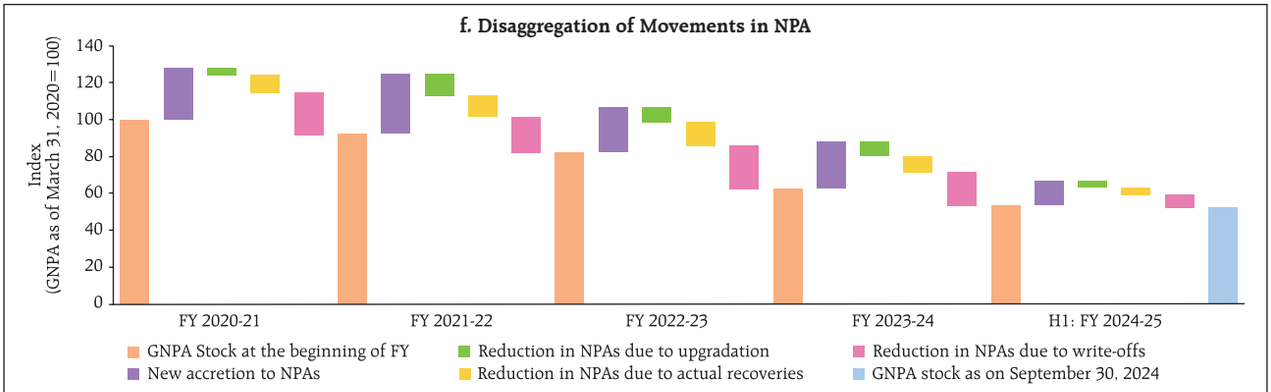
provisioning by PSBs (Chart 2.2 d). The write-off to GNPA ratio[7] for FBs increased in September 2024 while that of PSBs and PVBs declined marginally (Chart 2.2 e). Disaggregation of NPA movements reveals that write-offs remain a significant component of NPA reduction (Chart 2.2 f).

Chart 2.2: Select Asset Quality Indicators *(Contd.)*



[7] Ratio of write-offs (including technical/prudential write-offs and compromise settlement) during the period to GNPA at the beginning of the period.

Chart 2.2: Select Asset Quality Indicators *(Concld.)*



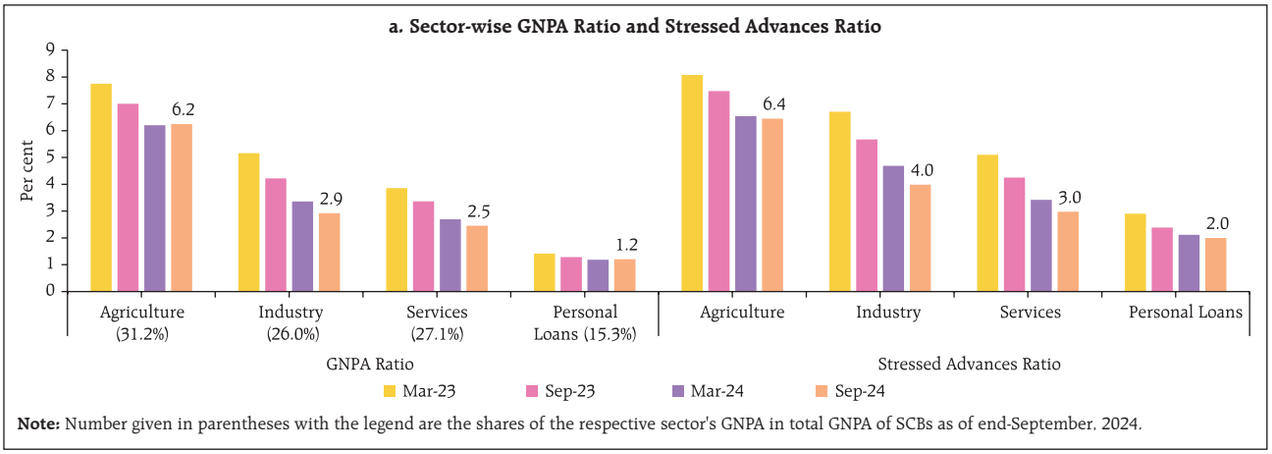
Note: Stock of GNPA, new accretions, reduction in NPAs due to upgradation, actual recoveries and write-offs have been derived as an index with GNPA stock as on 31st March, 2020 as 100.

Sources: RBI supervisory returns and staff calculations.

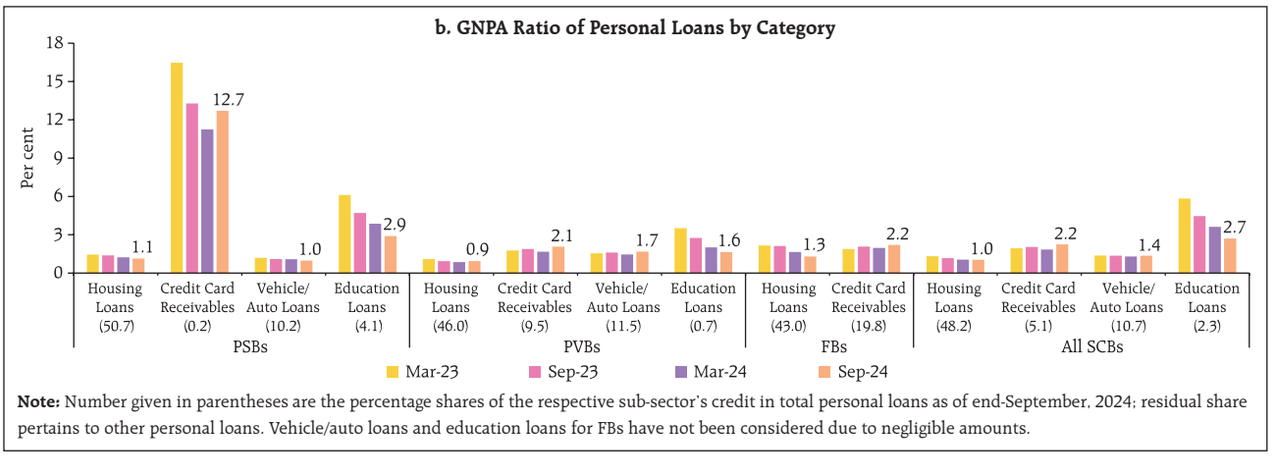
II.1.2 Sectoral Asset Quality

2.6 The improvement in asset quality of SCBs was broad based across sectors and bank groups (Chart 2.3 a). In the personal loans segment, asset quality remained largely stable, except for a marginal uptick in respect of credit card receivables

Chart 2.3: Sectoral Asset Quality Indicators *(Contd.)*

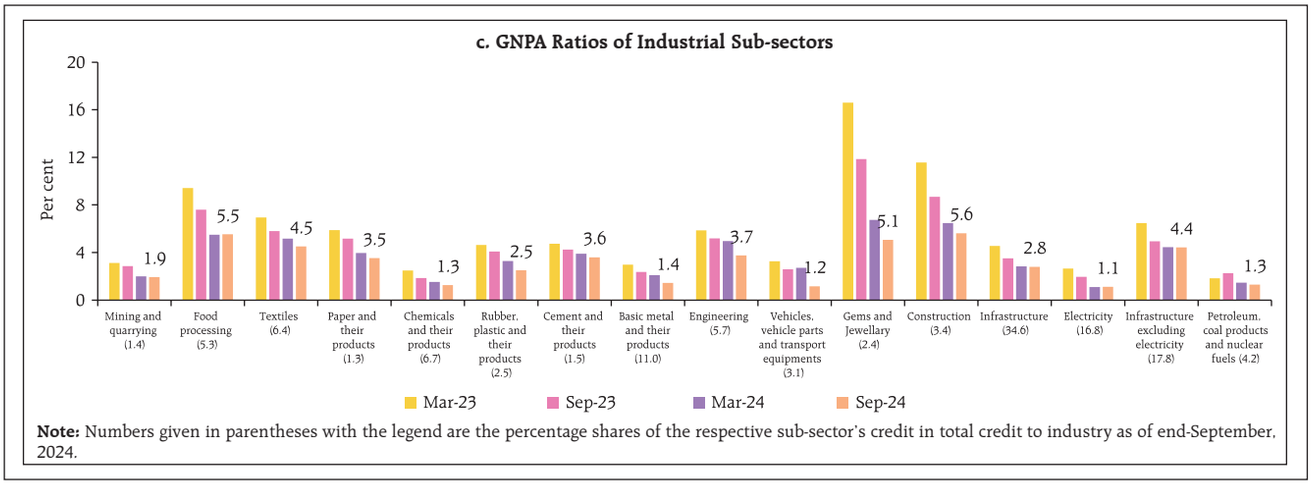


Note: Number given in parentheses with the legend are the shares of the respective sector's GNPA in total GNPA of SCBs as of end-September, 2024.



Note: Number given in parentheses are the percentage shares of the respective sub-sector's credit in total personal loans as of end-September, 2024; residual share pertains to other personal loans. Vehicle/auto loans and education loans for FBs have not been considered due to negligible amounts.

Chart 2.3: Sectoral Asset Quality Indicators *(Concld.)*



Note: Numbers given in parentheses with the legend are the percentage shares of the respective sub-sector's credit in total credit to industry as of end-September, 2024.

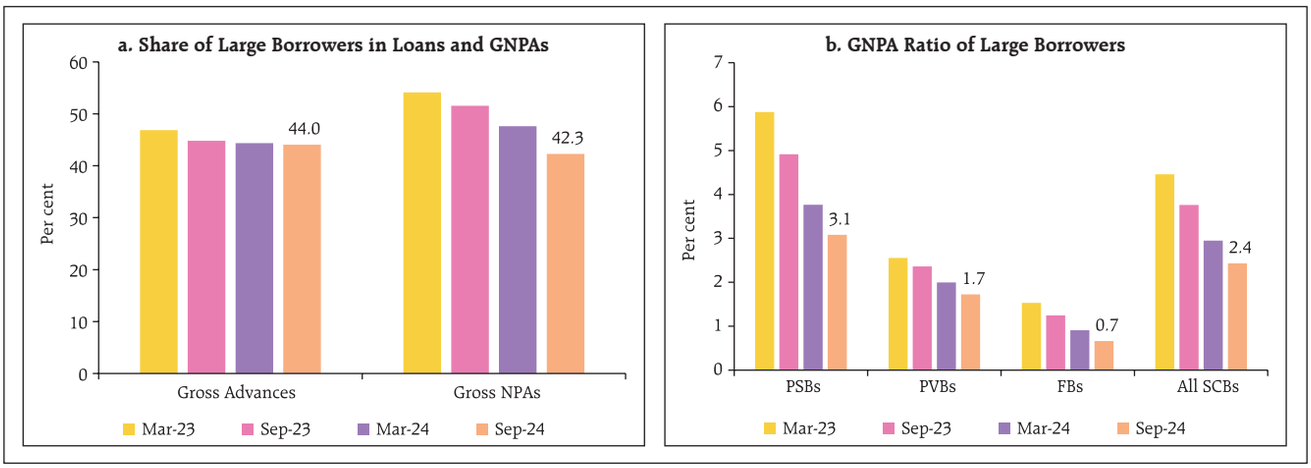
Sources: RBI supervisory returns and staff calculations.

across bank groups, which recorded the highest credit growth within the personal loans segment and may require careful monitoring. Within the industrial sector, asset quality exhibited sustained improvement across the major sub-sectors (Chart 2.3 b and c).

II.1.3 Credit Quality of Large Borrowers[8]

2.7 The share of large borrowers in GNPA of SCBs has steadily declined over the past two years, faster than the reduction in their share in overall credit (Chart 2.4 a). The asset quality of banks' large borrower portfolios has improved considerably, with the GNPA ratio falling from 4.5 per cent in March 2023 to 2.4 per cent in September 2024 (Chart 2.4 b). SMA-1 and SMA-2[9] loans have, however, risen sequentially (q-o-q) in the September 2024 quarter (Chart 2.4 c). Furthermore, the SMA-2

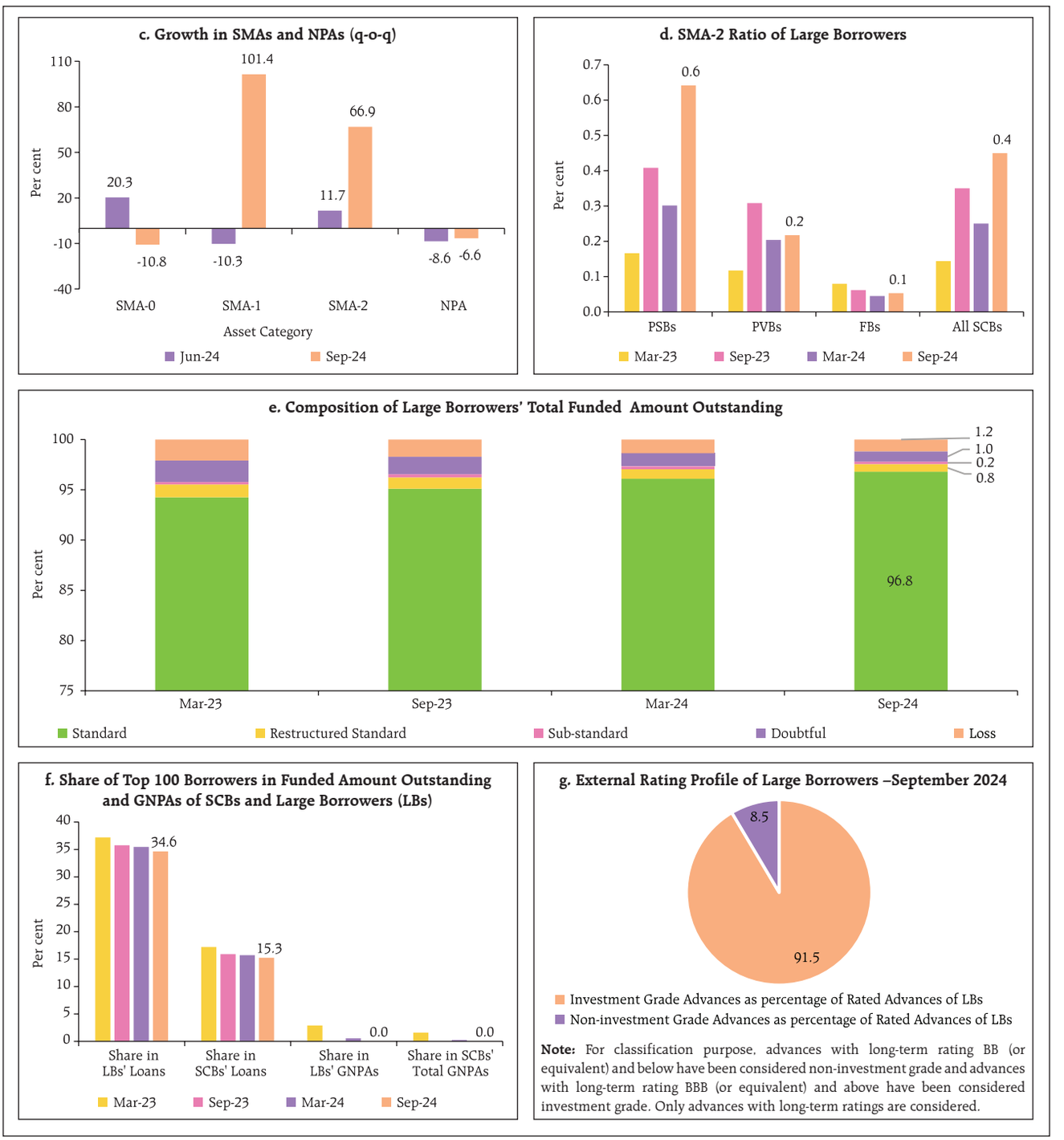
Chart 2.4: Select Asset Quality Indicators of Large Borrowers *(Contd.)*



[8] A large borrower is defined as one who has aggregate fund-based and non-fund-based exposure of ₹5 crore and above. This analysis is based on SCBs' global operations.

[9] Special mention account (SMA) is defined as
(a) Loans in the nature of revolving facilities like cash credit/overdraft: if outstanding balance remains continuously in excess of the sanctioned limit or drawing power, whichever is lower, for a period of 31-60 days - SMA-1; 61-90 days - SMA-2.
(b) Loans other than revolving facilities: if principal or interest payment or any other amount wholly or partly overdue remains outstanding up to 30 days - SMA-0; 31-60 days - SMA-1; 61-90 days - SMA-2.

Chart 2.4: Select Asset Quality Indicators of Large Borrowers *(Concld.)*



Sources: RBI supervisory returns and staff calculations.

ratio for large borrowers increased significantly for PSBs in September 2024 from a year ago, warranting close monitoring (Chart 2.4 d). In the large borrower segment, the share of standard assets in total funded amount has consistently improved over the past two years (Chart 2.4 e). Within the large borrowers' cohort, the share of top 100 borrowers has decreased to 34.6 per cent in September 2024, reflecting a growing credit appetite among medium-sized borrowers. Notably, none of the top 100

borrowers are classified as NPAs in September 2024 (Chart 2.4 f). In terms of value, investment grade advances (rated BBB and above) constituted 91.5 per cent of the funded advances to large borrowers with long-term external ratings (Chart 2.4 g).

II.1.4 Capital Adequacy

2.8 CRAR and CET1 ratios of SCBs displayed similar movements and stood at 16.7 per cent and 14.0 per cent, respectively, in September 2024, which were much higher than the regulatory minimum (Chart 2.5 a and b). The overall Tier 1 leverage ratio[10] remained stable (Chart 2.5 c). CRAR, CET1 and leverage ratios of foreign banks declined marginally during H1:2024-25.

II.1.5 Earnings and Profitability

2.9 Profitability of SCBs improved during H1:2024-25, with profit after tax (PAT) surging by 22.2 per cent (y-o-y). PSBs and PVBs recorded PAT growth of 30.2 per cent and 20.2 per cent, respectively, while FBs experienced single digit growth (8.9 per cent). The rise in other operating income (OOI) contributed significantly to the rise in profits of PSBs and PVBs (Chart 2.6 a).

2.10 The cost of funds has risen in sync with the monetary policy tightening cycle (Chart 2.6 b). On the other hand, overall yield on assets remained broadly stable (Chart 2.6 c). As a result, net interest margin (NIM) has marginally contracted

Chart 2.5: Capital Adequacy

Sources: RBI supervisory returns and staff calculations.

[10] Tier I leverage ratio is the ratio of Tier I capital to total exposure.

across all bank groups (Chart 2.6 d). Nevertheless, both return on equity (RoE) and return on assets (RoA) ratios have improved in September 2024 (Chart 2.6 e and f).

Chart 2.6: Select Performance Indicators of SCBs *(Contd.)*

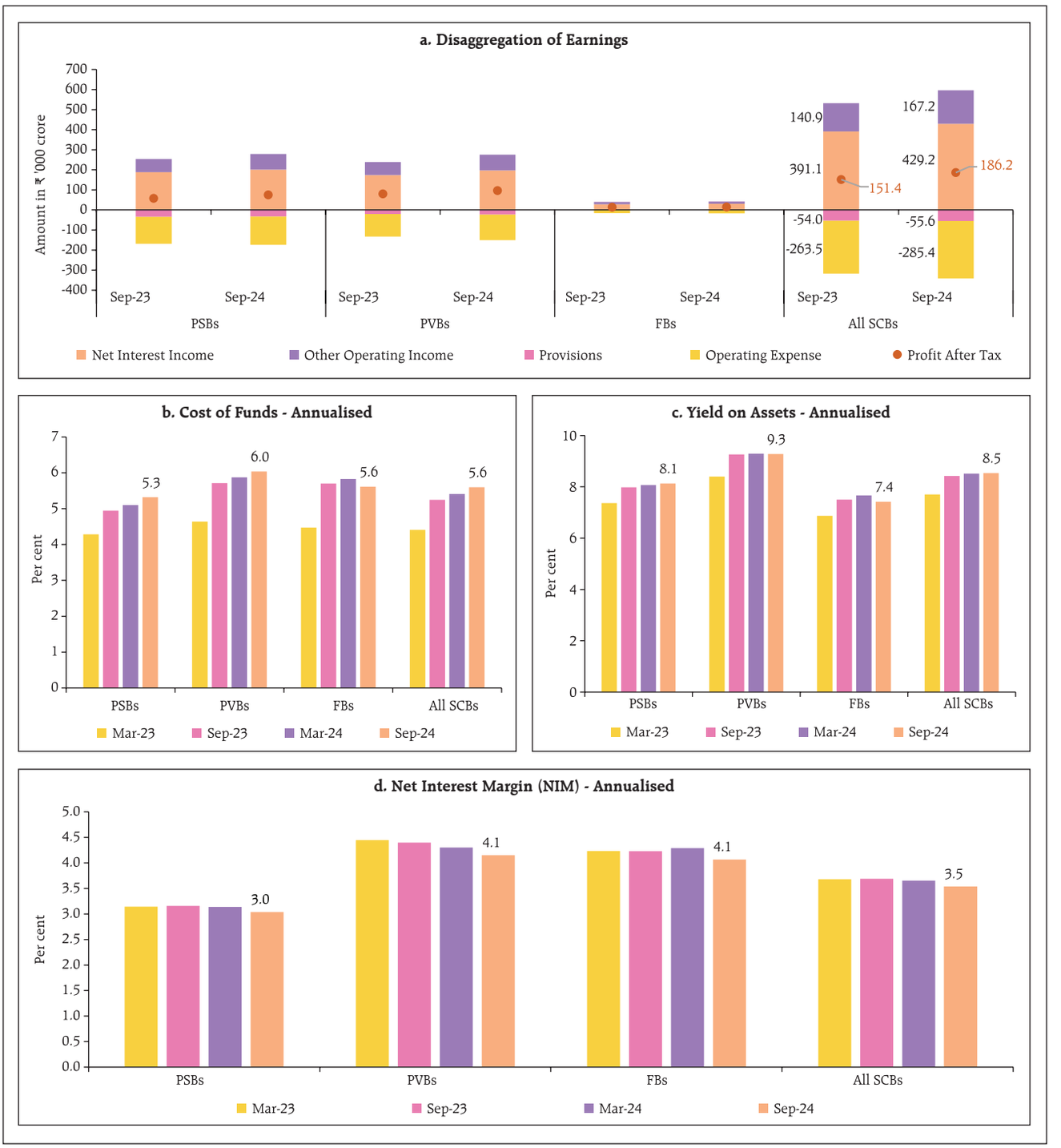
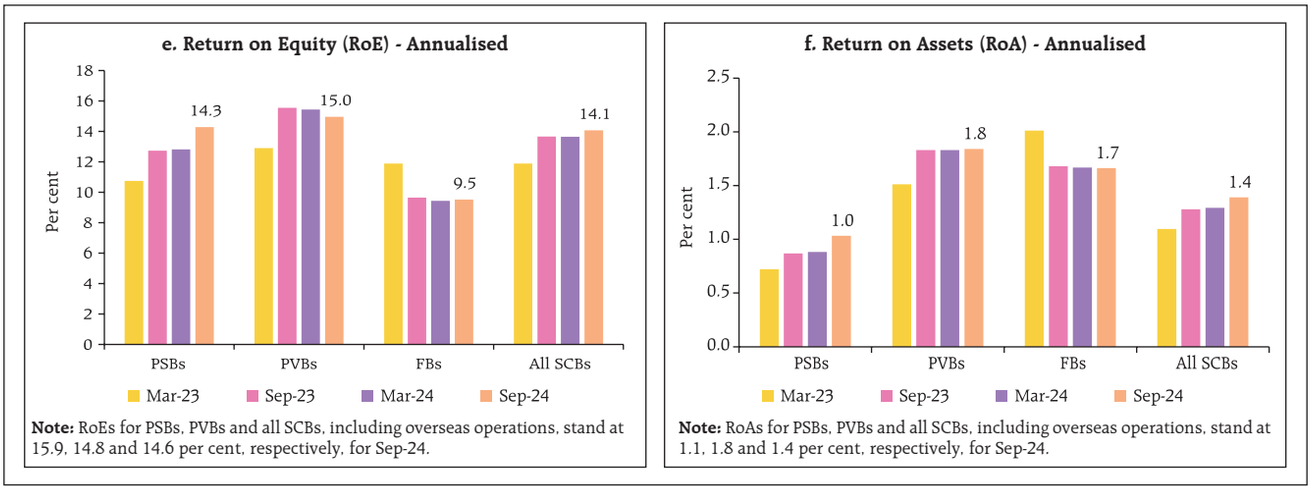


Chart 2.6: Select Performance Indicators of SCBs *(Concld.)*



Sources: RBI supervisory returns and staff calculations.

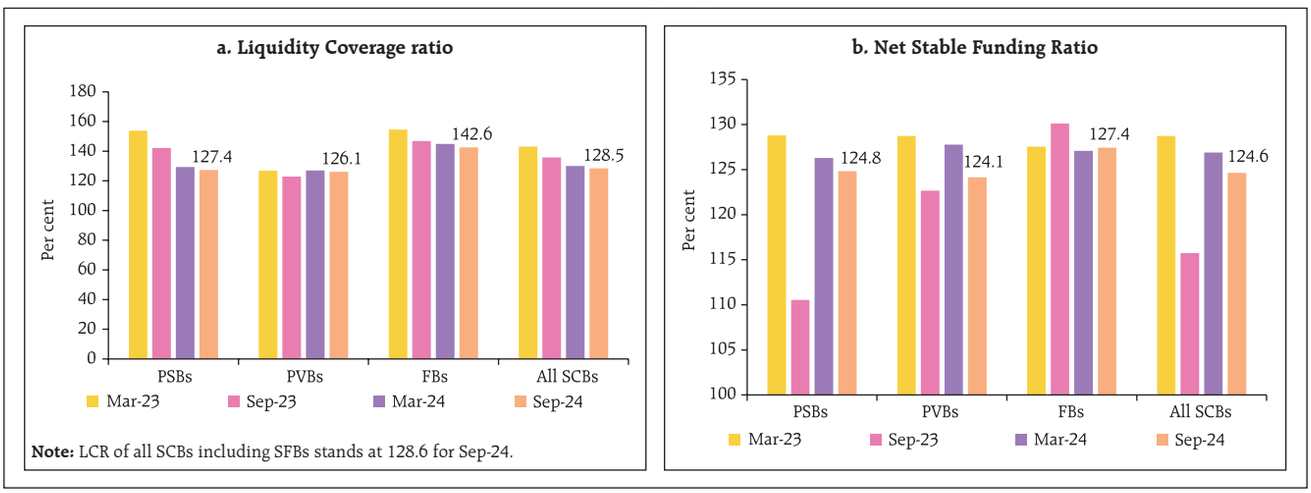
II.1.6 Liquidity

2.11 The liquidity coverage ratio (LCR) has been comfortably above the regulatory minimum of 100 per cent across bank groups. It is the highest in the case of FBs (Chart 2.7 a). The net stable funding ratio (NSFR) has also remained above the regulatory minimum of 100 per cent across all bank groups. The growth of 'required stable funding' for PSBs and PVBs between March 2024 and September 2024 has outpaced the growth of 'available stable funding' during the same period, which has resulted in a marginal decline in NSFR for these bank groups (Chart 2.7 b).

II.1.7 Resilience – Macro Stress Tests

2.12 Macro stress tests are performed to assess the resilience of SCBs' balance sheets to unforeseen shocks emanating from the macroeconomic environment. The framework for macro stress testing has been revised from this issue of the FSR (Box 2.1). The macro stress tests attempt to project capital ratios of banks under a baseline and two adverse macro scenarios over a one-and-half year horizon, *i.e.*, till end-March 2026 incorporating credit risk, interest rate risk in the banking book and market risk. The baseline scenario is derived from the forecasted path of macroeconomic

Chart 2.7: Liquidity Ratios



Sources: RBI supervisory returns and staff calculations.

Box 2.1: Revised Macro Stress Testing Framework

The macro stress testing framework has been revamped with the technical support of the International Monetary Fund (IMF, 2024). The salient features of the revised framework are enlisted below:

(i) Projection of internally consistent adverse macro-financial scenarios based on scenario narratives and by performing simulations based on a vector autoregression model with exogenous variables (VARX).

(ii) Projection of slippage ratio, interest income and interest expense at bank level using panel regression models.

(iii) Incorporation of market risk in the solvency stress testing framework.

(iv) Scenario horizon of 1.5 - 2 years, generating projections of key financial ratios as at the end of the ensuing financial years.

Macro-scenario design: The test envisages three scenarios - a baseline and two hypothetical adverse macro scenarios. While the baseline scenario is derived from the forecasted path of macroeconomic variables, the two adverse scenarios are hypothetical stringent stress scenarios derived by performing simulations using the VARX model,

$$Y_t = \sum_{p=1}^{P} A_p Y_{t-p} + \sum_{s=0}^{S} B_s X_{t-s} + u_t \quad \ldots(1)$$

based on GDP growth, CPI inflation, repo rate and lending spread as endogenous variables and US-GDP growth and US-VIX as exogeneous variables, as well as by assuming hypothetical stress scenario narratives.

Projection of key financial variables: Bank-wise slippage ratio, interest income and interest expense are projected based on bank-level panel regression models. GNPA ratios and provisions are projected using structural models. Non-interest income comprising of (a) fee income and (b) other operating income excluding fee income, and non-interest expenses are projected based on assumed growth rates of these variables under each scenario.

(i) **Projection of slippage ratios:** The quarterly slippage ratios are projected using the following panel regression model;

$$Z_{i,t} = \beta_Z * Z_{i,t-1} + \beta'_X * X_{t-s} + \mu'_i + \lambda'_{it} + \varepsilon'_{i,t}, \quad \ldots(2)$$

for $t = 1, \ldots, T$ and $i = 1, \ldots, N$

$Z_{i,t}$ is the quarterly slippage ratio of bank *i* during quarter *t*, X_t is a vector of macroeconomic variables including lending spread and GDP growth, μ'_i represents bank-specific fixed effects, λ'_{it} represents adjustments for specific quarters and $\varepsilon'_{i,t}$ is an i.i.d. error term. Subsequently, the estimates of quarterly slippage ratios, $\hat{Z}_{i,t}s$, are computed based on first differences of the regression equation (2) as,

$$\hat{Z}_{i,t} = \hat{Z}_{i,t-1} + \Delta\hat{Z}_{i,t} = \hat{Z}_{i,t-1} + \{\beta_Z \times \Delta\hat{Z}_{i,t-1} + \beta'_X \times \Delta\hat{X}_{i,t-1}\} \quad \ldots(3)$$

(ii) **Projection of GNPAs:** Bank-level GNPAs are projected using the equation,

$$NPL_{i,t} = NPL_{i,t-1}(1 - WRO_{i,t} - CURER_{i,t} - RECR_{i,t}) + PD_{i,t}.PL_{i,t-1} \quad \ldots(4)$$

where $NPL_{i,t}$ represents the stock of GNPA of bank *i* at the end of quarter *t*, $WRO_{i,t}$, $CURER_{i,t}$ and $RECR_{i,t}$ are write-off, upgradation and recovery rates of bank *i* during the quarter respectively, $PD_{i,t}$ is the probability of default (slippage ratio) projected in (3) and $PL_{i,t-1}$ is the stock of performing loans at the end of quarter t-1.

(iii) **Projection of performing loans:** The stock of performing loans for bank *i* at the end of quarter, t, $PL_{i,t}$ is projected as,

$$PL_{i,t} = PL_{i,t-1}(1 - PD_{i,t}) + NPL_{i,t-1}.CURER_{i,t} \quad \ldots(5)$$

(iv) **Projection of provisions:** Provisions of bank *i* for quarter t are projected as follows,

$$Provisions_{i,t} = PD_{i,t}.LGD_t.PL_{i,t-1}.PCR \quad \ldots(6)$$

where provisioning coverage ratio (PCR) is assumed at 75 per cent, loss given default (LGD) during quarter t is derived based on the model of Frye and Jacobs (2012),

$$LGD_{i,t0+h} = \frac{\Phi(\Phi^{-1}(PD_{i,t0+h}) - k)}{PD_{i,t0+h}} \quad \ldots(7)$$

and the parameter k is derived as,

$$k = \frac{\Phi^{-1}(PD^*_{i,t0}) - \Phi^{-1}(PD^*_{i,t0} \times LGD^*_{i,t0})}{\sqrt{1-\rho}} \quad \ldots(8)$$

PD* and LGD* are long-term average PDs and LGDs and Φ represents the cumulative normal distribution function.

(Contd.)

(v) **Projection of interest income and expenses:** Interest income (as share of interest-earning assets) and interest expenses (as share of interest-bearing liabilities) are modelled as functions of macroeconomic variables (GDP growth and call rate) and bank fixed effects with structure similar to equation (2). Bank-wise projections of these ratios are applied to derive shocks to yield on assets and cost of funds for each bank. These shocks are further applied on granular risk sensitive asset and risk sensitive liability portfolio of each bank to assess interest rate risk which comprises of, (i) interest rate risk due to changes in risk-free rates and (ii) interest rate risk due to changes in credit and funding spreads.

(vi) **Projection of market risk:** Market risk is estimated by applying MTM revaluation of bond (AFS and HFT portfolio) exposures of banks using three inputs, (1) bond exposure, (2) Macaulay duration, and (3) interest rate shock, using the bond revaluation formula:

$$\Delta V_{t+1} = -V_t \frac{D}{(1+r_t+s_t)}(\Delta r_{t+1} + \Delta s_{t+1}) \quad \ldots(9)$$

where D is the Macaulay duration, r is the risk-free rate, s is credit spread component, V_t is the market value at time t, Δr_{t+1} represents the risk-free rate shift and Δs_{t+1} the credit spread shift. Further, equity and foreign exchange risks are also factored into market risk.

(vii) **Projection of net profit:** Net profit is projected as,

$$Net\ Profit = Interest\ Income - Interest\ Expenses + Non\text{-}interest\ income - Non\text{-}interest\ Expenses + Trading\ income - Loss\ Provisions - Provisions\ for\ Income\ Tax$$

(viii) **Projection of capital:** Capital is projected as,

$$Capital_{t+1} = Capital_t + Net\ Profit_{(t,t+1)} + Other\ Comprehensive\ Income_{(t,t+1)} - Dividend$$

(ix) **Projection of Risk weighted assets (RWA):** RWA-credit risk is projected as,

$$RWA_{t+1} = (RWA_t - Reduction\ in\ RWA\ due\ to\ new\ provisions).(1+g/100) + Additional\ RWA\ due\ to\ new\ defaulted\ loans$$

where g is the growth rate assumed to be at nominal GDP growth rate. RWA-market risk and RWA-operational risk are projected to grow at assumed growth rates.

Major assumptions: Provisions for income tax are assumed at 30 per cent, 25 per cent and 35 per cent of profit before tax respectively for public sector banks (PSBs), private banks (PVBs) and foreign banks (FBs), based on the data of previous years. Dividend payout ratio is assumed at 35 per cent of net profit. Balance sheet is projected to grow at the rate of nominal GDP growth.

References:

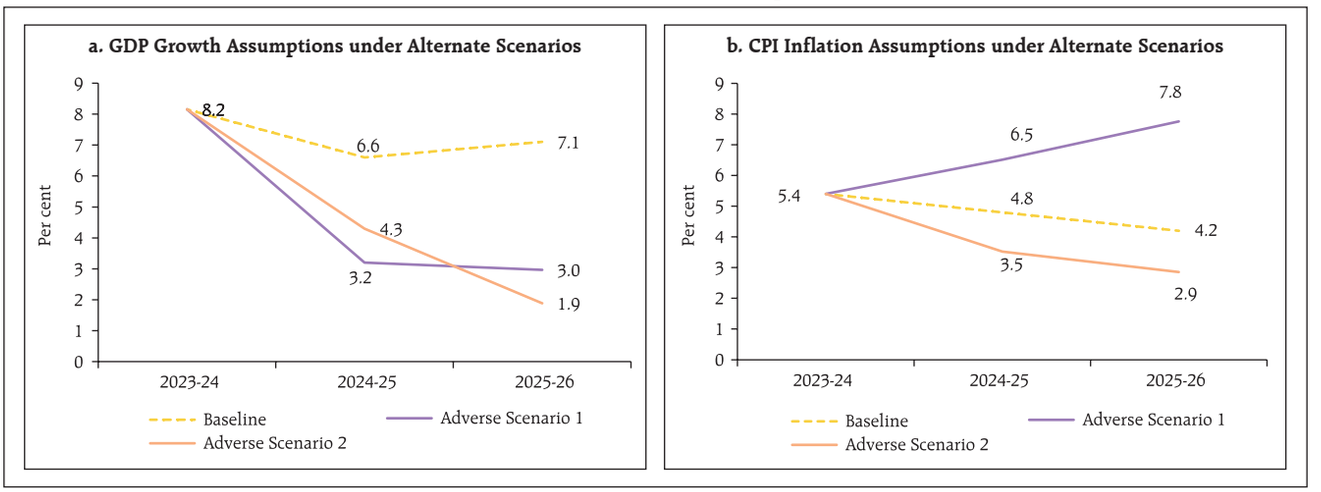
1. Frye and Jacobs (2012), "Credit Loss and Systematic Loss Given Default," The Journal of Credit Risk.
2. International Monetary Fund (2024). 'India: Technical Assistance Report-Review and Evaluation of the Reserve Bank of India's Stress Test Model Framework', November 01, 2024.

variables. The two adverse scenarios, as described below, are stringent conservative hypothetical stress scenarios (Chart 2.8). The paths of the macro variables under the adverse scenarios are derived by performing simulations that are based on a vector autoregression model with exogenous variables (VARX).

(i) ***Adverse Scenario 1:*** This scenario assumes persisting geopolitical risks and escalation of global financial market volatility. Due to supply chain disruptions percolating to commodity prices, domestic inflation soars. Consequently, domestic monetary policy tightens and the spread between policy rate and lending rate widens.

(ii) ***Adverse Scenario 2:*** This scenario assumes that global and idiosyncratic risk factors blend to trigger a synchronized sharp growth slowdown in key economies. Spillovers through trade and financial channels as well as market fragmentation impact domestic GDP growth. The scenario further assumes that although the central bank eases monetary policy, incomplete monetary policy transmission due to high uncertainty widens the spread between policy rate and lending rate.

Chart 2.8: Macro Scenario Assumptions

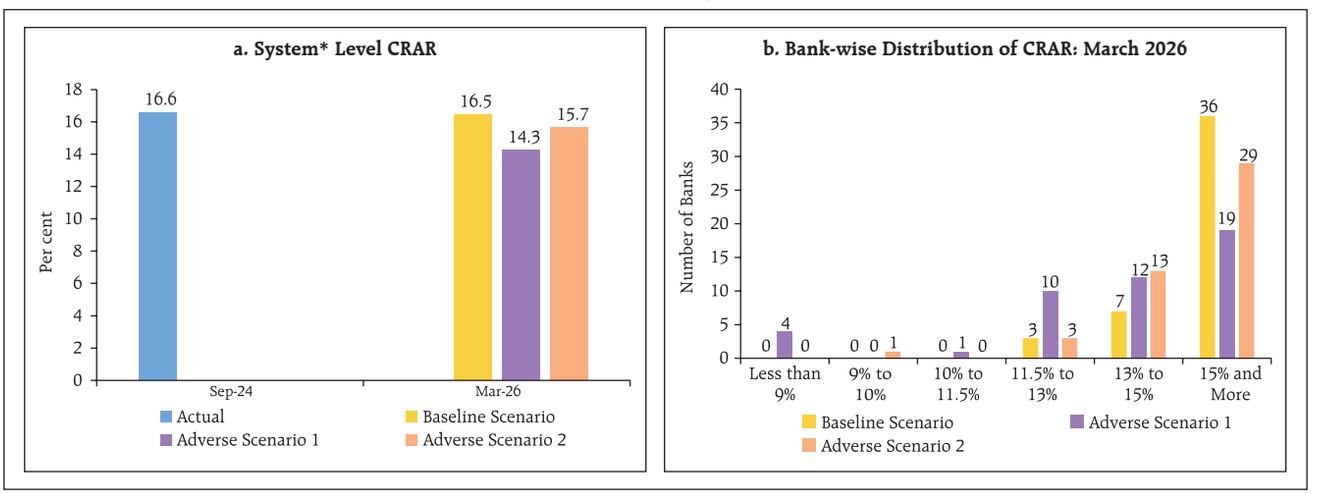


Source: RBI staff calculations.

2.13 The stress test results reveal that the aggregate CRAR of 46 major SCBs may fall from 16.6 per cent in September 2024 to 16.5 per cent by March 2026 under the baseline scenario and to 15.7 per cent under adverse scenario 2. No bank would fall short of the minimum capital requirement of 9 per cent under both the scenarios. However, under adverse scenario 1, SCBs' aggregate CRAR may deplete to 14.3 per cent and four banks may breach the minimum capital requirement of 9 per cent (Chart 2.9).

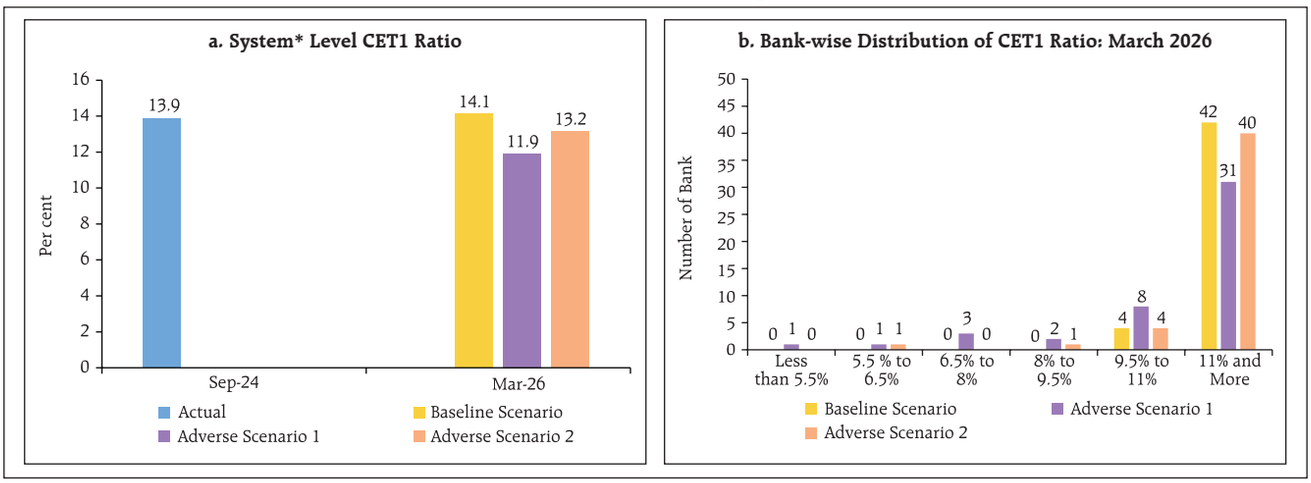
2.14 The CET1 capital ratio of the select 46 banks may marginally rise from 13.9 per cent in September 2024 to 14.1 per cent by March 2026 under the baseline scenario, but it may worsen to 13.2 per cent under adverse scenario 2. Under adverse scenario 1, the ratio may fall to 11.9 per cent and one bank may breach the minimum capital requirement of 5.5 per cent, although none of the banks would fail under the baseline scenario and adverse scenario 2 (Chart 2.10).

Chart 2.9: CRAR Projections



Note: * For a system of 46 select banks.
Source: RBI staff calculations.

Chart 2.10: Projection of CET1 Capital Ratio

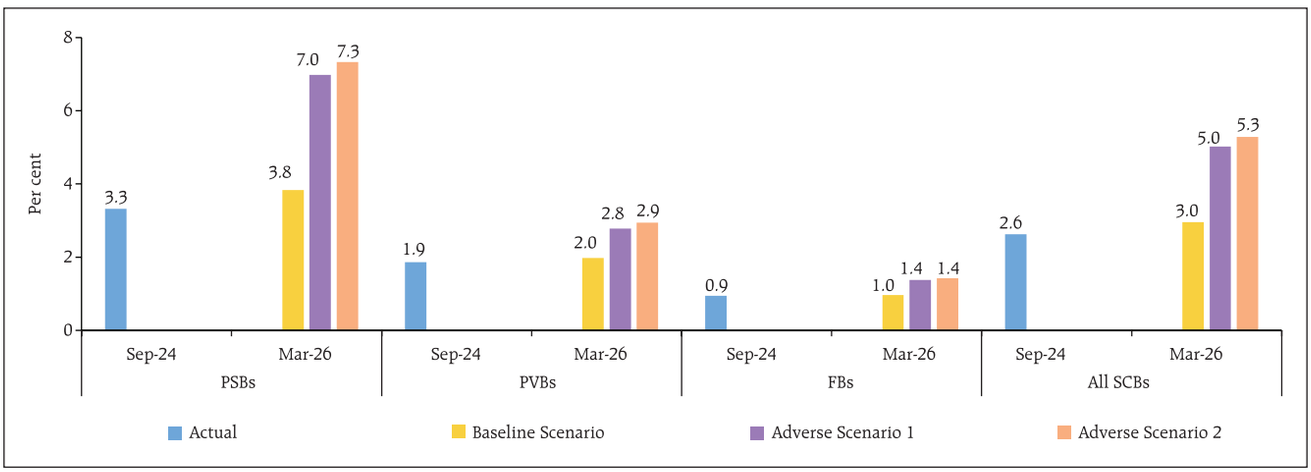


Note: * For a system of 46 select banks.
Sources: RBI supervisory returns and staff calculations.

2.15 The aggregate GNPA ratio of the 46 banks may rise from 2.6 per cent in September 2024 to 3.0 per cent in March 2026 under the baseline scenario and further to 5.0 per cent and 5.3 per cent, respectively, under adverse scenario 1 and adverse scenario 2. Credit risk is comparatively severe under adverse scenario 2; the GNPA ratios of PSBs may rise from 3.3 per cent in September 2024 to 7.3 per cent in March 2026, whereas it may go up from 1.9 per cent to 2.9 per cent for PVBs and from 0.9 per cent to 1.4 per cent for FBs (Chart 2.11).

2.16 The impact of liquidity risk on the solvency of SCBs has been simulated under the hypothetical scenario of a run of 25 per cent on customer deposits along with 75 per cent demand on unutilised portion of committed credit lines. It is further assumed that banks try to meet the deposit run and demand from committed credit lines by using cash and cash equivalents first, followed by liquidation of held for trading (HFT) and available for sale (AFS) securities; and if the liquidity shortfall persists further, they resort to pledging of held for maturity (HTM) securities with the RBI. When banks avail central bank funding (CBF), the capital impact is estimated on the basis of the increased funding costs at the marginal standing facility (MSF) rate.

Chart 2.11: Projection of SCBs' GNPA Ratios



Sources: RBI supervisory returns and staff calculations.

The results show that under this assumed liquidity risk scenario, the CRAR of SCBs would reduce by additional 80-90 bps by March 2026, owing to expenses related to the use of CBF (Chart 2.12).

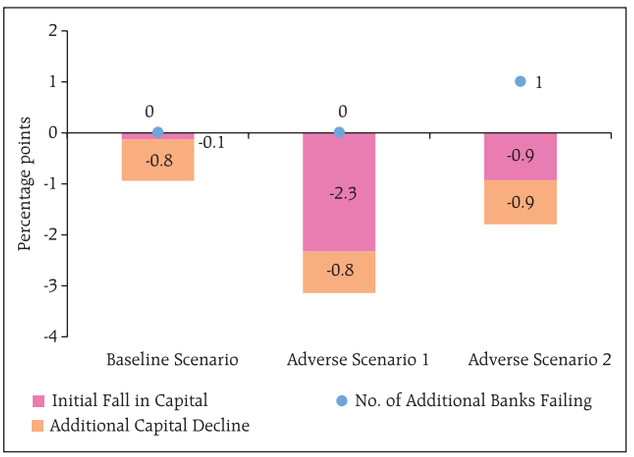
II.1.8 Sensitivity Analysis[11]

2.17 In case of macro stress tests, the shocks are in terms of adverse macroeconomic conditions, while in sensitivity analyses, shocks are applied to single factors like GNPA, interest rate, equity prices, deposits, and the like, one at a time. This sub-section presents the results of top-down sensitivity analyses involving several single-factor shocks to assess the vulnerabilities of SCBs to simulated credit, interest rate, equity and liquidity risks under various stress scenarios[12].

a. Credit Risk

2.18 Credit risk sensitivity has been analysed under two scenarios wherein the system level GNPA ratio is assumed to rise from its prevailing level by (i) one standard deviation (SD)[13]; and (ii) two SD in a quarter. Under a severe shock of two SD during Q2:2024-25: (a) the aggregate GNPA ratio of 46 select SCBs moves up from 2.6 per cent to 8.0 per cent; (b) the system-level CRAR depletes by 350 bps from 16.6 per cent to 13.1 per cent; and (c) the CET1 ratio declines from 13.9 per cent to 10.3 per cent, but both CRAR and CET1 ratio remain well above the respective regulatory minimum levels. The system level capital impairment could be 22.7 per cent in this case (Chart 2.13 a). The reverse stress test shows that a shock of 4.4 SD would be required to bring down the system-level CRAR below the regulatory minimum of 9 per cent. A shock of 6.3 SD would be required to bring down the system-level CET1 ratio below the prescribed regulatory minimum of 5.5 per cent.

Chart 2.12: Impact of Liquidity Risk on Solvency



Sources: RBI supervisory returns and staff calculations.

2.19 Bank-level stress tests indicate that under the severe (two SD) shock scenario, seven banks with a share of 11.8 per cent of SCBs' total assets may fail to maintain the regulatory minimum level of CRAR (Chart 2.13 b). In such a scenario, the CRAR would fall below 7 per cent in the case of three banks (Chart 2.13 c) and six banks would record a decline of over eight percentage points in the CRAR. In general, PVBs and FBs would face lower erosion in CRARs than PSBs under both scenarios (Chart 2.13 d).

b. Credit Concentration Risk

2.20 Stress tests on banks' credit concentration – considering top individual borrowers according to their standard exposures – show that in the extreme scenario of the top three individual borrowers of respective banks failing to repay[14],

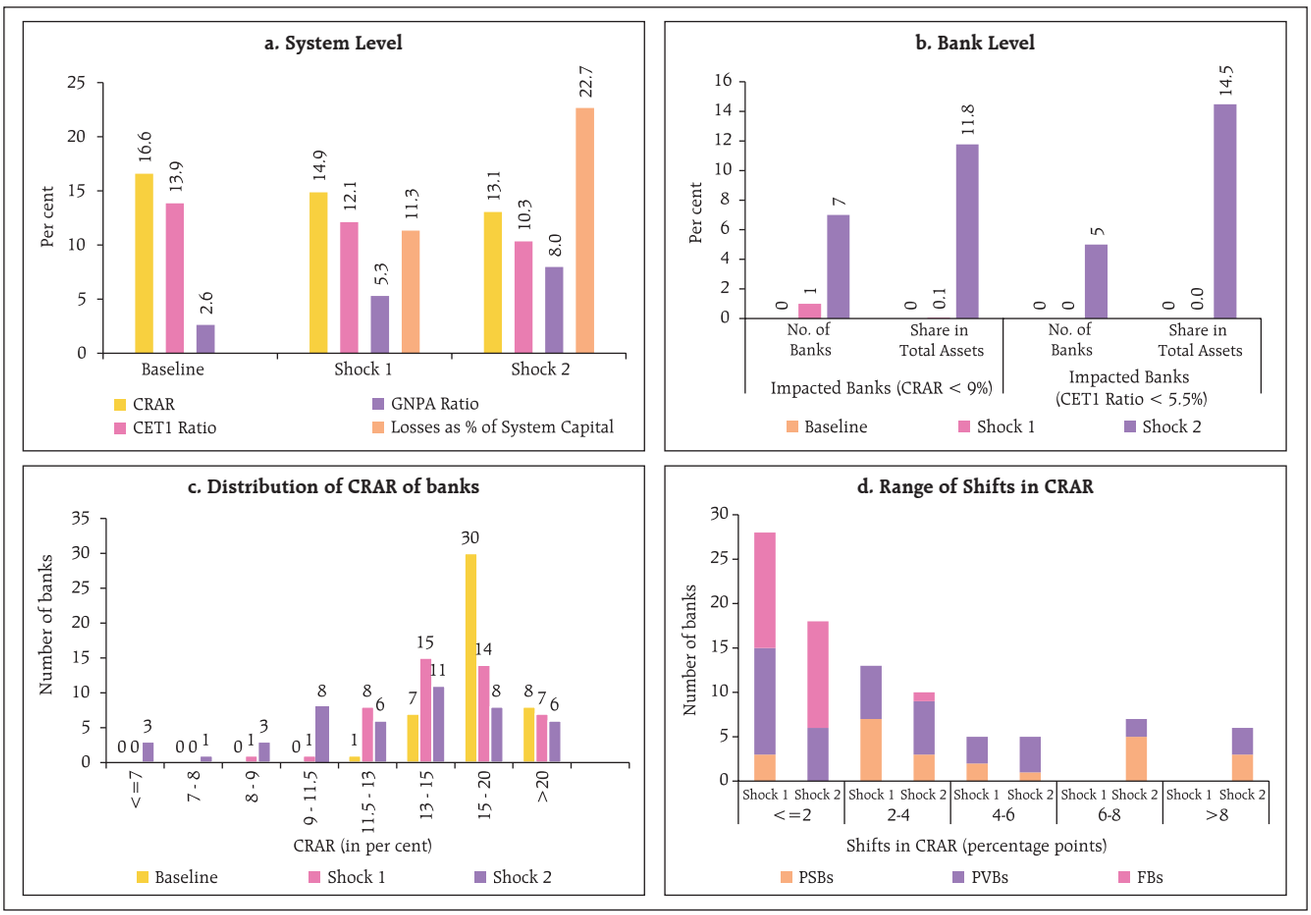
[11] Detailed methodology is provided in Annex 2.

[12] Macro stress test and single factor sensitivity analyses are conducted for a sample of 46 SCBs accounting for 98 per cent of the total assets of the banking sector, excluding RRBs and cooperative banks. From this round, the sample of 46 banks for stress test/ sensitivity analysis has been updated. The sample now includes 12 PSBs, 21 PVBs and 13 FBs. The shocks designed under various hypothetical scenarios are extreme but plausible.

[13] The SD of the GNPA ratio is estimated by using quarterly data for the last 10 years.

[14] In the case of default, the borrower in the standard category is considered to move to the sub-standard category.

Chart 2.13: Credit Risk - Shocks and Outcomes



Note: For a system of select 46 SCBs.
Shock 1: 1 SD shock on GNPA ratio.
Shock 2: 2 SD shock on GNPA ratio.
Sources: RBI supervisory returns and staff calculations.

no bank would face a situation of a drop in CRAR below the regulatory minimum of 9 per cent (Chart 2.14 a). In this extreme stress case, four banks would experience a fall of more than two

Chart 2.14: Credit Concentration Risk: Individual Borrowers – Exposure *(Contd.)*

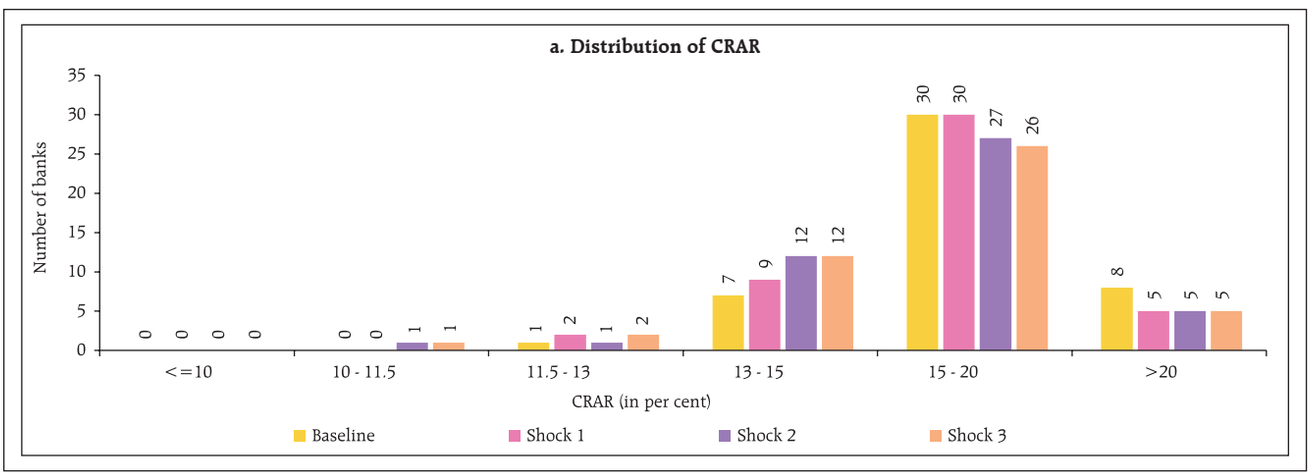
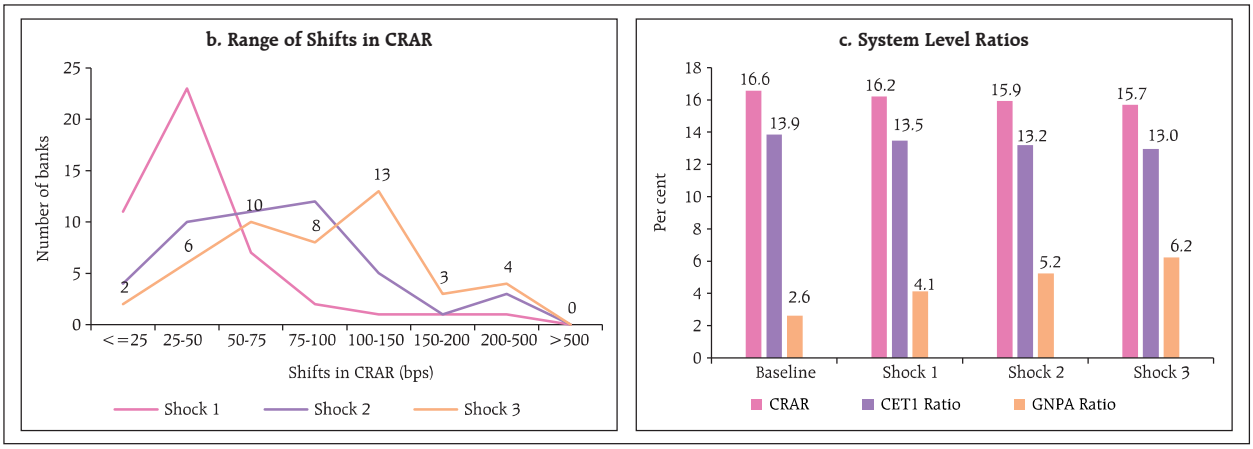


Chart 2.14: Credit Concentration Risk: Individual Borrowers – Exposure *(Concld.)*



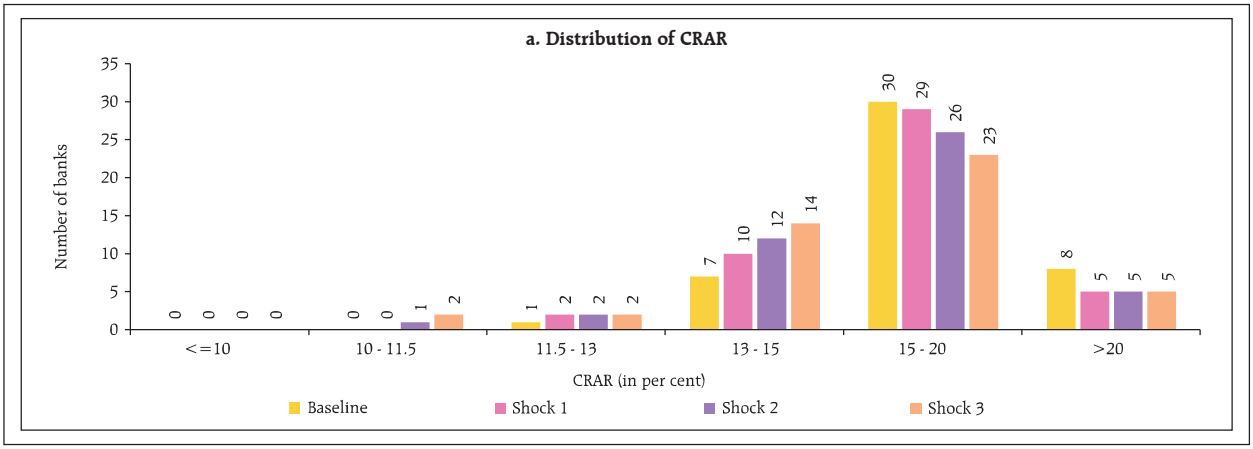
Note: For a system of select 46 SCBs.
Shock 1: Topmost individual borrower fails to meet payment commitments.
Shock 2: Top 2 individual borrowers fail to meet their payment commitments.
Shock 3: Top 3 individual borrowers fail to meet their payment commitments.
Sources: RBI supervisory returns and staff calculations.

percentage points in their CRARs (Chart 2.14 b) and the system level CRAR would fall by 90 bps (Chart 2.14 c).

2.21 Under the extreme scenario of the top three group borrowers in the standard category failing to repay[15], the system level CRAR would decline by 130 bps but the ratio for all banks would remain above the regulatory minimum. Five banks would face a CRAR decline of over two percentage points (Chart 2.15 a, b and c).

2.22 In the extreme scenario of the top three individual stressed borrowers of respective banks failing to repay[16], all the banks would remain resilient (Chart 2.16 a). For the majority of the banks, the CRAR would deplete by 25 bps or less (Chart 2.16 b). Under this scenario,

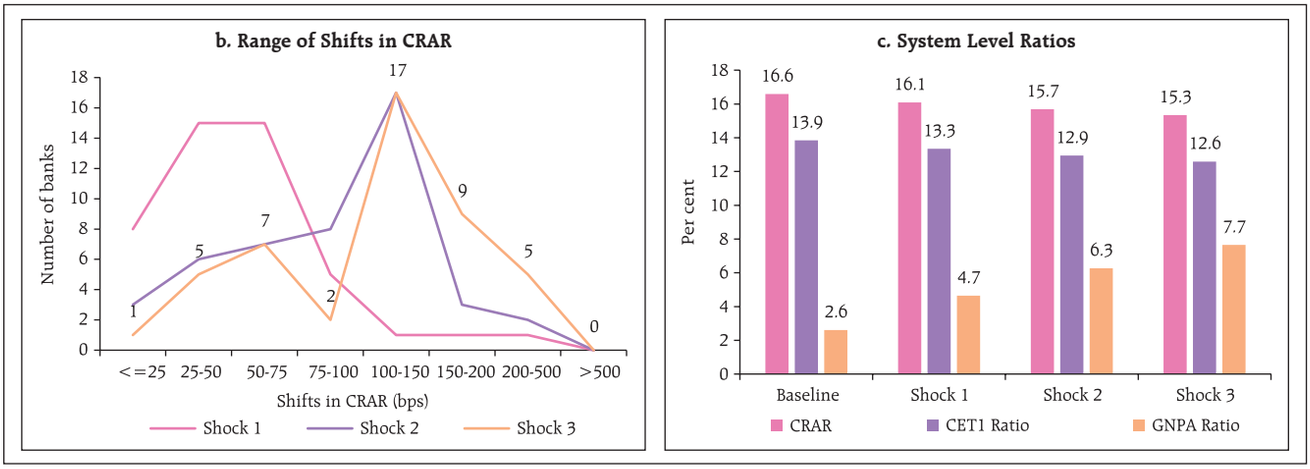
Chart 2.15: Credit Concentration Risk: Group Borrowers – Exposure *(Contd.)*



[15] In the case of default, the group borrower in the standard category is considered to move to the sub-standard category.

[16] In case of failure, the borrower in sub-standard or restructured category is considered to move to the loss category.

Chart 2.15: Credit Concentration Risk: Group Borrowers – Exposure *(Concld.)*



Note: For a system of select 46 SCBs.
Shock 1: The top 1 group borrower fails to meet payment commitments.
Shock 2: The top 2 group borrowers fail to meet payment commitments.
Shock 3: The top 3 group borrowers fail to meet payment commitments.
Sources: RBI supervisory returns and staff calculations.

the system level CRAR would decline by 20 bps (Chart 2.16 c).

c. Sectoral Credit Risk

2.23 Shocks applied on the basis of volatility of industry sub-sector-wise GNPA ratios indicate varying magnitudes of impact. By and large, sectoral credit risk remains muted – a two SD shock to basic metals and energy sub-sectors would reduce the system-level CRAR by 17 bps and 12 bps, respectively, whereas the impacts of shocks on the rest of the sub-sectors are negligible (Table 2.1).

Table 2.1:Decline in System Level CRAR
(basis points, in descending order for top 10 most sensitive sectors)

	1 SD	2 SD
Basic Metal and Metal Products (1048 per cent)	9	17
Infrastructure - Energy (615 per cent)	6	12
Infrastructure - Transport (145 per cent)	3	6
All Engineering (220 per cent)	2	5
Textiles (121 per cent)	2	4
Vehicles, Vehicle Parts and Transport Equipments (673 per cent)	1	2
Construction (111 per cent)	1	2
Food Processing (66 per cent)	1	2
Chemicals (222 per cent)	1	2
Gems and Jewellery (121 per cent)	1	1

Notes: (1) For a system of select 46 SCBs.
(2) Numbers in parentheses represent the growth in GNPA of that sub-sector due to 1 SD shock to the sub-sector's GNPA ratio.
Sources: RBI supervisory returns and staff calculations.

Chart 2.16: Credit Concentration Risk: Individual Borrowers – Stressed Advances *(Contd.)*

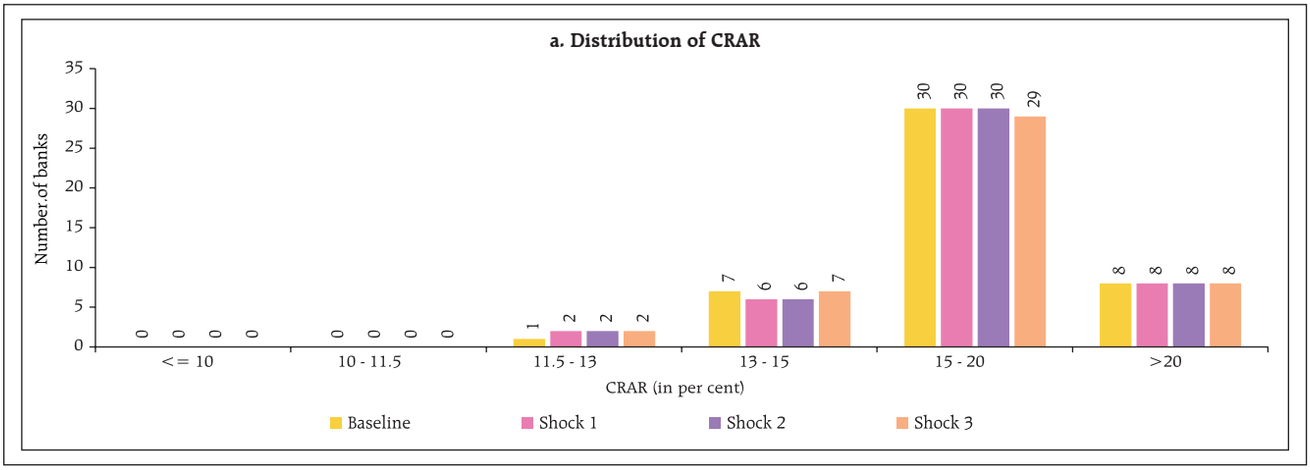
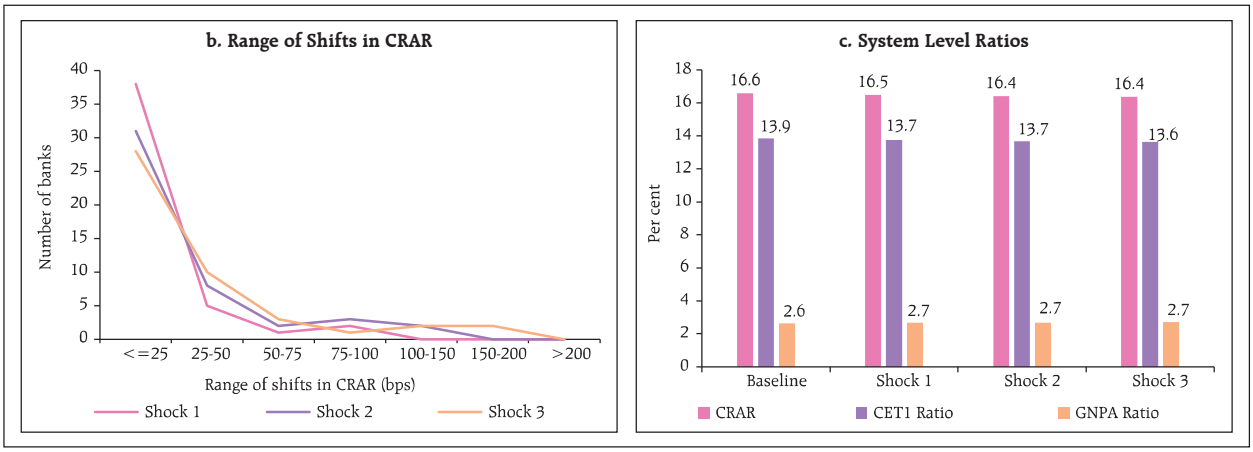


Chart 2.16: Credit Concentration Risk: Individual Borrowers – Stressed Advances *(Concld.)*



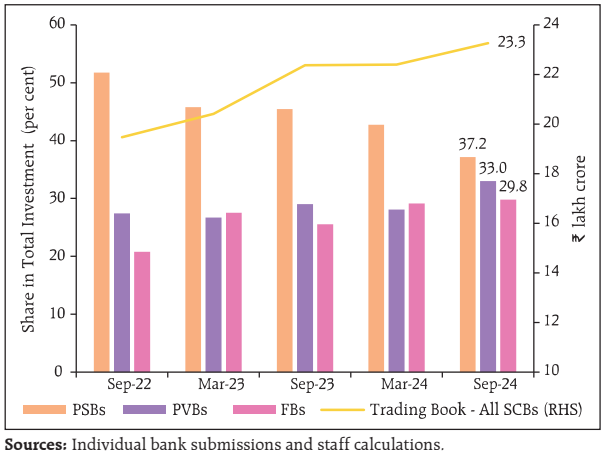
Note: For a system of select 46 SCBs.
Shock 1: Topmost stressed individual borrower fails to meet payment commitments.
Shock 2: Top 2 stressed individual borrowers fail to meet their payment commitments.
Shock 3: Top 3 stressed individual borrowers fail to meet their payment commitments.
Sources: RBI supervisory returns and staff calculations.

d. Interest Rate Risk[17 18]

2.24 A revised framework for classification, valuation and operation of SCBs' investment portfolios was introduced by the Reserve Bank[19] with effect from April 1, 2024 under which the classification and operation norms for investments are principally aligned with global financial reporting standards. Major changes include the removal of ceiling on held to maturity (HTM) book, a clearly identifiable trading book, introduction of fair value hierarchy for investments and symmetric treatment of fair value gains and losses.

2.25 For the sample of SCBs under assessment, the market value of investments subject to fair value has been on the rise and stood at ₹23.3 lakh crore in September 2024. Out of this, 68.2 per cent was in the available for sale (AFS) category and the remaining amount in the fair value through profit and loss (FVTPL) category, which includes the held for trading (HFT) portfolio (Chart 2.17). The fall in the share of the AFS portfolio (from 89.3 per cent in March 2024) is mainly attributable to the framework revision. The clearly identifiable trading book (*viz.*, the HFT category) accounts for 93.2 per cent of the FVTPL portfolio. PSBs' share in the fair-valued investment portfolio of SCBs has declined to reach a low of 37.2 per cent in September 2024, while the share of PVBs has increased to nearly one-third.

Chart 2.17: AFS and FVTPL (including HFT) Portfolios: Bank-group wise



Sources: Individual bank submissions and staff calculations.

[17] Prior period consistency and comparability may be limited as historical data has not been recast using the updated accounting standards.

[18] The analysis in this portion is restricted to investments in India by the domestic operations of SCBs. For HTM, AFS and FVTPL (including HFT) portfolios, only interest rate related instruments and for "Investment in Subsidiaries, Associates and Joint Ventures" both interest and non-interest related investments are taken into account.

[19] "Master Direction - Classification, Valuation and Operation of Investment Portfolio of Commercial Banks (Directions)" dated September 12, 2023.

2.26 The sensitivity (PV01[20]) of the AFS portfolio decreased in September 2024 relative to March 2024, predominantly on account of shrinkage in the size of the AFS portfolio. The modified duration of PSBs' and PVBs' AFS portfolios rose, whilst it declined for FBs.

2.27 The PV01 of FVTPL (including HFT) portfolios of all banking cohorts increased because of the significant increase in market value of securities held in the portfolio (Table 2.2). Additionally, the modified duration of the FVTPL portfolio of PVBs and FBs rose by 50 per cent, while it declined marginally for PSBs.

2.28 It is assessed that the impact of a parallel upward shift of 250 bps in the yield curve on the fair-valued portfolio (AFS and FVTPL) would reduce the system level CRAR and CET1 ratio by 114 and 115 bps, respectively (Table 2.3). At a disaggregated level, four foreign banks' CRAR will fall below the regulatory minimum of 9 per cent in the event of such a major shock.

2.29 As of September 2024, yields have decreased across the curve from their levels prevailing in March 2024. This is because the Government borrowing programme (gross and net) for 2024-25 announced in the Union Budget in July 2024 was lower than that announced in the interim budget in February 2024 – the adherence to the glide path of fiscal consolidation generated positive sentiments. The shorter end of the yield curve eased on account of the announcement in the Union Budget of reduction of T-bills borrowing by ₹1 lakh crore, easing of US treasury yields and increased demand by FPIs across the curve. Yields have trended up since end-September, 2024 on account of the negative sentiment caused by acceleration of domestic retail inflation (Chart 2.18).

2.30 The updated accounting guidelines require symmetrical treatment of fair value gains/losses for AFS and FVTPL portfolios, wherein both mark to market (MTM) gains and losses will be recognised in the books. The unrealised MTM gains/losses from performing investments in the AFS portfolio will be routed through the newly constituted "AFS-Reserve". This would be considered as common equity tier 1 (CET1) capital subject to certain conditions. Similarly, MTM gains/losses in the FVTPL portfolio will be reported through the profit and loss (P&L) account, which is in

Table 2.2: PV01 of AFS and FVTPL (including HFT) Portfolios

(in ₹crore)

	AFS Portfolio		FVTPL (including HFT) Portfolio	
	Mar-24	Sep-24	Mar-24	Sep-24
PSBs	231.4	209.1	4.4	48.5
PVBs	93.2	93.6	26.3	101.6
FBs	215.4	82.7	68.5	275.3

Note: FVTPL (including HFT) data for March 2024 pertains to HFT portfolio as per the earlier accounting norms.

Sources: Individual bank submissions and staff calculations.

Table 2.3: Interest Rate Risk – Bank-groups - Shocks and Impacts

(under shock of 250 basis points parallel upward shift of the INR yield curve)

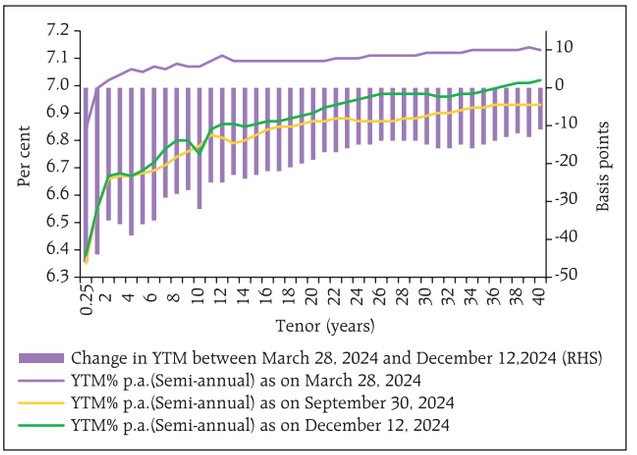
	PSBs		PVBs		FBs		All SCBs	
	AFS	FVTPL (incl. HFT)	AFS	FVTPL (incl. HFT)	AFS	FVTPL (incl. HFT)	AFS	FVTPL (incl. HFT)
Modified Duration (year)	2.9	3.4	1.9	3.7	2.2	8.7	2.4	5.7
Share in total Investments (per cent)	18.3	3.7	21.2	12.0	48.3	40.8	22.6	10.5
Reduction in CRAR (bps)	77		60		605		114	
Reduction in CET1 (bps)	78		61		608		115	

Note: Share of total investments has been computed excluding investment in associates, subsidiaries and Joint Ventures (JVs).

Sources: Individual bank submissions and staff calculations.

[20] PV01 is a measure of sensitivity of the absolute value of the portfolio to a one basis point change in the interest rate.

Chart 2.18: Yield Curves and Shift in Yields across Tenors since March 2024 (updated till December 12, 2024)



Source: FBIL.

contrast to previous standards which overlooked MTM appreciation while accounting for MTM depreciation in the P&L statement.

2.31 Trading profits increased on an annual basis (y-o-y) for all bank cohorts in Q2:2024-25, but on a sequential (q-o-q) basis, they increased for PSBs and FBs. Securities trading earnings contributed to more than a third of FBs' net operating income and were much lower for PSBs and PVBs (Table 2.4).

2.32 PSBs increased their holdings in government securities (G-secs) and state development loans (SDLs) as compared to other HTM-eligible securities (Chart 2.19). PVBs reduced their holding of G-secs in the HTM category while increasing their holding of SDLs. The inclusion of pass-through certificates

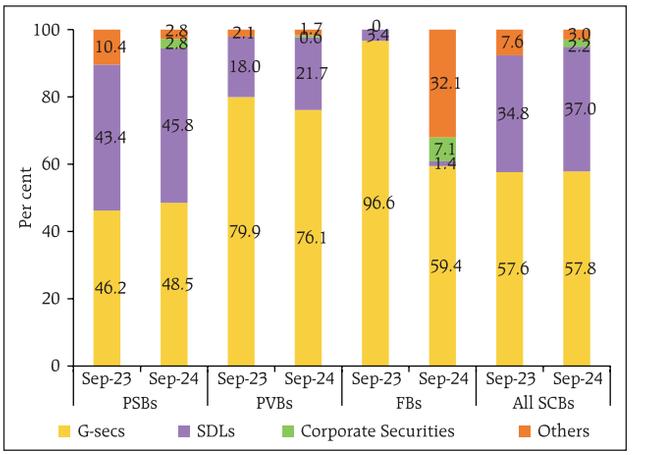
Table 2.4: Other Operating Income - Profit/ (Loss) on Securities Trading – All Banks

(in ₹crore)

	Q2: 2023-24	Q3: 2023-24	Q4: 2023-24	Q1: 2024-25	Q2: 2024-25
PSBs	3,914 (6.9)	3,187 (6.4)	7,565 (10.7)	4,883 (7.5)	9,134 (12.6)
PVBs	872 (1.4)	3,628 (5.4)	10,459 (13.7)	4,960 (6.6)	3,803 (5.1)
FBs	-617 (-5.2)	-1,864 (-19.6)	1,546 (17.6)	968 (8.0)	4,363 (33.7)

Note: Figures in parentheses represent other operating income (OOI)-Profit/ (Loss) on securities trading as a percentage of net operating income.
Source: RBI supervisory returns.

Chart 2.19: HTM Portfolio – Composition



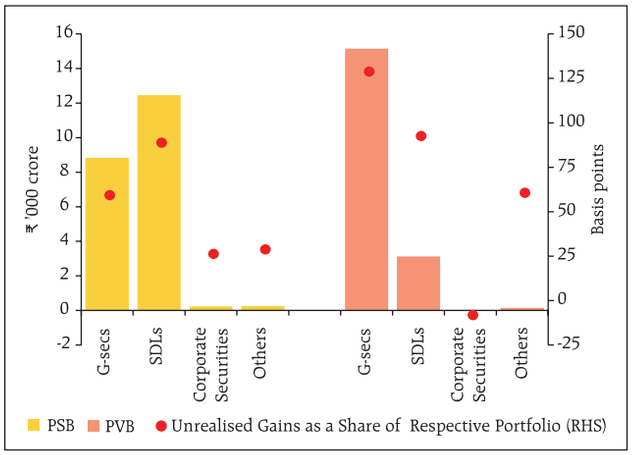
Note: Prior to April 1, 2024 corporate securities were not eligible to be included in HTM book.
Sources: Individual bank submissions and staff calculations.

of standard assets in the HTM book has increased the share of 'others' category for foreign banks – it forms nearly a third of their HTM book. Corporate bonds, which are eligible to be included in HTM books beginning April 1, 2024, accounted for 2.2 per cent of SCBs' HTM holdings as of September 30, 2024.

2.33 In September 2024, the notional MTM losses in the HTM books of SCBs (PSBs and PVBs) turned a corner, with a notional gain of ₹40,187 crore from a notional loss of ₹34,024 crore in March 2024, as the yield curve shifted down in H1:2024-25. The notional gains were predominantly concentrated among the larger banks. Nine banks (PSBs + PVBs) continue, however, to have notional MTM losses in their HTM book.

2.34 The distribution of unrealised gains across investment categories suggests that PVBs have the largest proportion of gains in their G-sec books, while PSBs have the largest proportion of their gains in their SDL books. PSBs have MTM gains in all categories of their HTM books. The loss in the corporate securities portfolio of PVBs is due to lower grade corporate bonds held in the HTM book (Chart 2.20).

Chart 2.20: HTM Portfolio – Unrealised Gain/ Loss as on September 30, 2024



Sources: Individual bank submissions and staff calculations.

2.35 If a parallel upward shock of 250 bps in the yield curve is applied, the MTM impact on the HTM portfolio of banks excluding unrealised gains/losses would reduce the system level CRAR by 318 bps but no bank would see a reduction in CRAR and CET-I ratio below the respective regulatory minimums.

2.36 The new guidelines do not place any ceiling on investments that can be made under the HTM category, unlike the previous guidelines which limited HTM holdings of banks. However, the new guidelines have not resulted in any substantial increase in the holding of statutory liquidity ratio (SLR) eligible securities in HTM books of PSBs and PVBs, which amounted to 22.9 per cent and 18.5 per cent of their net demand and time liabilities (NDTL), respectively, while it stood at 4.6 per cent for FBs.

2.37 The revised framework has established a new category for classification of investments *viz.*, 'Investments in Subsidiaries, Associates and Joint Ventures' separate from the other investment categories (*viz.*, HTM, AFS and FVTPL). This portfolio is predominated by the equity portfolio and has large unrealised gains, which could provide strength to the balance sheet during periods of stress, but its valuation is subject to market risk.

2.38 An assessment of the interest rate risk of banks[21] using traditional gap analysis (TGA) for rate sensitive global assets, liabilities and off-balance sheet items estimates that for a 200 bps increase in interest rate, the earnings at risk (EAR) for time buckets up to one year is 11.7 per cent and 11.3 per cent of NII for PSBs and PVBs, respectively. The impact would be minimal for FBs and SFBs (Table 2.5). The impact of an interest rate rise on earnings would be positive as the cumulative gap[22] at bank group level was positive in September 2024. Conversely, if the interest rates would decrease, they would lead to an adverse impact.

2.39 As per the duration gap analysis[23] (DGA) of rate sensitive global assets, liabilities and off-balance sheet items, the market value of equity (MVE) for PVBs, FBs and SFBs would reduce from an upward movement in the interest rate, while that of PSBs would be positively impacted. The MVE of SFBs would be particularly weighed down by an interest rate rise (Table 2.6). If the interest rates decrease, the impact would be in the opposite direction.

Table 2.5: Earnings at Risk (EAR) - Traditional Gap Analysis (TGA)

Bank Group	Earnings at Risk (till one year) as percentage of Net Interest Income (NII)	
	100 bps increase	200 bps increase
PSBs	5.9	11.7
PVBs	5.7	11.3
FBs	0.5	0.9
SFBs	0.9	1.8

Sources: RBI supervisory returns and staff calculations.

[21] In terms of circular on "Guidelines on Banks' Asset Liability Management Framework – Interest Rate Risk" dated November 04, 2010.

[22] Gap refers to rate sensitive assets (RSA) minus rate sensitive liabilities (RSL). Advances, investments, swaps/ forex swaps, and reverse repos are major contributors to RSA whereas deposits, swaps/ forex swaps and repos are observed to be the main elements under RSL.

[23] The DGA involves bucketing of all RSA and RSL as per residual maturity/ re-pricing dates in various time bands and computing the Modified Duration Gap (MDG).

Table 2.6: Market Value of Equity (MVE)-Duration Gap Analysis (DGA)

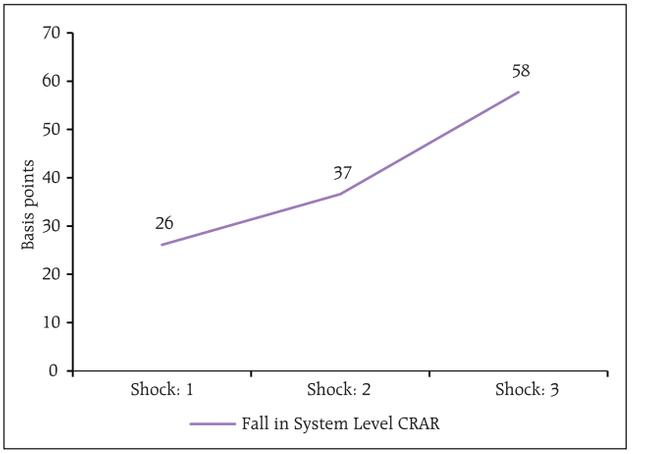
Bank Group	Market Value of Equity (MVE) as percentage of Equity	
	100 bps increase	200 bps increase
PSBs	0.3	0.5
PVBs	-1.1	-2.2
FBs	-3.7	-7.3
SFBs	-5.8	-11.6

Sources: RBI supervisory returns and staff calculations.

e. Equity Price Risk

2.40 As banks have limited direct capital market exposures owing to regulatory prescriptions, any impact of a possible significant fall in equity prices on banks' CRAR would be low for the system of 46 banks. Under scenarios of 25 per cent, 35 per cent and 55 per cent drop in equity prices, the system level CRAR would reduce by 26 bps, 37 bps and 58 bps, respectively (Chart 2.21).

Chart 2.21: Equity Price Risk



Note: For a system of select 46 SCBs.
Shock 1: Equity prices drop by 25 per cent.
Shock 2: Equity prices drop by 35 per cent.
Shock 3: Equity prices drop by 55 per cent.
Sources: RBI supervisory returns and staff calculations.

f. Liquidity Risk

2.41 Liquidity risk analysis aims to capture the impact of any possible run on deposits and increased demand for unutilised portions of sanctioned/committed/guaranteed credit lines. The methodology for the liquidity stress test has been updated (Box 2.2).

Box 2.2: Revamped Liquidity Stress Test of SCBs based on LCR Framework

In 2010, the Basel Committee on Banking Supervision (BCBS) introduced two key minimum standards for funding liquidity: the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR) (BCBS, 2010). The LCR [*viz.*, the ratio of high quality liquid assets (HQLA) holdings to total net cash outflows over the next 30 calendar days] aims to enhance banks' short-term resilience by ensuring that they hold enough HQLAs to withstand a 30-day stress scenario. The NSFR, on the other hand, focuses on long-term stability by requiring banks to finance their operations with more reliable and stable funding sources. Since 2019, Indian banks are required to maintain a minimum LCR of 100 per cent on a continuous basis, although certain temporary relaxations were provided during the COVID-19 pandemic.

The LCR is computed on the basis of granular data on HQLA as well as expected cash inflows and outflows over the next 30 days, by applying appropriate weights to each of these components (RBI, 2014). The baseline scenario for the stress test applies weights to each component, similar to that used for LCR computation. The adverse scenarios are designed by applying higher weights (run-off rates) to certain cash outflows than the baseline (Table 1).

The LCR-based liquidity stress test has been performed for a sample of 46 major SCBs, based on the data submitted by banks for the September 2024 quarter. The results show that the aggregate LCR of 46 SCBs may reduce from 128.0 per cent in the baseline scenario to 120.9 per cent in stress scenario 1 and further to 114.8 per cent in stress scenario 2. No bank would fail to maintain LCR above the minimum requirement of 100 per cent in stress scenario 1, while two banks would fail to meet minimum regulatory LCR in stress scenario 2 (Chart 1a).

The median LCRs of these banks decreases from 130.3 per cent in the baseline to 123.2 per cent under stress

(Contd.)

Table 1: Run-off Factors applied on Cash Outflow Components

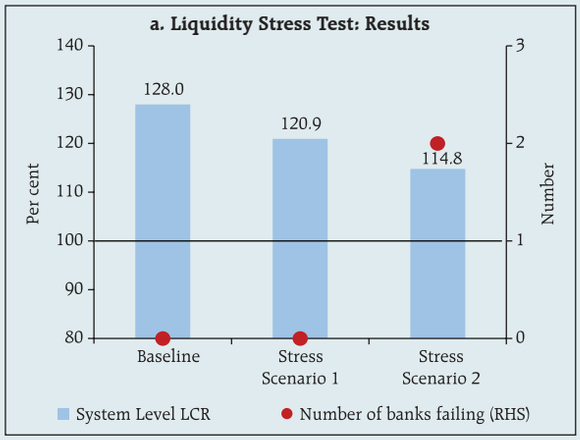
(per cent)

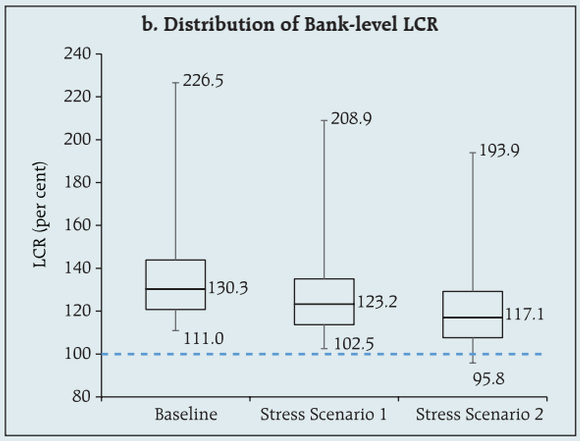
Cash Outflow Components	Baseline	Stress Scenario 1	Stress Scenario 2
Retail Deposits			
Stable deposits	5	6	7
Less stable retail deposits	10	11	12
Unsecured Wholesale Funding			
Demand and term deposits, residual maturity < 30 days, small business			
Stable deposits	5	6	7
Less stable deposits	10	11	12
Non-financial corporates, sovereigns, central banks, multilateral development banks, PSEs	40	42.5	45
Currently undrawn but committed credit and liquidity facilities			
Retail and small business	5	10	12
Non-financial corporates, sovereigns, central banks, multilateral development banks, PSEs			
Credit facilities	10	12	15
Liquidity facilities	30	40	50

scenario 1, and further to 117.1 per cent under stress scenario 2 (Chart 1b).

Foreign banks (FBs) have the highest LCR among bank groups under all the three scenarios. The impact of liquidity stress on PSBs is the highest (decline of 14.5 percentage points under stress scenario 2) among bank groups (Chart 2).

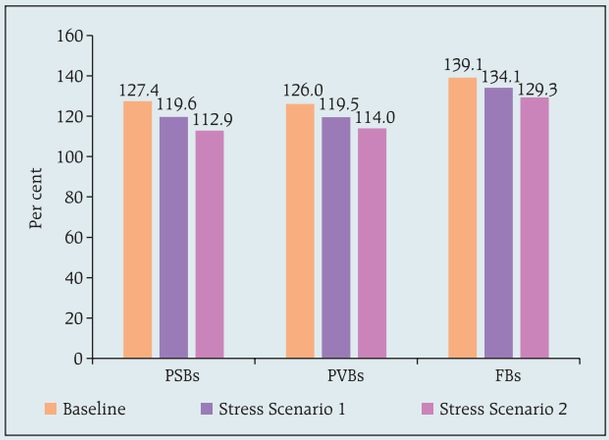
Chart 1: LCR-based Liquidity Stress Test





Source: RBI staff calculations.

Chart 2: Bank Group-wise LCR under alternate Scenarios



Source: RBI staff calculations.

References:

1. Basel Committee on Banking Supervision. (2010). Basel III: International framework for liquidity risk measurement, standards and monitoring. Basel: Bank for International Settlements.

2. Reserve Bank of India (2014). Basel III Framework on Liquidity Standards – Liquidity Coverage Ratio (LCR), Liquidity Risk Monitoring Tools and LCR Disclosure Standards, June 09, 2014. RBI/2013-14/635 DBOD.BP.BC.No.120/21.04.098/2013-14.

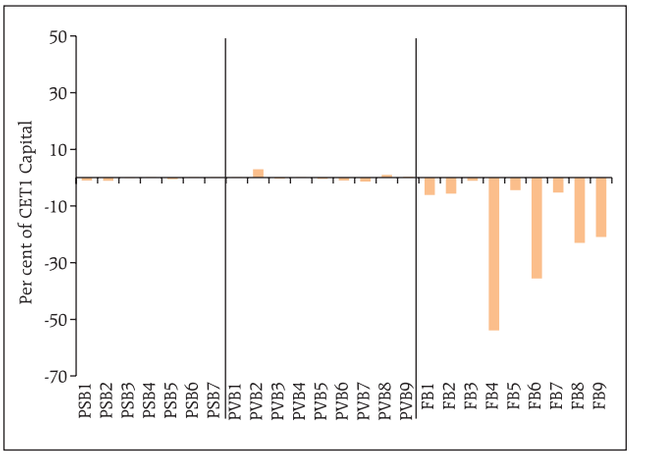
II.1.9 Bottom-up Stress Tests: Derivatives Portfolio

2.42 A series of bottom-up stress tests (sensitivity analyses) on derivatives portfolios have been conducted for select banks[24] with the reference date of end-September 2024. The derivatives portfolios of the banks in the sample are subjected to four separate shocks on interest rates and foreign exchange rates. While the interest rate shocks range from 100 to 250 basis points, in the case of foreign exchange rates, shocks of 20 per cent appreciation/depreciation are assumed. The stress tests are carried out for individual shocks on a stand-alone basis.

2.43 Keeping parity with the trend observed in the recent past, most of the FBs maintained a significantly negative net MTM position as a proportion to CET1 capital in September 2024. The MTM impact is, by and large, muted for PSBs and PVBs (Chart 2.22). For the overall system, the extent of negative MTM position increased in the half-year ending September 2024.

2.44 The stress test results show that the select set of banks would, on an average, gain from an interest rate rise and lose from an interest rate fall (Chart 2.23). As regards exposures to forex derivatives, banks stand to benefit more from INR depreciation in September 2024 than in March 2024; also, their potential losses from INR appreciation get reduced.

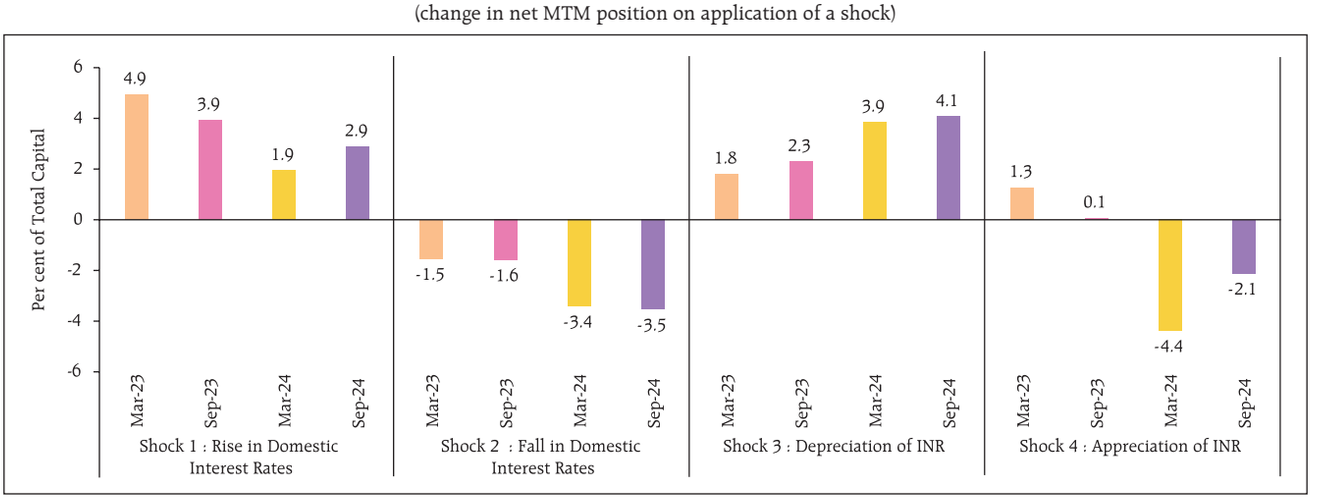
Chart 2.22: MTM Position of Total Derivatives Portfolio of Select Banks – September 2024



Note: PSB: Public sector bank, PVB: Private sector bank, FB: Foreign bank.
Source: Sample banks (bottom-up stress tests on derivatives portfolio).

2.45 The income from the derivatives portfolios includes changes in net MTM positions and the realised income. The contribution of the derivatives portfolio of FBs to their net operating income (NOI)

Chart 2.23: Impact of Shocks on Derivatives Portfolios of Select Banks
(change in net MTM position on application of a shock)



Note: Change in net MTM due to an applied shock is with respect to the baseline.
Source: Sample banks (bottom-up stress tests on derivatives portfolio).

[24] Stress tests on derivatives portfolios were conducted by a sample of 25 banks, constituting the major active authorised dealers and interest rate swap counterparties. Details of test scenarios are given in Annex 2.

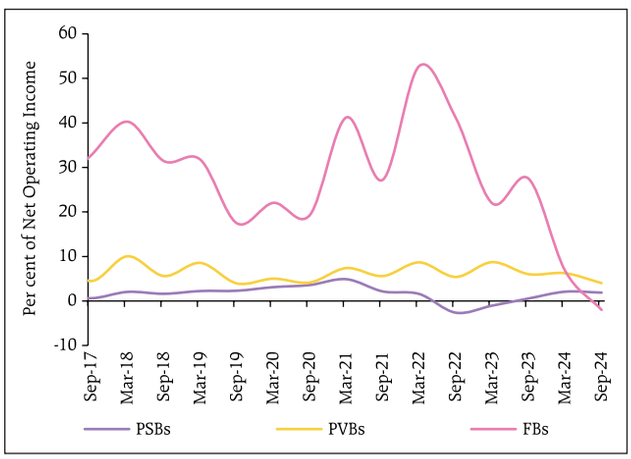
hit a low in March 2024 and then turned negative in September 2024. A possible reason for the same may be that their realised income was unable to compensate for the decrease in their net MTM positions (net MTM positions of most FBs turned more negative). For PSBs and PVBs, the contribution declined marginally in September 2024 as compared to March 2024, although income from the derivatives portfolios witnessed an uptick in the case of PSBs (Chart 2.24). Based on the notional principal amount, FBs have more diversified counterparties while most of the positions taken by PVBs and PSBs are with other banks.

II.2 Primary (Urban) Cooperative Banks[25]

2.46 Credit by primary urban cooperative banks (UCBs) recorded a growth of 7.4 per cent (y-o-y)[26] in September 2024. Both scheduled UCBs (SUCBs) and non-scheduled UCBs (NSUCBs) recorded increases in growth (Chart 2.25 a).

2.47 The capital position of UCBs has remained robust, with their combined CRAR rising to 17.5 per cent in September 2024. This improvement has been mainly due to Tier 1[27] institutions (Chart 2.25 b and c).

Chart 2.24: Income from the Derivatives Portfolio



Source: Sample banks (bottom-up stress tests on derivatives portfolio).

2.48 The GNPA and NNPA ratios of UCBs increased in September 2024 from March 2024, but have remained below September 2023 levels (Chart 2.25 d and e). The provisioning coverage ratio (PCR), which showed improvement in March 2024, has decreased to 67.5 per cent in September 2024 (Chart 2.25 f). GNPA ratios of large borrowers, which accounted for 23.8 per cent of UCBs' loan book, followed similar movements as the overall GNPA ratio (Chart 2.25 g). Improvement in asset quality was witnessed across all tiers, except the smallest one (Tier 1), in September 2024 from a year ago (Chart 2.25 h).

2.49 UCBs' profitability ratios went up in September 2024 from March 2024, despite a broad-based moderation of the net interest margin (NIM). However, these ratios declined in H1:2024-25 from a year ago (Chart 2.25 i, j and k). Compared to September 2023, both RoA and RoE decreased in September 2024 for all tiers, except for Tier 1 (Chart 2.25 l).

II.2.1 Stress Testing

2.50 Stress tests were conducted on a select set of UCBs[28] to assess credit risk (default risk and concentration risk), market risk (interest rate risk in trading book and banking book) and liquidity risk, based on their financial positions reported for September 2024.

[25] Data are provisional and based on off-site surveillance (OSS) returns.

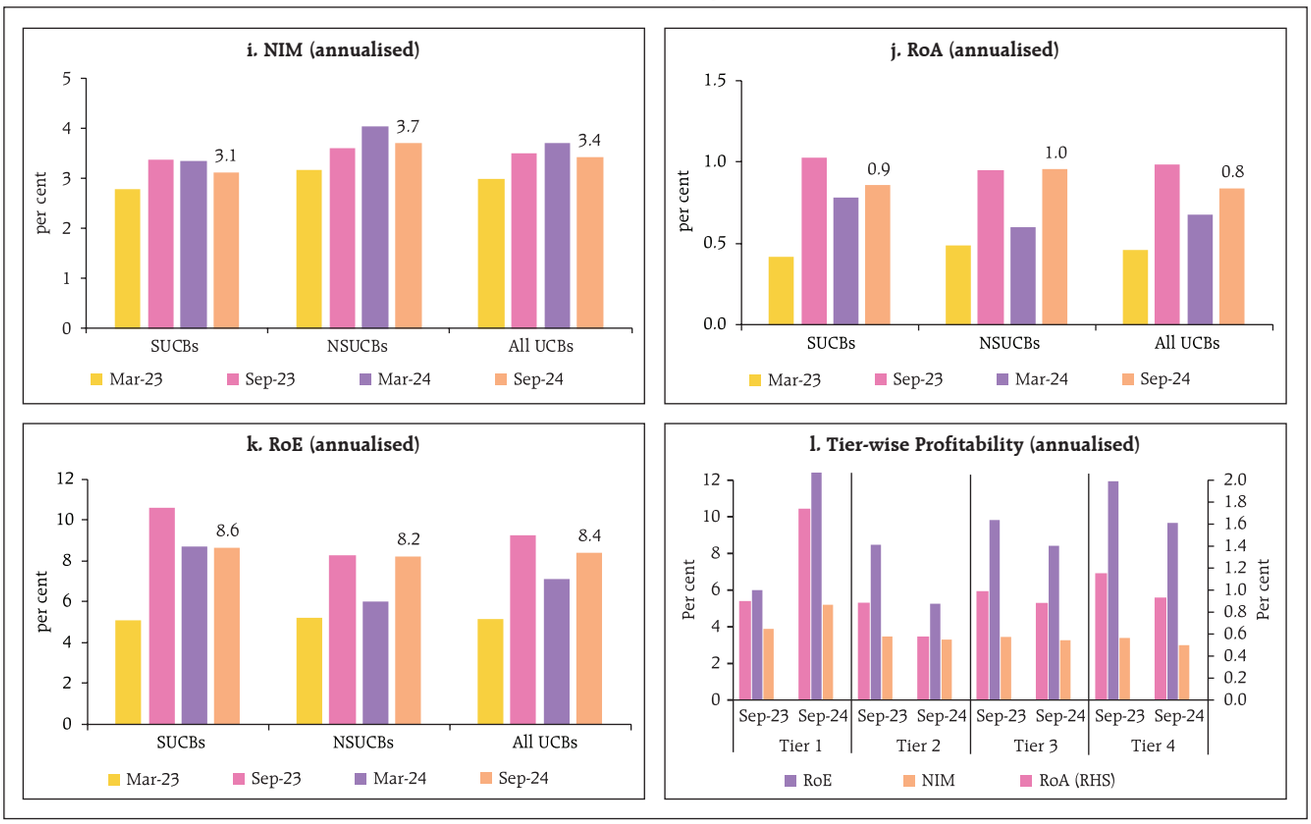
[26] Based on common sample of 1438 UCBs covering over 90 per cent of gross loans extended by UCBs.

[27] Revised Regulatory Framework for Urban Co-operative Banks (UCBs) – Net Worth and Capital Adequacy (Circular DOR.CAP.REC.No.86/09.18.201/2022-23 dated December 01, 2022 and DOR.CAP.REC. No.109/09.18.201/2022-23 dated March 28, 2023).

[28] The stress test is conducted with reference to the financial position of September 2024 for select 197 UCBs with asset size of more than ₹500 crore, excluding banks under the Reserve Bank's All Inclusive Directions (AID). These 197 UCBs together cover 69 per cent of the total assets of the UCB sector. The detailed methodology used for stress test is given in Annex 2.

Chart 2.25: Credit Profile and Asset Quality Indicators of UCBs *(Contd.)*

Chart 2.25: Credit Profile and Asset Quality Indicators of UCBs *(Concld.)*



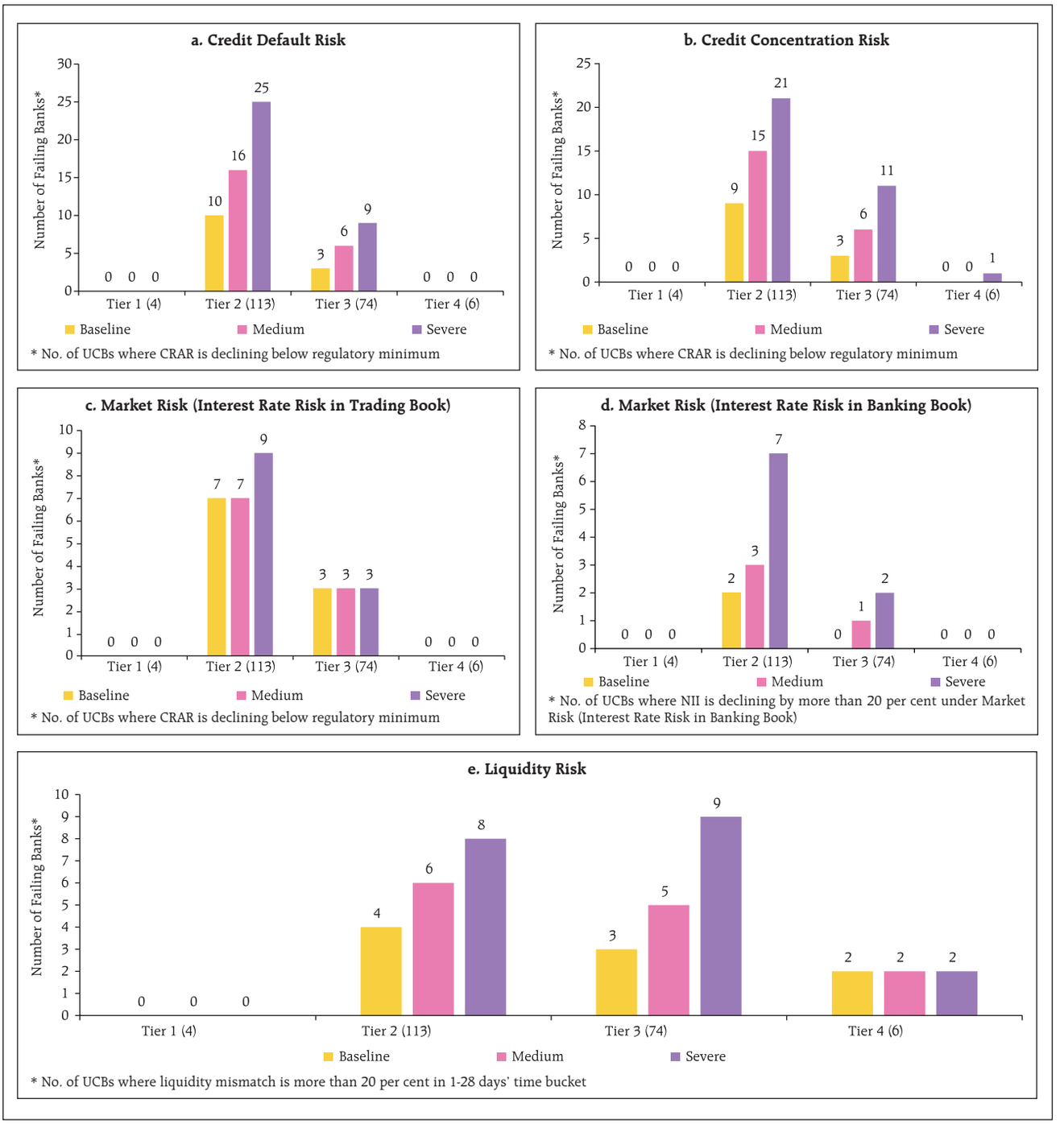
Sources: RBI supervisory returns and staff calculations.

2.51 All banks in the Tier 4 UCB sample - the largest category of UCBs with deposits above ₹10,000 crore - would be able to meet the minimum regulatory requirement[29] of 10 per cent CRAR even under a severe stress scenario for credit default risk. Under a severe stress scenario for credit concentration risk, however, one Tier 4 UCB would fail. In case of liquidity risk, two UCBs in the Tier 4 category will face a liquidity mismatch of more than 20 per cent in 1-28 days maturity bucket under the severe stress scenario. For Tier 2 and Tier 3 UCBs, the impact of credit default risk and credit concentration risk under the severe stress scenario is significant. The smallest UCBs (Tier 1) show resilience under stress scenarios for all the tested risk factors (Chart 2.26).

2.52 Under the severe stress scenario of credit default risk, credit concentration risk and interest rate risk in the trading book, the system level CRAR would reduce from the pre-shock position of 16.9 per cent to 14.9 per cent, 13.5 per cent and 15.5 per cent, respectively. A severe interest rate shock in the banking book would dent the system level net interest income (NII) by 6.9 per cent. At the aggregate level, there would be no liquidity mismatch in 1-28 days time bucket under the severe stress scenario.

[29] The regulatory minimum CRAR for Tier 1 UCBs is 9 per cent and for the UCBs in Tiers 2 to 4 is 10 per cent. Further, UCBs in Tiers 2 to 4 shall achieve the CRAR of at least 11 per cent by March 31, 2025, and 12 per cent by March 31, 2026.

Chart 2.26: Stress Test of UCBs



Notes: Figures in brackets represent sample size of the Tier.
Sources: RBI supervisory returns and staff calculations.

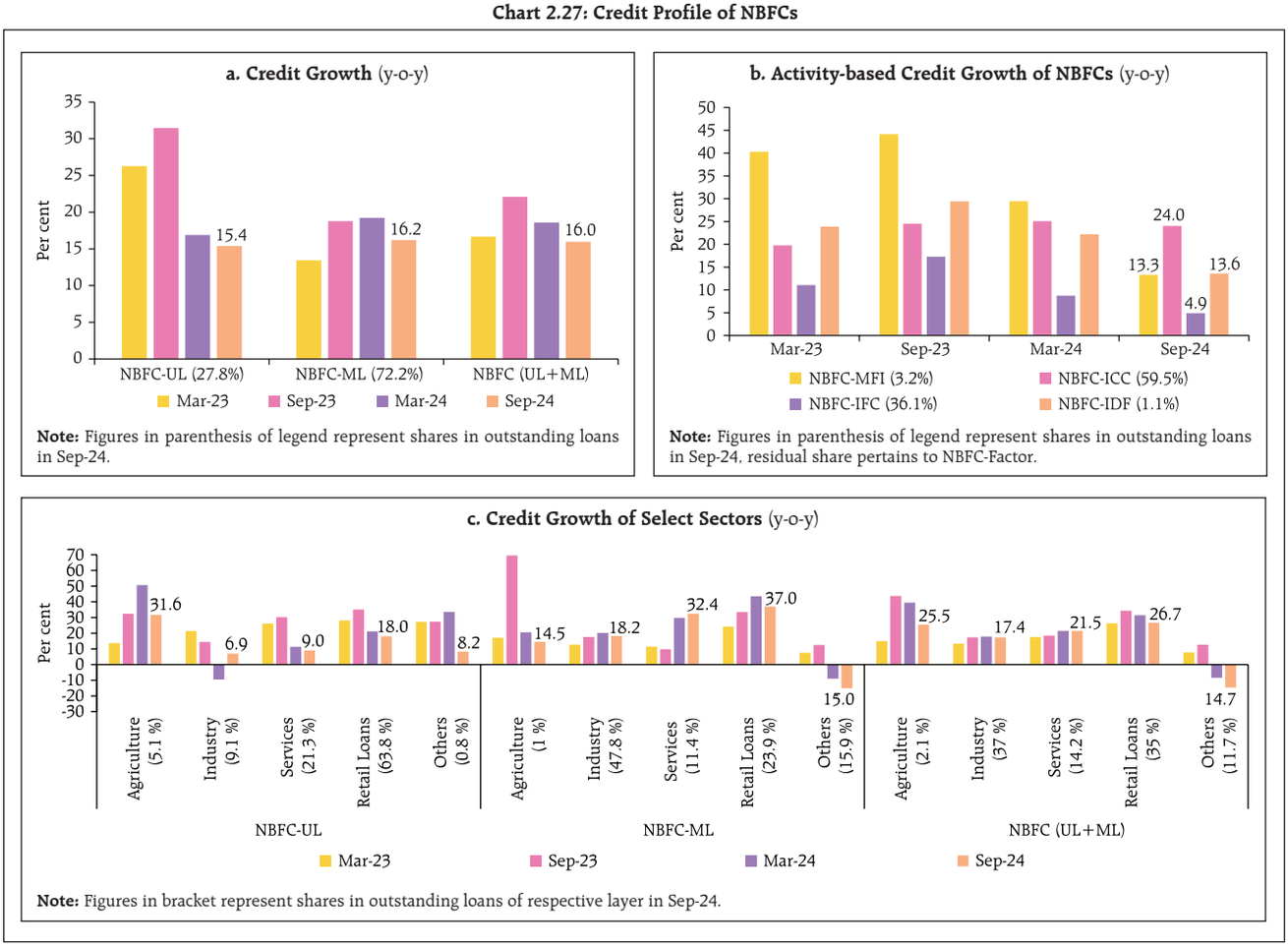
II.3 Non-Banking Financial Companies (NBFCs)[30]

2.53 NBFCs have been categorised into four layers - Base Layer (6.0 per cent[31]); Middle Layer (71.2 per cent); Upper Layer (22.8 per cent); and Top Layer – with effect from October 1, 2022. The focus in this section is on NBFCs in the upper layer and the middle layer (excluding CICs, HFCs and SPDs).

2.54 The credit growth of NBFCs slowed down to 16.0 per cent from 22.1 per cent a year ago, due to the high base effect and the increased risk weight for consumer lending prescribed by the Reserve Bank in November 2023. This impact was especially pronounced for NBFC-UL, comprising mostly of NBFC-ICCs whose portfolios are dominated by retail lending (Chart 2.27 a).

2.55 In September 2024, credit growth for the largest category of NBFCs, *viz.*, investment and credit companies (NBFC-ICCs), remained strong. The second largest category of NBFCs (*viz.*, NBFC-IFCs) continued to slow down further in H1: 2024-25 and recorded low single digit credit growth (Chart 2.27 b). Advances by HFCs in the upper

Chart 2.27: Credit Profile of NBFCs



Sources: RBI supervisory returns and staff calculations.

[30] The analyses done in this section are based on the provisional data available for NBFCs in upper layer and middle layer (excluding CICs, HFCs and SPDs) as of November 25, 2024. Prior period consistency and comparability may be limited as NBFC data has been reclassified based on scale-based regulation. The effect of mergers and reclassifications, if any, has not been considered for recasting historical data.

[31] Numbers in parentheses represent the share of respective layer in NBFCs' overall assets as of March 31, 2024.

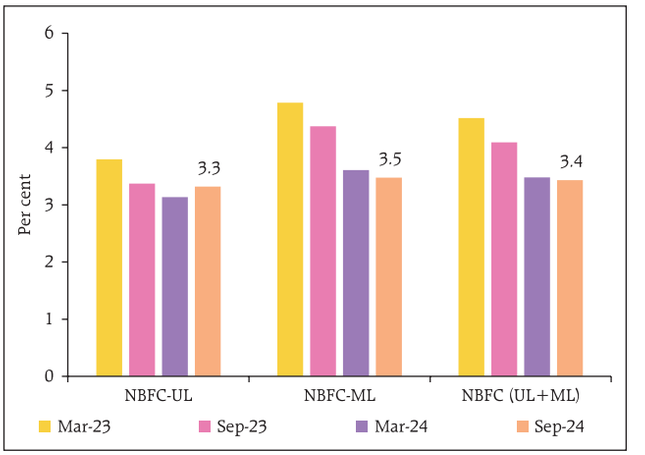
layer have grown by 11.6 per cent (y-o-y) as of end-September 2024[32].

2.56 For NBFC-UL, credit growth decelerated across all major sectors other than industry during H1:2024-25. The pace of credit expansion by NBFC-ML also moderated but remained positive across major sectors (Chart 2.27 c).

2.57 Credit growth in the unsecured personal loan segment has slowed down significantly since September 2023. Similarly, the growth rate of microfinance/SHG loans within the retail advances category has decreased by more than two-thirds in the recent year. Gold loans have clocked rapid growth in the period ending September 2024 as compared to a year ago (Chart 2.28).

2.58 Delinquency level in NBFC-UL edged up marginally from March 2024, while they improved for NBFC-ML in September 2024 (Chart 2.29). PCR of NBFC-ML remained higher than that of NBFC-UL (Chart 2.30). GNPA ratio of Government owned NBFCs (55.4 per cent share in advances by NBFC-ML) improved to 2.0 per cent while that of privately owned NBFCs of NBFC-ML stood at 5.3 per cent in September 2024.

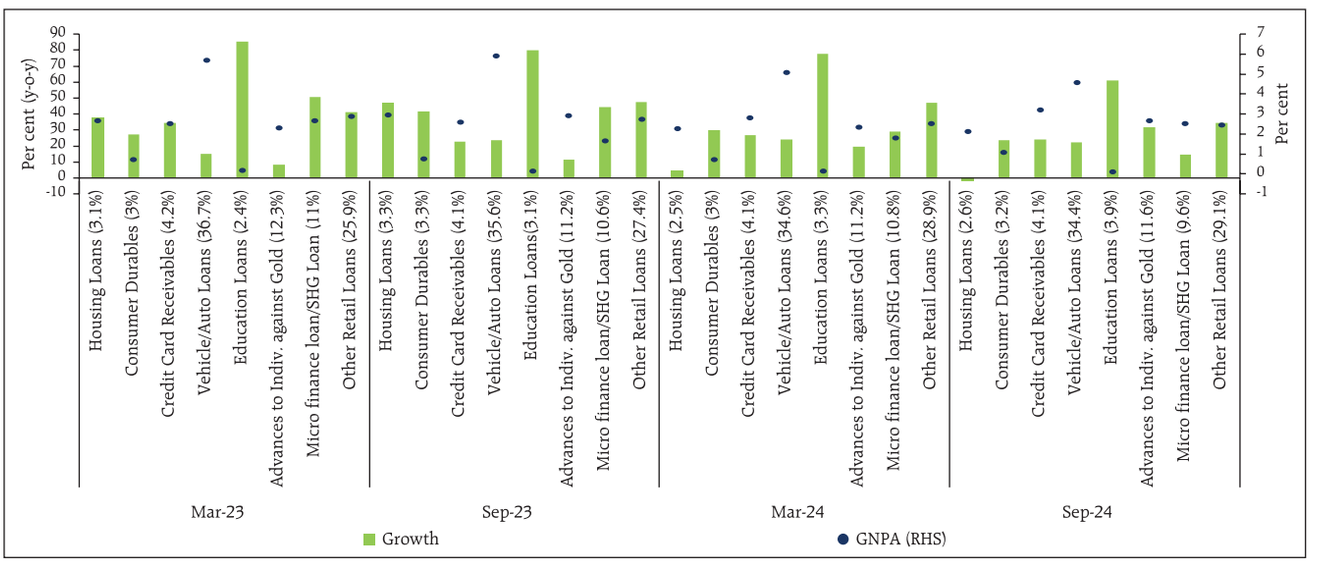
Chart 2.29: GNPA Ratio



Sources: RBI supervisory returns and staff calculations.

2.59 The system level CRAR of NBFCs was

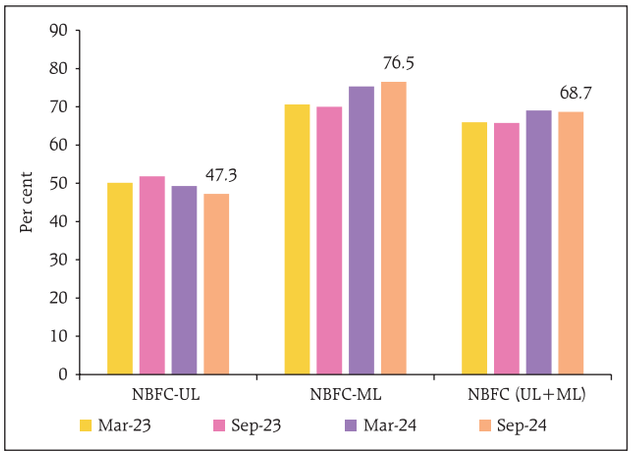
Chart 2.28: Growth and Delinquency of Components of Retail Loans



Note: Figure in parenthesis represents share of respective category of loans within retail sector at the end of each period. Residual share represents small loan categories like (i) advances against fixed deposits and (ii) advances to individuals against shares, bonds, *etc.*
Sources: RBI supervisory returns and staff calculations.

[32] Growth rate is based on the common sample of HFCs in Sep-23 and Sep-24.

Chart 2.30: Provision Coverage Ratio



Sources: RBI supervisory returns and staff calculations.

healthy at 26.1 per cent in September 2024. CRAR of NBFC-UL was, however, lower at 20.5 per cent. CRARs of HFCs (UL+ML) stood at 27.2 per cent as of end-September 2024. Upper layer NBFCs were consistently maintaining an elevated NIM at around 8 per cent, which was more than double that of NBFC-ML. Nevertheless, profitability of NBFC-UL and NBFC-ML remained comparable in terms of ROA and ROE (Chart 2.31).

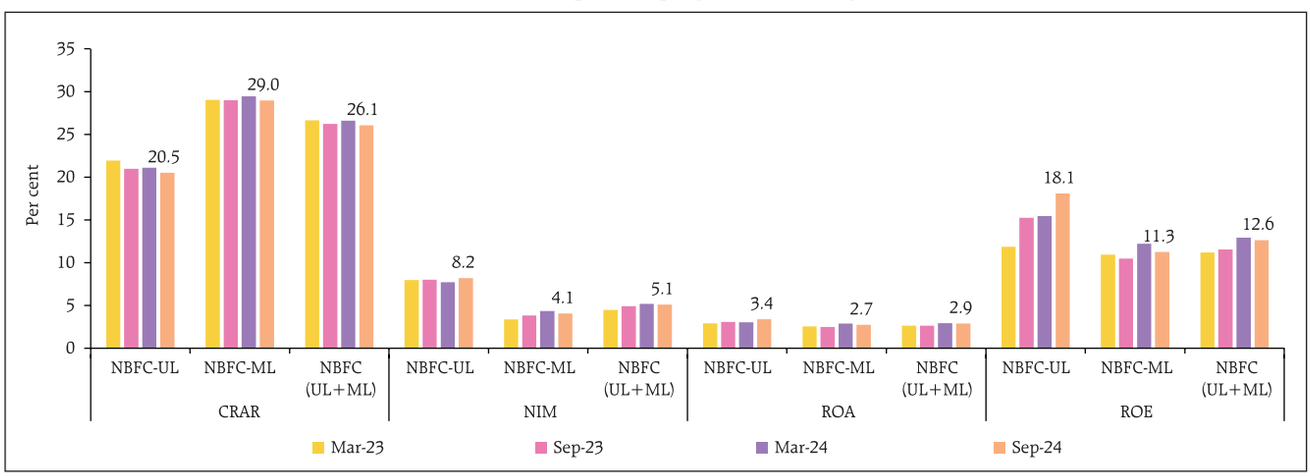
2.60 On the liquidity front, upper layer NBFCs were more vulnerable, given that they had a higher proportion of short-term liabilities to total assets in comparison with NBFC-ML. The share of long-term assets in total assets of NBFC-UL stood at 56.5 per cent as against nearly two-thirds for NBFC-ML. This share is higher for NBFC-ML as this layer includes NBFC-IFCs, which account for half of NBFC-ML's gross loans and predominantly lend for longer term projects (Chart 2.32).

2.61 The reliance of NBFC-UL on bank borrowings and public deposits was higher than NBFC-ML. 97 per cent of the funds sourced from banks by NBFC-UL was secured in nature as against about 70 per cent by NBFC-ML. The share of resources mobilised by NBFCs from banks have decreased over the last one year (Table 2.7).

II.3.1 Stress Test[33] - Credit Risk

2.62 System level stress tests for assessing the resilience of the NBFC sector to shocks in credit risk were conducted on a sample of 162[34] NBFCs, whose

Chart 2.31: Capital Adequacy and Profitability



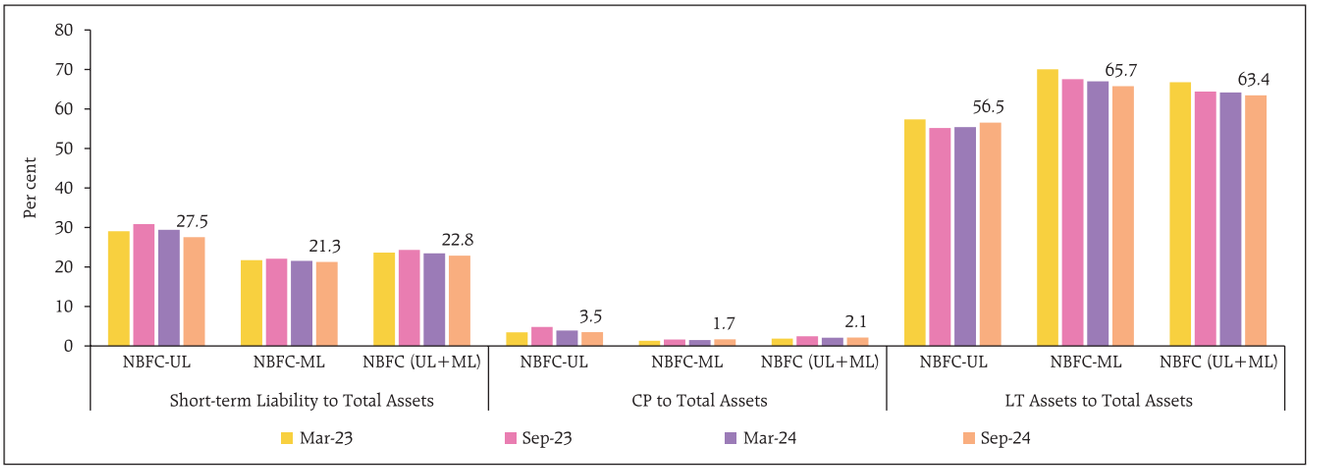
Notes: 1) NIM = (Interest Income – Interest Expense) / Average (Gross loans and advances + Total Investments)
2) RoE = (Annualised PAT) / Average (Capital + Reserves)

Sources: RBI supervisory returns and staff calculations.

[33] The detailed methodology used for stress tests of NBFCs is given in Annex 2.

[34] The sample comprised of 162 NBFCs from Upper Layer and Middle Layer with total advances of ₹25.00 lakh crore as of September 2024, which forms around 95 per cent of total advances of non-Government NBFCs. The sample for stress test excluded Government NBFCs, companies presently under resolution, standalone primary dealers, and investment focused companies to ensure better representation of credit risk of the sector.

Chart 2.32: Liquidity Stock Measures



Sources: RBI supervisory returns and staff calculations.

combined capital adequacy ratios and GNPA ratios stood at 23.6 per cent and 2.9 per cent, respectively, in September 2024. The tests were carried out under a baseline and two stress scenarios – medium and high risk – with increase in GNPA ratios by 1 SD and 2 SD, respectively.

2.63 Under the baseline scenario, the one year ahead GNPA ratio for the system is estimated at 3.4 per cent and the system level CRAR at 21.2 per cent. CRARs of 11 NBFCs fall below the minimum regulatory requirement of 15 per cent. Under the medium and high-risk scenarios, income loss and additional provision requirements would reduce CRAR of the sector further (compared to the baseline) by 70 bps and 100 bps, respectively (Chart 2.33).

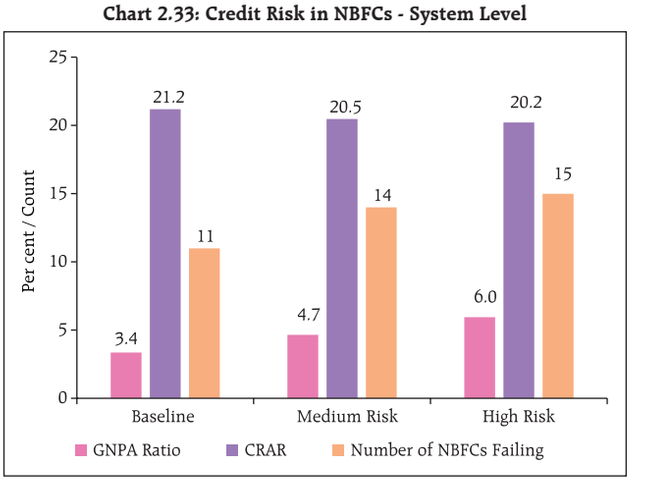
Table 2.7: NBFCs' Sources of Funds

(per cent)

Item Description	NBFC-UL		NBFC-ML	
	Sep-23	Sep-24	Sep-23	Sep-24
1. Share Capital, Reserves and Surplus	18.1	18.4	23.2	24.2
2. Total Borrowings	70.3	69.9	67.4	67.0
Of which:				
2 (i) Borrowing from banks	30.4	30.0	24.2	24.1
2(ii) CPs subscribed by banks	1.1	0.8	0.3	0.2
2(iii) Debentures subscribed by banks	4.3	3.8	2.2	2.1
Total from banks [2(i)+2(ii)+2(iii)]	**35.8**	**34.6**	**26.7**	**26.3**
2(iv) CPs excluding 2(ii)	3.7	2.7	1.4	1.4
2(v) Debentures excluding 2(iii)	16.0	16.4	23.9	23.7
3. Public Deposits	6.8	7.2	0.6	0.5
4. Others	4.8	4.6	8.8	8.3
Total	**100.0**	**100.0**	**100.0**	**100.0**

Sources: RBI supervisory returns and staff calculations.

Chart 2.33: Credit Risk in NBFCs - System Level



Note: Baseline scenario is based on assumptions of business continuing under usual conditions for one year ahead, whereas medium risk and high-risk scenarios assume GNPA ratio increasing by 1 SD and 2 SD, respectively, over one year horizon.

Sources: RBI supervisory returns and staff calculations.

II.3.2 Stress Test - Liquidity Risk

2.64 The resilience of the NBFC sector to liquidity shocks has been assessed by estimating the impact of an increase in cash outflows coupled with a decline in cash inflows[35]. A liquidity mismatch over one year is likely to be capped within 20 per cent; although a weak tail of NBFCs may experience higher liquidity mismatch in medium and high risk scenarios (Table 2.8).

II.4 Stress Testing of Mutual Funds

2.65 The Securities and Exchange Board of India (SEBI) has mandated that asset management companies (AMCs) should carry out stress testing[36] of all open-ended debt schemes (except overnight schemes) every month to evaluate the impact of various risk parameters (*viz.*, interest rate risk, credit risk, liquidity risk and redemption risk) faced by such schemes on their net asset values (NAVs). The Association of Mutual Funds in India (AMFI) and AMCs specify the thresholds of impact for risk parameters: breach of either the AMFI or the AMC threshold requires reporting and remedial action.

2.66 In September 2024, 34 open-ended debt schemes with total AUM of ₹2.75 lakh crore breached the AMFI or AMC prescribed threshold (Table 2.9). In this respect, all the mutual funds (MFs) have reported initiation of remedial action to be completed in the prescribed timeframe.

2.67 Furthermore, as part of liquidity risk management for open-ended debt schemes, two types of liquidity ratios, *viz.*, (i) redemption at risk (LR-RaR), which represents likely outflows at a given confidence interval, and (ii) conditional redemption at risk (LR-CRaR), which represents the behaviour of the tail at the given confidence interval, have been used. All AMCs are mandated to maintain these liquidity ratios above the threshold limits which are derived from scheme type, scheme asset composition and potential outflows (modelled from investor concentration in the scheme). MFs are required to carry out back-testing of these liquidity ratios for all open-ended debt schemes (except overnight funds, gilt funds and gilt funds with 10-year constant duration) on a monthly basis.

Table 2.8: Liquidity Risk in NBFCs

Cumulative Mismatch as percentage of Outflows over next one year	No. of NBFCs having Liquidity Mismatch		
	Baseline	Medium	High
Over 50 per cent	0 (0.0)	1 (0.1)	1 (0.1)
Between 20 and 50 per cent	1 (0.1)	3 (0.9)	7 (1.6)
Between 15 and 20 per cent	2 (0.8)	1 (0.3)	6 (4.8)
Between 10 and 15 per cent	1 (0.1)	3 (0.3)	7 (0.8)
Between 5 and 10 per cent	1 (0.3)	5 (4.3)	8 (10.1)
5 per cent and below	3 (0.3)	8 (1.7)	5 (1.6)

Notes: (i) Baseline scenario is based on projected outflows and inflows over next one year as of September 2024; medium risk scenario assumes 5 per cent decrease in inflows and 5 per cent increase in outflows and high-risk scenario assumes 10 per cent decrease in inflows and 10 per cent increase in outflows.
(ii) Figures in parenthesis represent percentage share in asset size of the sample.
Sources: RBI supervisory returns and staff calculations.

Table 2.9: Stress Testing of Open-Ended Debt Schemes of Mutual Funds – Summary Findings – September 2024

	Risk above Threshold	Risk below Threshold	Total
No. of AMCs	20	24	44
No. of Schemes	34*	261	295
AUM (₹crore)	2,74,724	11,93,923	14,68,647

Note: * No. of schemes showing interest rate risk, credit risk and liquidity risk above threshold are 22, 13 and 0, respectively, while total number of unique schemes remain 34.
Source: SEBI.

[35] Stress testing based on liquidity risk was performed on a sample of 218 NBFCs from Upper Layer and Middle Layer. The total asset size of the sample was ₹33.61 lakh crore, comprising around 99 per cent of total assets of non-government, non-CIC NBFCs in the sector.

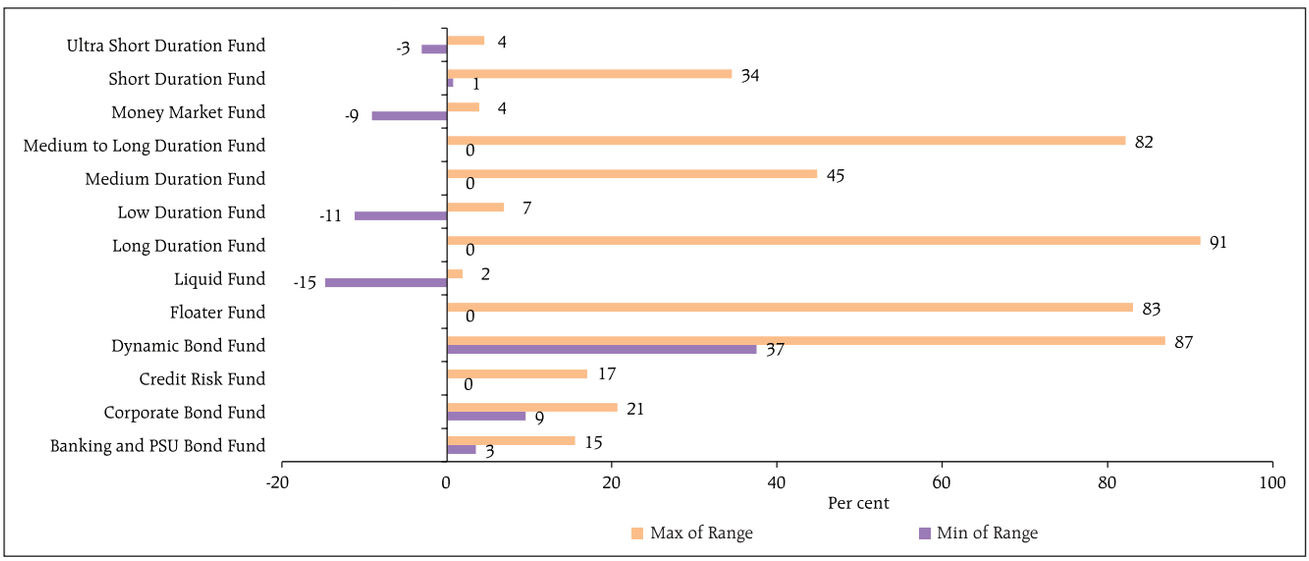
[36] The methodology used for stress testing of mutual funds is given in Annex 2.

2.68 The LR-RaR and LR-CRaR computed by top 10 MFs (based on AUM) for 13 categories of open-ended debt schemes were well above the respective threshold limits for most of the MFs in September 2024. A few instances of the ratios falling below the threshold limits were addressed by the respective AMCs in a timely manner (Chart 2.34 and Chart 2.35).

II.5 Stress Testing Analysis at Clearing Corporations

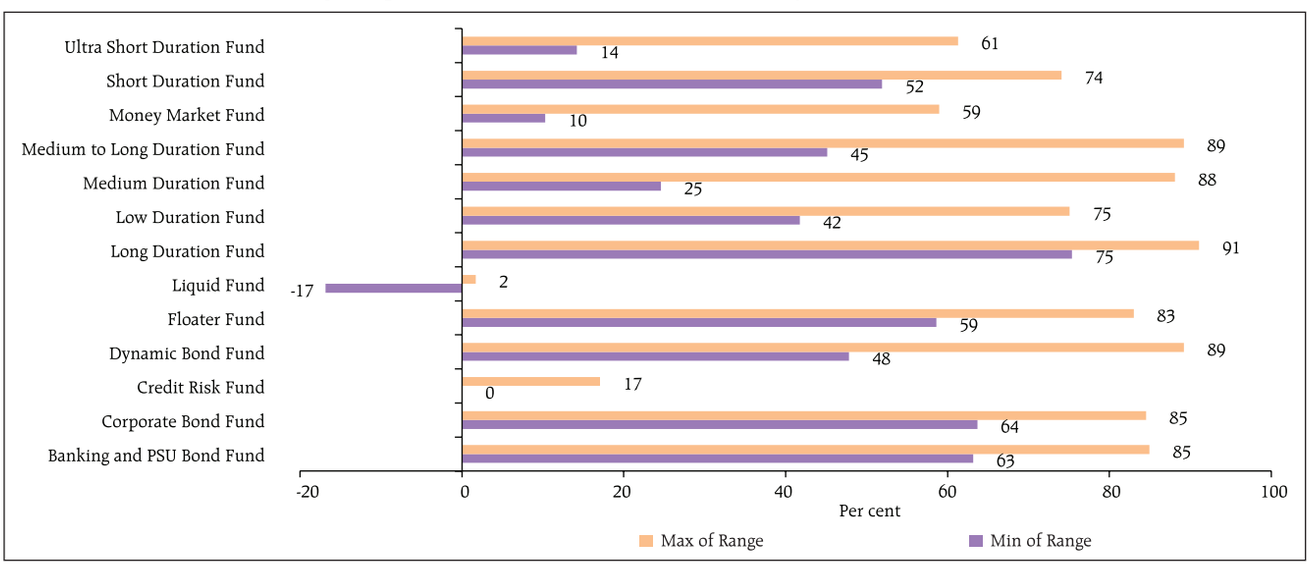
2.69 Stress testing[37] has been carried out at clearing corporations (CCs) to determine the

Chart 2.34: Range (Surplus (+)/ Deficit (-)) of LR-RaR Maintained by AMCs over AMFI Prescribed Limits



Note: Data pertains to Top 10 AMCs based on AUM as on September 30, 2024.
Source: SEBI.

Chart 2.35: Range (Surplus (+)/ Deficit (-)) of LR-CRaR Maintained by AMCs over AMFI Prescribed Limits



Note: Data pertains to Top 10 AMCs based on AUM as on September 30, 2024.
Source: SEBI.

[37] The methodology used for stress testing at clearing corporations is given in Annex 2.

segment-wise minimum required corpus (MRC), which needs to be contributed by clearing members (CMs) to the core settlement guarantee fund (Core SGF). The stress testing exercises aid in determining MRC for each segment (*viz.*, equity cash, equity derivatives, currency derivatives, commodity derivatives, debt and tri-party repo segment) every month.

2.70 The actual MRC requirement for any given month is determined as the higher of the MRC of the month and the MRC arrived at any time in the past. Stress test analysis for the period May 2024 to September 2024 indicated that while the monthly calculated amounts of MRC at CCs varied over months, the actual MRC requirement remained the same for most of the segments. The MRC requirement for one of the CCs in equity derivatives segment and another CC in the commodity derivatives segment, however, increased during the period (Table 2.10).

Table 2.10: Minimum Required Corpus of Core SGF Based on Stress Testing Analysis at Clearing Corporations-(Amount in ₹crore)

Segment	May-24	Jun-24	Jul-24	Aug-24	Sep-24
Clearing Corporation 1					
Average Stress Test Loss					
Equity Cash Segment	69	172	39	102	69
Equity Derivatives Segment	630	2616	768	755	714
Currency Derivatives Segment	126	144	132	124	108
Debt Segment	0	0	0	0	0
Tri-Party Repo Segment	0	0	0	0	0
Commodity Derivatives Segment	0	0	1	2	3
Total	826	2932	940	982	894
Actual MRC Requirement					
Equity Cash Segment	388	388	388	388	388
Equity Derivatives Segment	2423	2423	2423	2616	2616
Currency Derivatives Segment	242	242	242	242	242
Debt Segment	4	4	4	4	4
Tri-Party Repo Segment	17	17	17	17	17
Commodity Derivatives Segment	10	10	10	10	10
Total	3,085	3,085	3,085	3,277	3,277
Clearing Corporation 2					
Average Stress Test Loss					
Equity Cash Segment	27	32	30	19	24
Equity Derivatives Segment	22	57	17	23	14
Currency Derivatives Segment	0.0	0.2	0.0	0.2	0.5
Commodity Derivatives Segment	0	0	0	0	0
Total	48	89	47	42	38
Actual MRC Requirement					
Equity Cash Segment	194	194	194	194	194
Equity Derivatives Segment	74	74	74	74	74
Currency Derivatives Segment	388	388	388	388	388
Commodity Derivatives Segment	14	14	14	14	14
Total	670	670	670	670	670
Clearing Corporation 3 (Commodity Derivatives Segment)					
Average Stress Test Loss	50	44	50	47	56
Actual MRC requirement	124	124	124	124	124
Clearing Corporation 4 (Commodity Derivatives Segment)					
Average Stress Test Loss	483	477	618	626	504
Actual MRC requirement	562	562	562	562	618

Note: Average stress test loss calculated for a month M is applicable as MRC, from the month M+2.
Source: Clearing corporations.

II.6 Insurance Sector

2.71 The solvency ratio of an insurance company assesses its ability to meet its obligations towards policyholders by reflecting the level of its assets over and above its liabilities. The higher the solvency ratio, the better the ability of the insurer to meet its liabilities. The Insurance Regulatory and Development Authority of India (IRDAI) has set the minimum solvency ratio requirement for insurance companies in India at 150 per cent. As insurance liabilities are contingent upon future events, a higher solvency ratio implies resilience of the insurer to withstand future uncertainties.

2.72 The aggregate solvency ratio for life insurance companies has remained above the prescribed threshold for both public and private sectors (Table 2.11). The solvency ratio for three public sector non-life insurers, however, stood below the baseline prescription. It remained well above the threshold for rest of the non-life insurer categories (Table 2.12).

Table 2.11: Solvency Ratio of Life Insurance Sector

(per cent)

	Public Sector	Private Sector	Life Insurance Industry
Sep-23	190	220	197
Dec-23	193	215	198
Mar-24	198	207	200
Jun-24	199	210	202

Source: IRDAI.

Table 2.12: Solvency Ratio of Non-Life Insurance Sector

(per cent)

	PSU Insurers	Private Insurers	Stand Alone Health Insurers	Specialised Insurers	Non-Life Insurance Industry
Sep-23	39	228	195	689	164
Dec-23	39	223	209	774	165
Mar-24	35	223	208	835	166
Jun-24	31	227	208	855	167

Source: IRDAI.

II.7 Interconnectedness

2.73 Interconnections among financial institutions involve funding gaps arising due to liquidity mismatches and maturity transformation, payments processes, and risk transfer mechanisms. The financial system can be visualised as a network where financial institutions act as nodes and the bilateral exposures among them serve as links connecting these nodes. These links could be in the form of loans to, investments in, or deposits with each other, which act as a source of funding, liquidity, investment and risk diversification. While these links enable gains in efficiency and diversification of risks, they can become conduits of risk transmission and risk amplification in a crisis. Understanding the nuances in propagation of risk through networks is useful for devising appropriate policy responses for safeguarding macroeconomic and financial stability.

II.7.1 Financial System Network[38] [39]

2.74 The total outstanding bilateral exposures[40] among the entities in the Indian financial system continued to expand during H1:2024-25. While the annual growth of bilateral exposures fluctuated between 15 and 19 per cent, a surge during H1:2024-25 was primarily driven by the rise in exposure of AMC-MFs and NBFCs to SCBs. Further, the conversion of two HFCs to NBFCs (non-HFC) also contributed to a higher share of NBFCs (non-HFC) and a decline in the share of HFCs in bilateral exposures. (Chart 2.36 a and b).

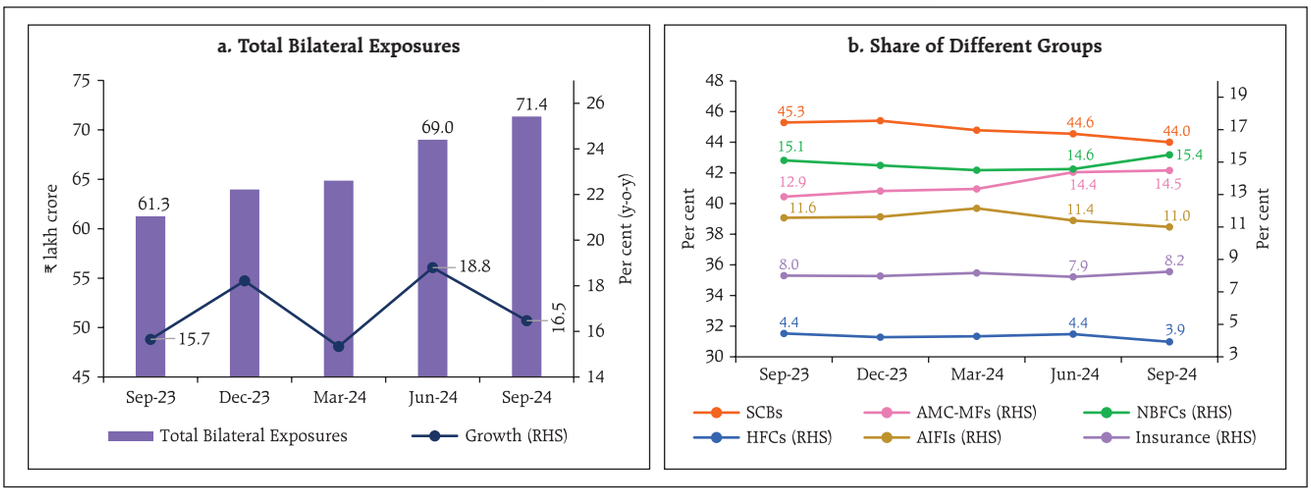
2.75 The funding mix of the financial system shows that long-term (LT) funding - primarily loans and advances, equity and other LT debt instruments - provided a major channel for bilateral exposures in the system. A segment wise analysis broadly indicated that (a) LT loans were mainly advanced by SCBs to NBFCs; (b) AMC-MFs were major investors in the equities issued by PVBs and NBFCs; and (c) in the LT debt market, insurance companies held the majority of instruments issued by PVBs,

[38] The network model used in the analysis has been developed by Professor Sheri Markose (University of Essex) and Dr. Simone Giansante (Bath University) in collaboration with the Financial Stability Department, Reserve Bank of India.

[39] Analyses presented here and in the subsequent part are based on data of 229 entities from the following eight sectors: SCBs, scheduled UCBs (SUCBs), AMC-MFs, NBFCs, HFCs, insurance companies, pension funds and AIFIs. These 229 entities covered include 77 SCBs, 11 small finance banks (SFBs), 20 SUCBs; 25 AMC-MFs (which cover more than 98 per cent of the AUMs of the mutual fund sector); 43 NBFCs (both deposit taking and non-deposit taking systemically important companies, which represent about 70 per cent of total NBFC assets); 22 insurance companies (that cover more than 95 per cent of assets of the sector); 16 HFCs (which represent more than 75 per cent of total HFC assets); 10 PFs and 5 AIFIs (NABARD, EXIM, NHB, SIDBI and NaBFID).

[40] Includes exposures between entities of the same group. Exposures are outstanding position as on September 30, 2024 and are broadly divided into fund-based and non-fund-based exposure. Fund-based exposure includes money market instruments, deposits, loans and advances, long-term debt instruments and equity investments. Non-fund- based exposure includes letter of credit, bank guarantee and derivative instruments (excluding settlement guaranteed by CCIL).

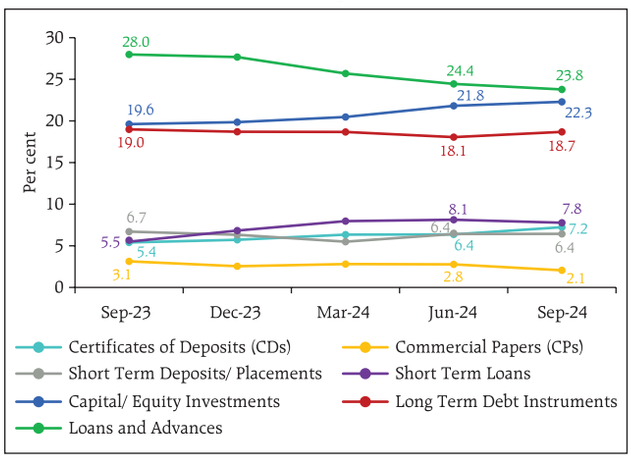
Chart 2.36: Bilateral Exposures between Entities in the Financial System



Note: Exposures between entities of the same group are included.
Sources: Supervisory returns of various regulators and RBI staff calculations.

NBFCs (non-HFC) and HFCs. In the short-term (ST) funding mix, apart from inter-bank ST loans and deposits, CPs and CDs played a significant role. In the CP market, AIFIs, NBFCs (non-HFC) and HFCs were the largest receivers of funds and AMC-MFs were the largest investor group. On the other hand, PSBs, PVBs and AIFIs were the major fund receivers in the CD market, where AMC-MFs were the largest fund providers (Chart 2.37).

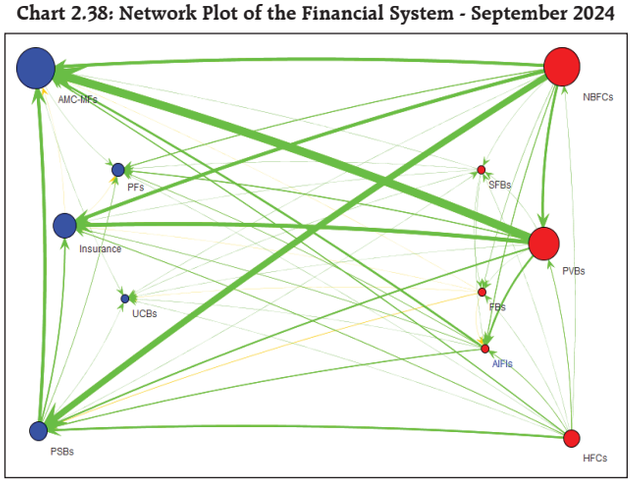
Chart 2.37: Instrument-wise Exposure among Entities in the Financial System



Note: Exposures between entities of the same group are included.
Sources: Supervisory returns of various regulators and RBI staff calculations.

2.76 In terms of inter-sectoral exposures[41], AMC-MFs, insurance companies and PSBs remained the largest fund providers in the system, whereas NBFCs and PVBs were the largest receivers of funds, followed by HFCs. Among bank groups, PSBs and UCBs had net receivable positions *vis-à-vis* the entire financial sector whereas PVBs, FBs and SFBs had net payable positions (Chart 2.38).

Chart 2.38: Network Plot of the Financial System - September 2024



Note: Receivables and payables do not include transactions among entities of the same group. Red circles are net payable institutions and the blue ones are net receivable institutions.
Sources: Supervisory returns of various regulators and RBI staff calculations.

[41] Inter-sectoral exposures do not include transactions among entities of the same sector in the financial system.

2.77 The net receivable positions of AMC-MFs and net payable positions of PVBs and NBFCs recorded large increases in September 2024 *vis-à-vis* September 2023 (Chart 2.39).

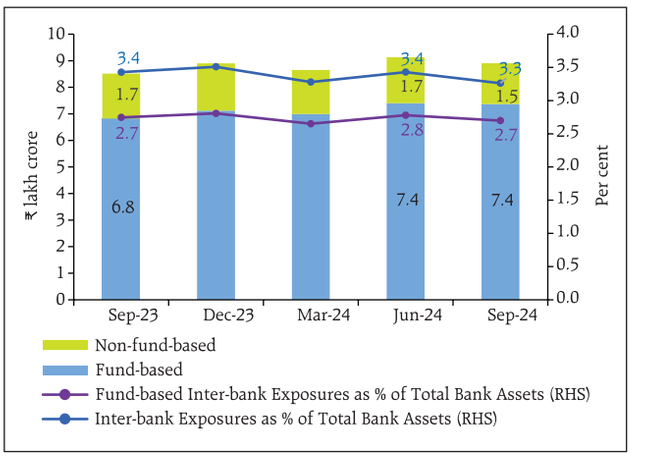
a. Inter-Bank Market

2.78 Inter-bank exposures were 3.3 per cent of the total assets of the banking system in September 2024. During H1:2024-25, fund-based exposures[42] increased marginally while non-fund-based exposures[43] receded marginally (Chart 2.40).

2.79 PSBs continued to dominate the inter-bank market, followed by PVBs and FBs. The share of PSBs increased while that of PVBs and FBs declined in H1:2024-25 (Chart 2.41).

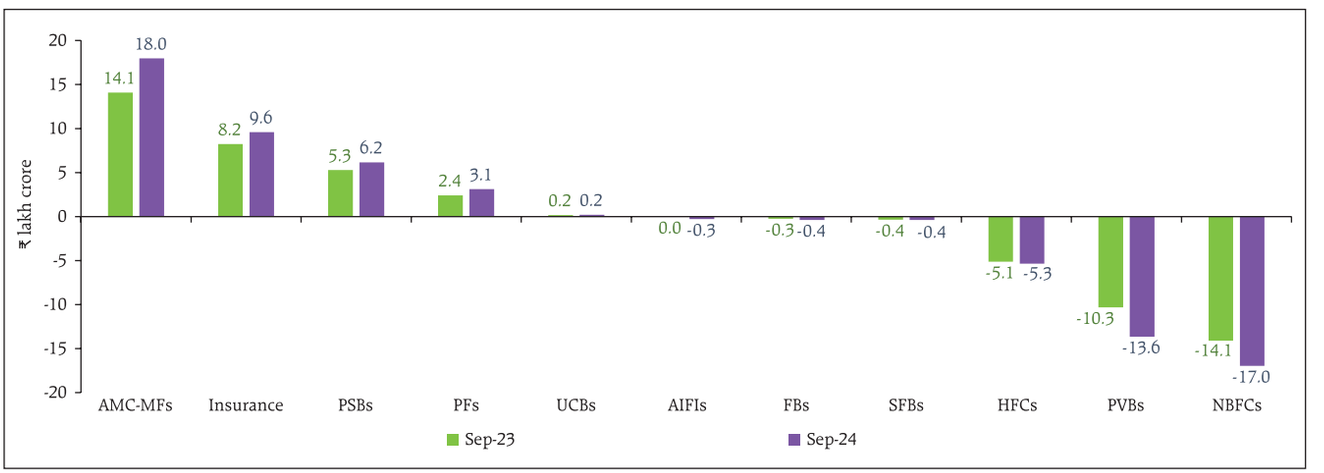
2.80 Unlike in the overall financial network in which LT fund-based exposure forms a major part, ST funding plays a crucial role in the inter-bank market. As at end-September 2024, 74 per cent of the fund-based inter-bank market was short-term in nature in which ST deposits and ST loans constituted over 70 per cent. There was a notable rise (y-o-y) in share of CDs, *inter alia*, due to higher issuance of CDs by banks. The share of LT deposits increased whereas that of LT loans and LT debt in LT fund-based inter-bank market declined during this period (Chart 2.42).

Chart 2.40: Inter-Bank Market



Sources: RBI supervisory returns and staff calculations.

Chart 2.39: Net Receivables (+ve)/ Payables (-ve) by Institutions

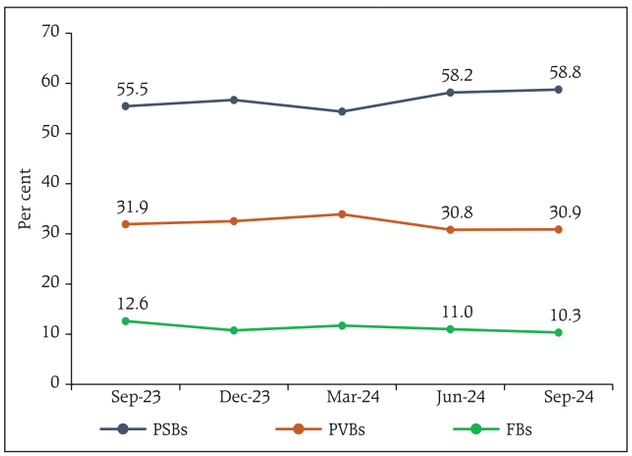


Note: Receivables and payables do not include transactions among entities of the same group.
Sources: Supervisory returns of various regulators and RBI staff calculations.

[42] Fund-based exposures include both short-term exposures and long-term exposures. Data on short-term exposures are collected across seven categories – repo (non-centrally cleared); call money; commercial papers; certificates of deposits; short-term loans; short-term deposits and other short-term exposures. Data on long-term exposures are collected across five categories – Equity; Long-term Debt; Long-term loans; Long-term deposits and Other long-term liabilities.

[43] Non-Fund based exposures include - outstanding bank guarantees, outstanding Letters of Credit, and positive mark-to-market positions in the derivatives market (except those exposures for which settlement is guaranteed by the CCIL).

Chart 2.41: Share of Different Bank Groups in the Inter-Bank Market



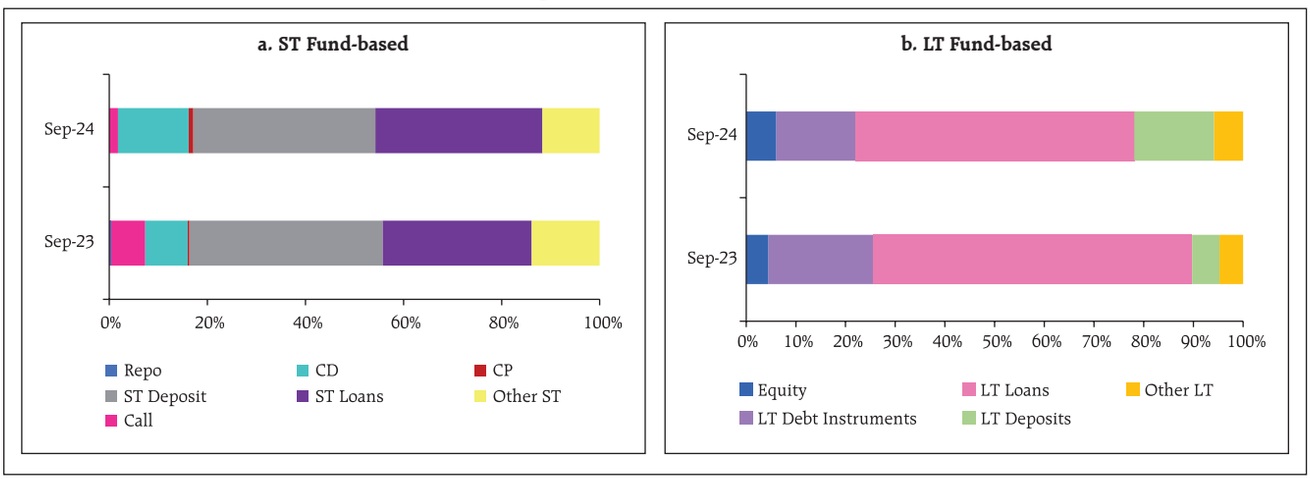
Sources: RBI supervisory returns and staff calculations.

b. Inter-Bank Market: Network Structure and Connectivity

2.81 The distribution of the number of links between entities in the inter-bank market network is highly skewed, with most banks having few links and few banks having many links. This has resulted into a typical core-periphery network structure[44] [45]. As of end-September 2024, two banks (one PSB and one PVB) were in the inner-most core and nine banks in the mid-core circle. The mid-core consisted of PSBs, PVBs and FBs. Most of the old PVBs along with FBs, SUCBs and SFBs formed the periphery (Chart 2.43).

2.82 While the degree of interconnectedness among SCBs in terms of the number of links, as measured by the connectivity ratio[46], increased marginally in H1:2024-25, the cluster coefficient[47], *i.e.*, the number of connections along with interconnections of neighbouring nodes, reduced marginally (Chart 2.44).

Chart 2.42: Composition of Fund based Inter-Bank Market



Sources: RBI supervisory returns and staff calculations.

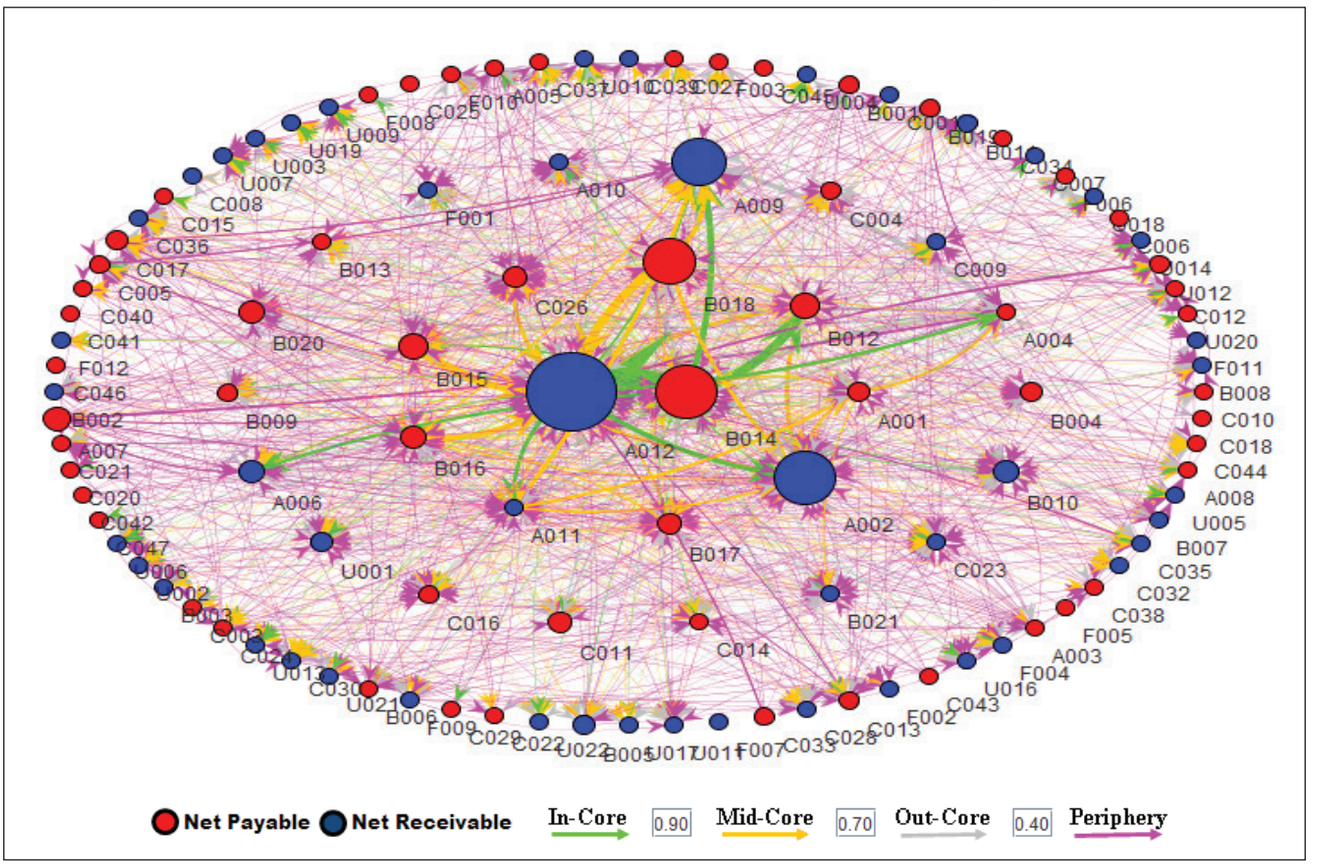
[44] The diagrammatic representation of the network of the banking system is that of a tiered structure, in which different banks have different degrees or levels of connectivity with others in the network. The most connected banks are in the inner-most core (at the centre of the network diagram). Banks are then placed in the mid-core, outer core and the periphery (concentric circles around the centre in the diagram), based on their level of relative connectivity. The colour coding of the links in the tiered network diagram represents borrowings from different tiers in the network (for example, the green links represent borrowings from the banks in the inner core). Each ball represents a bank and they are weighted according to their net positions *vis-à-vis* all other banks in the system. The lines linking each bank are weighted on the basis of outstanding exposures.

[45] 77 SCBs, 11 SFBs and 20 SUCBs were considered for this analysis.

[46] The Connectivity ratio measures the actual number of links between the nodes relative to all possible links in a complete network.

[47] Cluster Coefficient: Clustering in networks measures how interconnected each node is. Specifically, there should be an increased probability that two of a node's neighbours (banks' counterparties in case of the financial network) are also neighbours themselves. A high cluster coefficient for the network corresponds with high local interconnectedness prevailing in the system.

Chart 2.43: Network Structure of the Indian Banking System (SCBs + SFBs + SUCBs) – September 2024



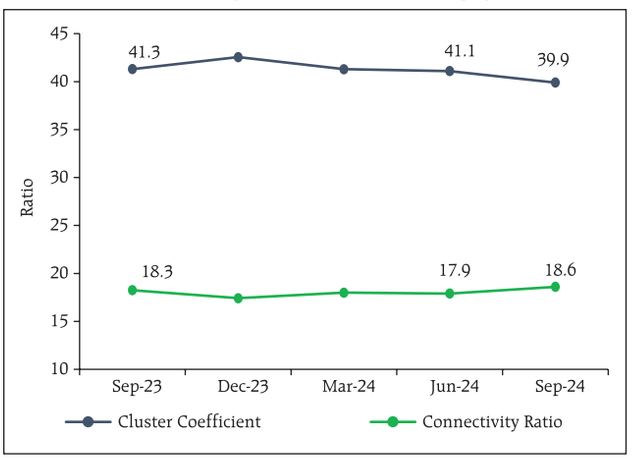
Sources: RBI supervisory returns and staff calculations.

c. Exposure of AMC-MFs

2.83 Gross receivables of AMC-MFs stood at ₹19.16 lakh crore (around 29 per cent of their average AUM) whereas their gross payables were ₹1.19 lakh crore as at end-September 2024. SCBs (primarily PVBs) remained the major recipients of their funding, followed by NBFCs, AIFIs and HFCs (Chart 2.45 a).

2.84 The share of equity holdings in total assets of AMC-MFs continued to rise. There was notable increase in AMC-MFs' investment in CDs whereas their CP investment came down during the period (Chart 2.45 b).

Chart 2.44: Connectivity Statistics of the Banking System (SCBs)

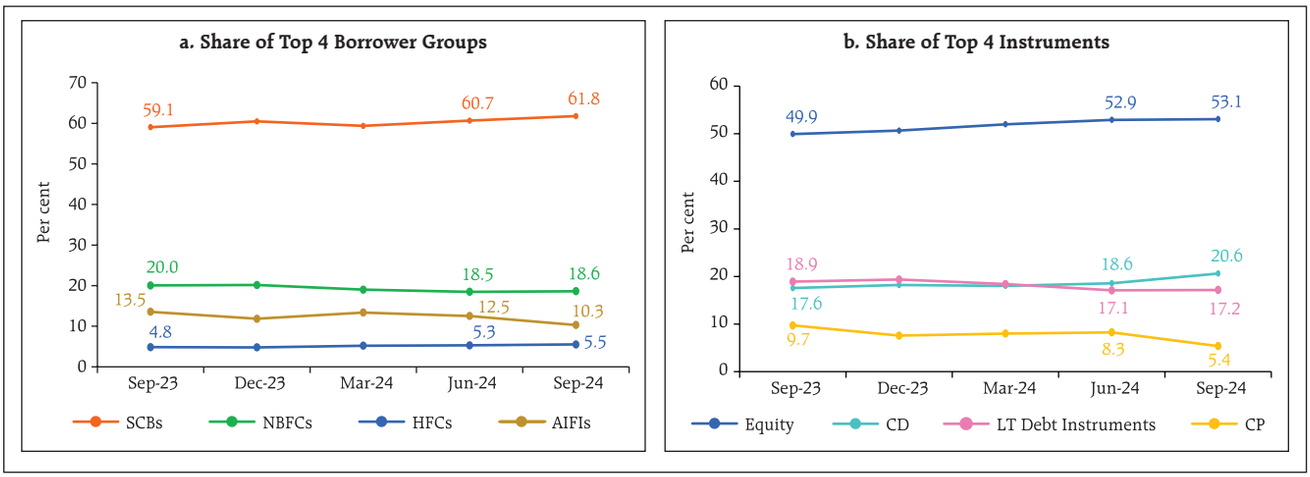


Sources: RBI supervisory returns and staff calculations.

d. Exposure of Insurance Companies

2.85 With gross receivables at ₹10.44 lakh crore and gross payables at ₹0.86 lakh crore, insurance companies were the second largest net providers of funds to the financial system in September 2024. SCBs (primarily PVBs) were the largest recipients

Chart 2.45: Gross Receivables of AMC-MFs from the Financial System



Sources: Supervisory returns of various regulators and RBI staff calculations.

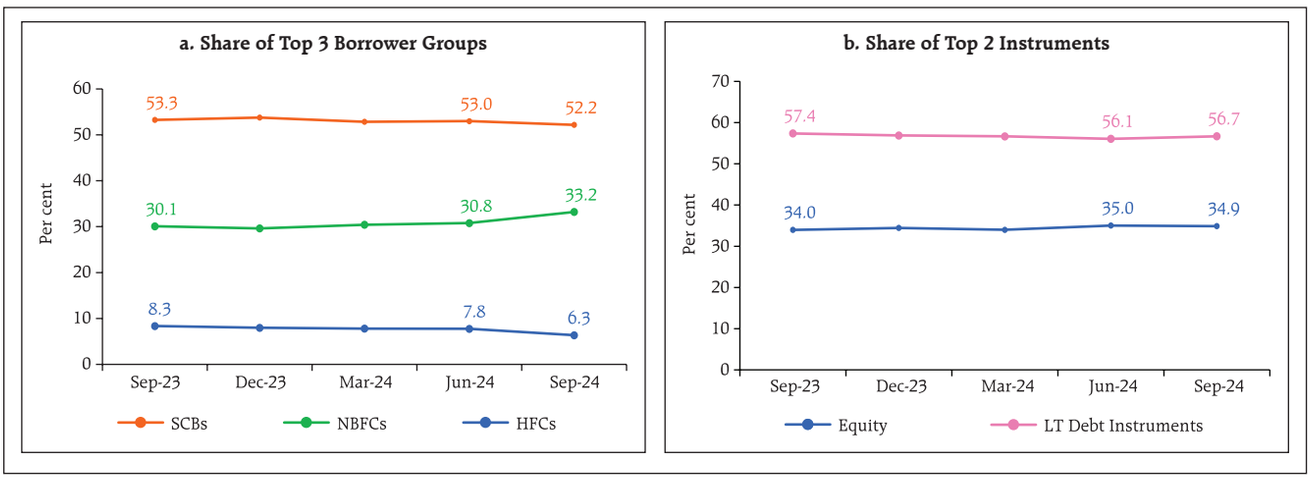
of their funds, followed by NBFCs (non-HFC) and HFCs. LT debt and equity accounted for more than 90 per cent of receivables of insurance companies; they had limited exposure to ST instruments (Chart 2.46 a and b).

e. Exposure to NBFCs (non-HFC)

2.86 NBFCs (non-HFC) were the largest net borrowers of funds of the financial system, with gross payables of ₹19.16 lakh crore and gross receivables of ₹2.19 lakh crore in September 2024. A breakup of their gross payables reveals that the bulk of funds were sourced from SCBs, followed by AMC-MFs and insurance companies (Chart 2.47 a).

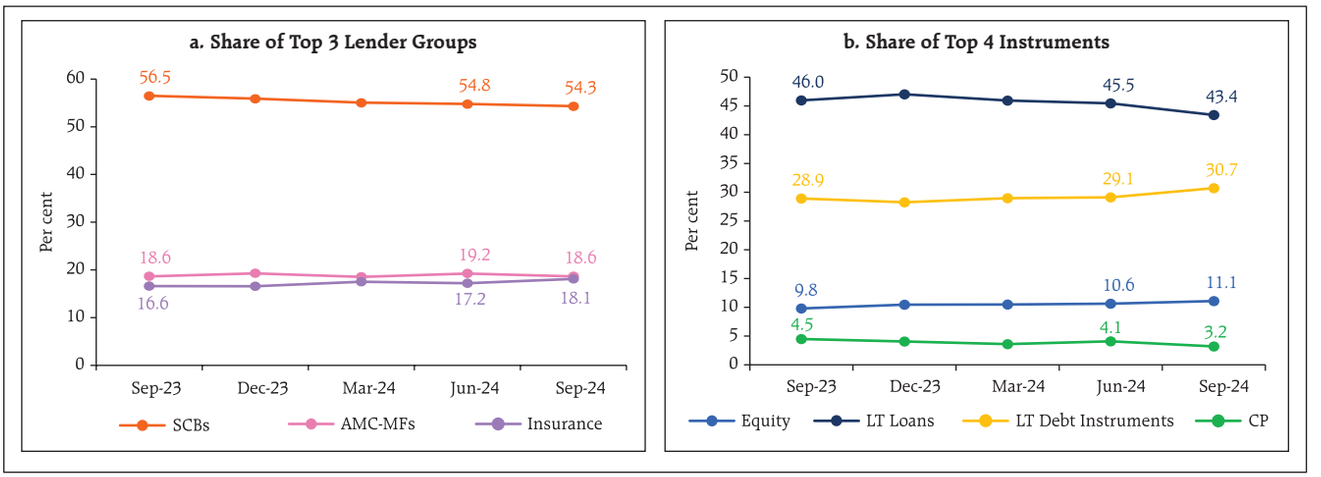
2.87 The choice of instruments in the funding mix of NBFCs (non-HFC) shows high reliance on LT funds. While the raising of funds by NBFCs through LT loans (from SCBs) declined during H1:2024-25, the reliance on borrowing through LT debt instruments increased, which were largely held by insurance companies and AMC-MFs (Chart 2.47 b).

Chart 2.46: Gross Receivables of Insurance Companies from the Financial System



Sources: Supervisory returns of various regulators and RBI staff calculations.

Chart 2.47: Gross Payables of NBFCs to the Financial System



Sources: Supervisory returns of various regulators and RBI staff calculations.

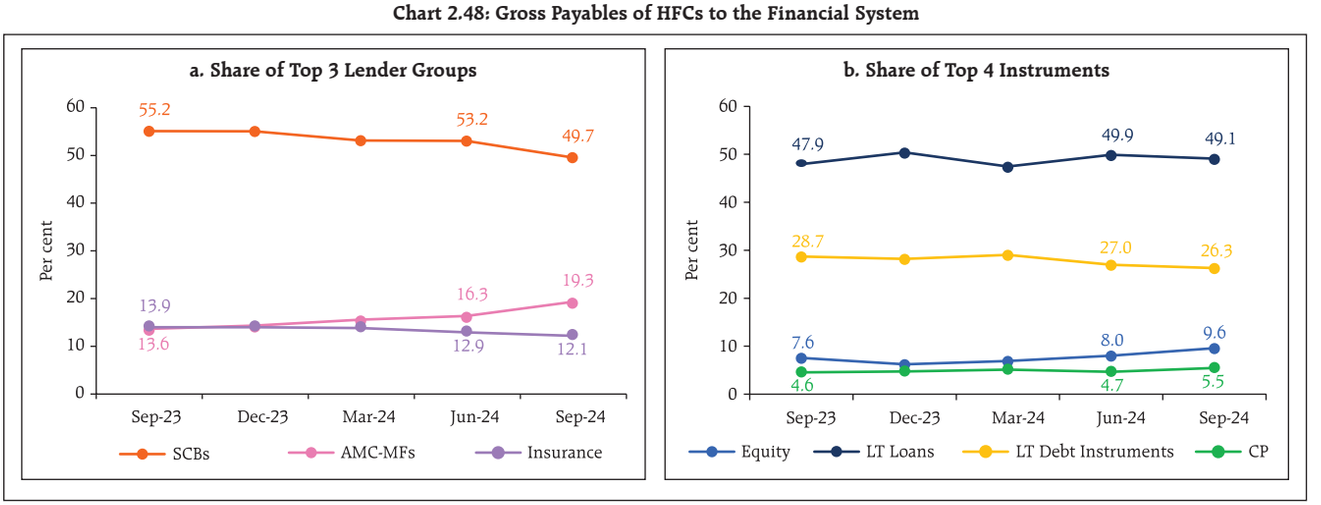
f. Exposure to HFCs

2.88 HFCs remained the second largest net borrowers and had gross payables of ₹5.45 lakh crore against gross receivables of ₹0.12 lakh crore in September 2024. SCBs followed by AMC-MFs and insurance companies were the major providers of funds. About 75 per cent of HFCs' resource mobilisation was through LT loans and LT debt instruments (Chart 2.48 a and b).

g. Exposure to AIFIs

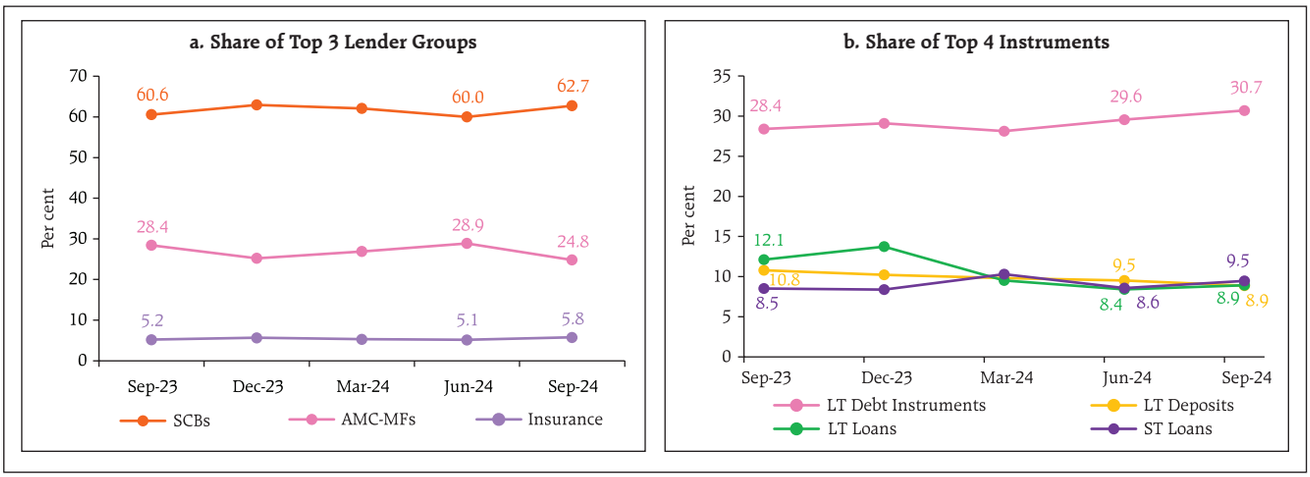
2.89 With gross payables and receivables at ₹7.95 lakh crore and ₹7.66 lakh crore, respectively, AIFIs were net borrowers of the financial system in September 2024. They raised funds mainly from SCBs, AMC-MFs and insurance companies. Given their nature of operations, long-term instruments such as LT debt, LT loans and LT deposits remained their preferred instruments for resource mobilisation, though the combined share of these instruments came down marginally to 48.5 per cent from 51.3 per cent a year ago, while the borrowing through ST loans and other ST instruments increased (Chart 2.49 a and b).

Chart 2.48: Gross Payables of HFCs to the Financial System



Sources: Supervisory returns of various regulators and RBI staff calculations.

Chart 2.49: Gross Payables of AIFIs to the Financial System



Sources: Supervisory returns of various regulators and RBI staff calculations.

II.7.2 Contagion Analysis

2.90 Contagion analysis uses network technology to estimate the systemic importance of different financial institutions. The failure of a systemically important bank entails greater solvency and liquidity losses for the banking system which, in turn, depend on the initial capital and liquidity positions of banks along with the number, magnitude, and nature (whether it is a lender or a borrower) of the interconnections that a failing bank has with the rest of the banking system.

a. Joint Solvency[48]- Liquidity[49] Contagion Impact on SCBs due to Bank Failure

2.91 Contagion analysis of the banking network on the end-September 2024 position indicates that if the bank with the maximum capacity to cause contagion losses fails, it will cause a solvency loss of 3.10 per cent (as compared to 5.06 per cent in March 2024) of total Tier 1 capital of SCBs and liquidity loss of 0.22 per cent (as compared to 0.31 per cent in March 2024) of total HQLA of the banking system. Also, it will not lead to failure of any additional bank (Table 2.13).

b. Solvency Contagion Impact on SCBs due to NBFC/ HFC Failure

2.92 As NBFCs (non-HFC) and HFCs are among the largest borrowers of funds from the financial system with a substantial part of funding from banks, failure of any of such institution will act as a solvency shock to their lenders which can spread through contagion.

Table 2.13: Contagion Losses due to Bank Failure – September 2024

Name of Bank	Solvency Losses as per cent of Tier 1 Capital of the Banking System	Liquidity Losses as per cent of HQLA	Number of Banks Defaulting due to Solvency	Number of Banks Defaulting due to Liquidity
Bank 1	3.10	0.22	0	0
Bank 2	1.78	0.00	0	0
Bank 3	1.59	0.51	0	0
Bank 4	1.46	0.40	0	0
Bank 5	1.34	0.06	0	0

Note: Top five 'Trigger banks' have been selected on the basis of solvency losses caused to the banking system.
Sources: RBI supervisory returns and staff calculations.

[48] In solvency contagion analysis, gross loss to the banking system owing to a domino effect of hypothetical failure of one or more borrower banks is ascertained. Failure criterion for contagion analysis has been taken as Tier 1 capital falling below 7 per cent.

[49] In liquidity contagion analysis, a bank is considered to have failed when its liquid assets are not enough to tide over a liquidity stress caused by the hypothetical failure of large net lender. Liquid assets are measured as: 18 per cent of NDTL + excess SLR + excess CRR.

Table 2.14: Contagion Losses due to NBFC Failure – September 2024

NBFC Name	Solvency Losses as per cent of Tier 1 Capital of the Banking System	Number of Banks Defaulting due to Solvency
NBFC 1	2.74	0
NBFC 2	2.58	0
NBFC 3	2.28	0
NBFC 4	1.80	0
NBFC 5	1.75	0

Note: Only Private NBFCs are considered. Top five 'Trigger NBFCs' have been selected on the basis of solvency losses caused to the banking system.
Sources: RBI supervisory returns and staff calculations.

Table 2.15: Contagion Losses due to HFC Failure – September 2024

HFC Name	Solvency Losses as per cent of Tier 1 Capital of the Banking System	Number of Banks Defaulting due to Solvency
HFC 1	4.14	0
HFC 2	1.29	0
HFC 3	1.04	0
HFC 4	0.77	0
HFC 5	0.73	0

Note: Top five 'Trigger HFCs' have been selected on the basis of solvency losses caused to the banking system.
Sources: RBI supervisory returns and staff calculations.

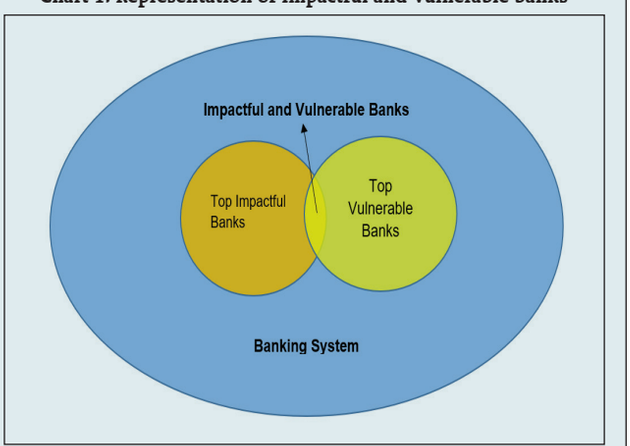
2.93 By end-September 2024, the hypothetical failure of the NBFC with the maximum capacity to cause solvency losses to the banking system would have knocked off 2.74 per cent (2.29 per cent in March 2024) of the latter's total Tier 1 capital but it would not lead to failure of any bank. Similarly, the hypothetical failure of the HFC with the maximum capacity to cause solvency losses to the banking system would have knocked off 4.14 per cent (3.87 per cent in March 2024) of the latter's total Tier 1 capital but without failure of any bank (Tables 2.14 and 2.15).

2.94 By leveraging the bilateral exposure data collected for contagion analysis, impact and vulnerability metrics have been constructed to identify banks which are highly impactful and vulnerable at the same time (Box 2.3).

Box 2.3: Identification of Impactful and Vulnerable Banks

The evolving landscape of the financial system calls for better understanding of the build-up of systemic risk in the complex interactions between different financial intermediaries - not only banks but also non-bank financial institutions. When a bank experiences financial stress, its vulnerabilities may spill over and contaminate the broader financial system. The identification of such banks that are impactful (*i.e.*, those causing sizeable capital losses throughout the system upon their default) and vulnerable (*i.e.*, their own capital loss susceptibility conditional on other entities' failures) can help understand how the vulnerabilities in impactful entities propagate shocks through the network and lead to contagion in the broader financial system during a crisis and can possibly guide policy makers on macro-prudential policy measures (Chart 1). Based on the recommendations of the IMF (2024), impact and vulnerability metrics for banks have been compiled.

Chart 1: Representation of Impactful and Vulnerable banks



(Contd.)

Data on bilateral exposures among entities of the financial system can be leveraged to compute impact and vulnerability metrics to identify entities that are impactful and vulnerable, using the following metrics and methodology (IMF, 2017):

(i) Index of contagion (impact) of a bank represents the average loss experienced by other banks (expressed as a percentage of their Tier 1 capital) due to failure of the bank.

Index of contagion (impact) of bank i $= 100 * (\sum_{j \neq i} L_{ji} / K_j) / (N-1)$

where K_j is bank j's capital, L_{ji} is the loss to bank j due to the default of bank i and N is the total number of banks;

(ii) Index of vulnerability of a bank represents the average loss experienced by the bank (expressed as a percentage of its Tier 1 capital) across individually triggered failures of all other banks.

Index of vulnerability of bank i $= 100 * (\sum_{j \neq i} L_{ij} / K_i) / (N-1)$

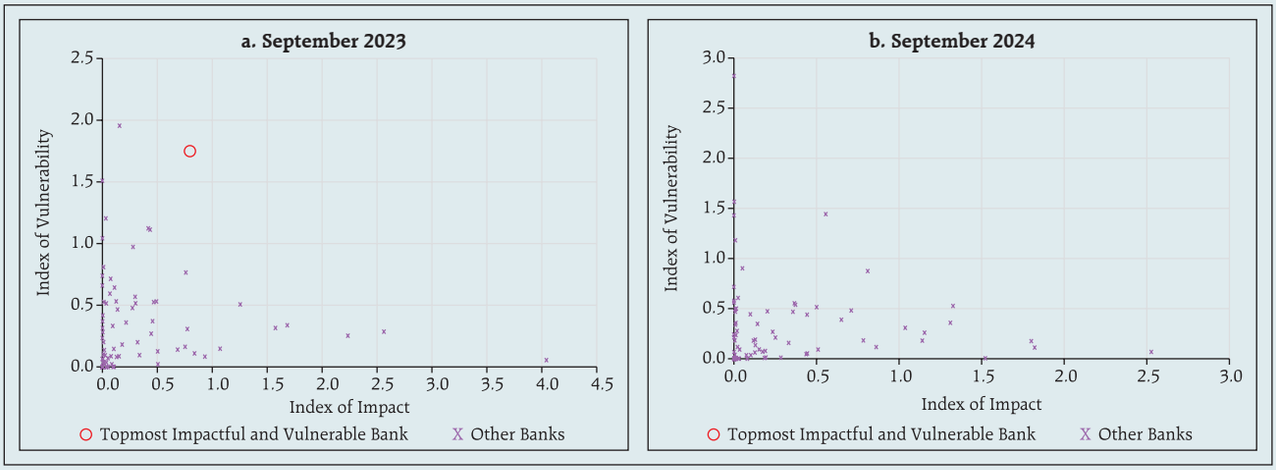
where K_i is bank i's capital, L_{ij} is the loss to bank i due to the default of bank j and N is the total number of banks;

(iii) To analyse the effects of a credit shock, the present exercise simulates individual default of each bank with 100 per cent loss-given-default ($\lambda = 1$), where the counterparties' capitals absorb the losses on impact. Then, bank i is said to fail, if its capital is insufficient to fully cover its losses due to the default of bank j, *i.e.*, if $K_i - \lambda X_{ji} < 0$, where X_{ji} stands for exposure of bank i to bank j and K_i stands for bank i's capital. In the subsequent rounds, if there are further failures, the losses are aggregated.

Scatter plot of impact and vulnerability indices of all 77 banks (PSBs, PVBs and FBs) included in the analysis for September 2024 shows that the bank which occupies the topmost position in terms of impact is different from the topmost bank in terms of vulnerability. Hence, the set of top ten highly impactful banks and the set of top ten highly vulnerable banks are considered. However, there is no bank common between these two sets in September 2024. Over a longer horizon (September 2019 to September 2024), one bank emerged to be both impactful and vulnerable at the same time in each period among the top ten ones, although such bank differed from period to period (Chart 2 a and b).

As an extension of the analysis, vulnerability of banks due to failure of NBFCs and HFCs is also assessed. Vulnerability indices of PSBs due to the failure of NBFCs/HFCs are found to be higher relative to other bank groups during 2019 to 2024. Within the PVBs' cohort, old banks are more vulnerable as compared to the newer ones. Further, vulnerability indices of four banks on account of failure of NBFCs are comparatively higher (more than 2 per cent), while these indices are higher for only two banks due to the failure of HFCs

Chart 2: Scatter Plot of Impactful and Vulnerable Banks



Source: RBI staff calculations.

(Contd.)

(Chart 3 a and b). Also, the impact index shows that the failure of one NBFC can impact banks by more than 2 per cent of their capital on an average due to its higher borrowings from banks, whereas HFCs do not have a significant contagion impact on banks (Chart 3 c and d).

In short, within the cohort of top ten highly vulnerable and impactful banks, there is no bank which is highly impactful and vulnerable at the same time. Among the bank groups, PSBs are more vulnerable to failures of NBFCs/HFCs and, NBFCs may cause higher contagion impact on banks as compared to HFCs.

Chart 3: Impact and Vulnerability Metrics of NBFCs/HFCs - September 2024

Source: RBI staff calculations.

References:

1. International Monetary Fund (2017), Luxembourg Financial Sector Assessment Program Technical Note - Risk Analysis, August.

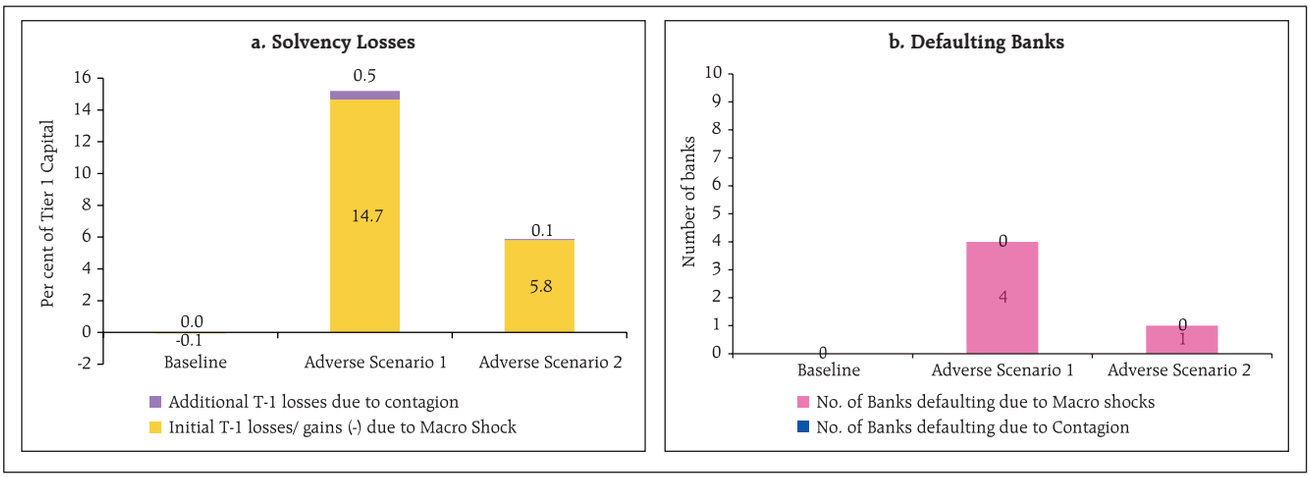
2. International Monetary Fund (2024), 'India: Technical Assistance Report-Review and Evaluation of the Reserve Bank of India's Stress Test Model Framework', November 01, 2024.

c. Solvency Contagion Impact[50] after Macroeconomic Shocks to SCBs

2.95 Any contagion from failure of a bank is likely to get magnified if macroeconomic shocks result in distress to the banking system. In such a situation, similar shocks may cause some SCBs to fail the solvency criterion, which, then, acts as a trigger for further solvency losses.

[50] Failure Criterion for both PSBs and PVBs has been taken as Tier 1 CRAR falling below 7 per cent.

Chart 2.50: Contagion Impact of Macroeconomic Shocks (Solvency Contagion)



Sources: RBI supervisory returns and staff calculations.

2.96 In the previous iteration, the shock was applied to the entity that could cause the maximum solvency contagion losses. Here, we consider another iteration, where the initial impact on an individual bank's capital is taken from the macro stress test results[51]. In such conditions, capital loss(+)/gain(-) under various macroeconomic scenarios stood at (-) 0.1 per cent, 14.7 per cent and 5.8 per cent of Tier I capital for baseline, adverse scenario 1 and adverse scenario 2, respectively. All banks would maintain the regulatory minimum capital in the baseline scenario, whereas Tier I capital ratio would fall below 7 per cent for four banks in adverse scenario 1 and for one bank in adverse scenario 2. As a result, there would be marginal additional solvency losses to the banking system due to contagion (over and above the initial loss of capital due to the macro shocks), without failure of additional banks (Chart 2.50 a and b).

Summary and Outlook

2.97 Bank credit growth has moderated but remains in double digits and broad based. The asset quality parameters of banks have improved further and their capital levels remain robust. Although net interest margins have narrowed, banks' return on equity and return on assets have improved. MTM losses in the HTM books of SCBs have turned a corner to record gains. The balance sheet of the NBFC sector has gained further strength.

2.98 Macro stress tests reveal that SCBs' aggregate capital would remain much higher than the minimum regulatory capital requirements in March 2026 under adverse scenarios. Stress test for NBFCs shows that even under a high-risk scenario, their CRARs would remain much above the regulatory minimum level. The ability of the financial institutions to absorb shocks in adverse scenarios provide comfort on financing of economic growth dynamics, going forward.

[51] The contagion analysis used the results of the macro-stress tests and made the following assumptions:

(a) The projected losses under a macro scenario (calculated as reduction in projected Tier 1 CRAR, in percentage terms, in March 2026 with respect to the actual value in September 2024) were applied to the September 2024 capital position assuming proportionally similar balance sheet structures for both September 2024 and March 2026.

(b) Bilateral exposures between financial entities are assumed to be similar for September 2024 and March 2026.

Chapter III

Regulatory Initiatives in the Financial Sector

Global regulatory initiatives remained focused on strengthening the resilience of the financial system by mitigating risks arising from technological advancements, cyber-security threats and third-party dependencies. Domestically, regulators emphasised upon reinforcing the strength of financial intermediaries, preventing frauds and protecting customers. The Financial Stability and Development Council (FSDC) and its Sub-Committee remain resolute in their commitment to fostering a robust and efficient financial system for the Indian economy.

Introduction

3.1 As the global financial system navigates through high uncertainty, regulators remain focused on strengthening the financial system and identification and mitigation of potential vulnerabilities. Policymakers and international standard-setting bodies are prioritising measures to safeguard the resilience of an increasingly complex financial system in an environment of technological advancements and incorporating climate risk through proactive regulatory and supervisory actions. Concurrently, regulatory initiatives are being undertaken to address vulnerabilities in non-bank financial intermediaries, the banking sector and cross-border payment systems.

3.2 Against this backdrop, this chapter reviews the recent regulatory initiatives, both global and domestic, aimed at enhancing the stability and resilience of the financial system.

III.1 Global Regulatory Developments

III.1.1 Markets and Financial Stability

3.3 The International Organisation of Securities Commissions (IOSCO) published a report[1] on "Market Outages"[2] in June 2024, proposing measures to enhance market resilience and outlining appropriate response by trading venues and their regulators in case of suspension of trading due to a technical problem. Apart from taking stock of the current legislative and regulatory framework surrounding business continuity plans, a survey was done to gauge organisational requirements and arrangements of trading venues and market participants. The survey found many episodes of market outages on listed trading venues between 2018 and 2022, with 'Software issues' and 'Hardware issues' cited to be the top reasons behind such incidents. The report enlists several good practices, such as conducting lessons-learned exercises, establishing and publishing an outage

[1] IOSCO (2024), "Market Outages", June.

[2] In the report *ibid.*, "market outage" is used to refer to the disruption of outright/ orderly trading on a trading venue caused by a technical problem or an operational issue, which leads to the suspension of trading.

plan, methodology for alternative closing prices and communication plans to help ensure business continuity.

3.4 The IOSCO final report[3] on "Leveraged Loans and Collateralised Loan Obligations (CLOs)" reviews origination practices in the leveraged loan[4] and CLO[5] segments, highlighting good practices to ensure adequate investor protection. The report observes that the borrower base has shifted from traditional industrial sectors towards technology and healthcare with the credit profile of corporate borrowers broadly deteriorating. The current investor base majorly consists of non-banks as regulatory oversight has prompted banks to keep less risky and less capital-intensive investments on books. There have been significant developments in market practices including the rise in covenant-lite[6] deals, increasing complexity of documentation and highly leveraged transactions. The IOSCO has outlined twelve good practices across five themes, *viz.*, (i) origination and refinancing based on sound business premise; (ii) transparency on EBITDA adjustments and other loan covenants; (iii) strengthening alignment of interest from loan origination to end investors; (iv) addressing interests of different market participants throughout the intermediation chain; and (v) disclosure of information on an ongoing basis.

III.1.2 Technology and Financial Stability

3.5 Adoption of artificial intelligence (AI) by companies and service providers can help optimise their operations and resource allocation. The pace at which AI-based technologies have, however, penetrated business operations and front-end consumer services has evoked concerns about the associated risks to wider public interest. The European Union (EU) enacted the European Artificial Intelligence Act (AI Act) in August 2024[7], pioneering the formulation of comprehensive regulations around the use of AI. The Act provides for ensuring that any AI system[8] developed and deployed in the EU is reliable and safeguards people's fundamental rights while creating a conducive environment for innovation and investment.

3.6 The discussions[9] held during the Organisation for Economic Co-operation and Development and the Financial Stability Board (OECD – FSB) Roundtable on AI in Finance noted the rapid adoption of predictive[10] AI systems, such as Machine Learning (ML) and Generative AI (GenAI)[11], especially by banks and insurance companies and called for policy makers to promote the safe use of AI in financial services. The report notes that the use of AI in finance has increased operational efficiency, risk modelling and fraud detection and

[3] IOSCO (2024), "Leveraged Loans and CLOs Good Practices for Consideration", June.

[4] Loans to highly indebted, non-investment grade, nonfinancial corporate issuers. Such loans usually carry a floating rate of interest and, in contrast to high yield bonds, are secured by the borrower's assets.

[5] A type of securitisation in which a portfolio of loans is bought by a special purpose vehicle that finances the portfolio by the issuance of financial instruments in the form of bonds.

[6] Fewer and looser provisions on investor protection.

[7] European Commission Press Release IP/24/4123 "European Artificial Intelligence Act comes into force", August 1, 2024.

[8] The Act defines an 'AI system' as a machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment and that, for explicit or implicit objectives, infers from the input it receives, how to generate outputs such as predictions, content, recommendations or decisions that can influence physical or virtual environments.

[9] OECD – FSB (2024), "Roundtable on Artificial Intelligence (AI) in Finance", September.

[10] IBM defines predictive artificial intelligence as use of statistical analysis and machine learning to identify patterns, anticipate behaviours and forecast upcoming events.

[11] IBM defines generative AI as deep-learning models that can generate high-quality text, images, and other content based on the data they were trained on.

the sector is exploring the potential of GenAI for internal applications. There is increasing reliance on data driven models, cloud services and third-party provided AI software, which could amplify existing vulnerabilities in the financial sector. The report states that the policy and regulatory frameworks surrounding the use of AI in financial services should strive to achieve a balance between encouraging innovation and ensuring consumer protection and financial supervisors need to develop necessary expertise, tools and skills for effective oversight of finance-based AI applications.

3.7 Tokenisation[12] has permeated the financial sector through crypto-asset markets and the advent of digital tokens created on programmable platforms has provided an ecosystem where multiple issuers, investors, payers and payees may issue, trade and settle transactions with traditional money and other assets. Various projects and experiments resulting in application of tokenisation in financial markets have garnered scrutiny from central banks, given their regulatory ambit over payments system, monetary policy and financial stability. In this context, the Bank for International Settlements (BIS) and the Committee on Payments and Market Infrastructures (CPMI) submitted a joint report[13] to the G20[14] on "Tokenisation in the context of money and other assets" which, *inter alia*, concludes that token-based arrangements that provide platform-based intermediation in financial assets have the potential to alter market structures and may lead to network effects.

3.8 The Financial Stability Board's (FSB) report[15] on the 'Financial Stability Implications of Tokenisation' focuses on a subset of tokenisation initiatives, *viz.*, tokenised money[16] based on distributed ledger technology (DLT), assessed to be the most relevant for financial stability. The report identifies several vulnerabilities associated with DLT-based tokenisation that could impact financial stability, including liquidity and maturity mismatches, leverage, asset pricing and asset quality issues, interconnectedness and operational fragilities. The FSB released a status report[17] on the implementation of the "Crypto-Asset Policy Implementation Roadmap", endorsed by the G20 members in 2023, which highlights that stablecoin issuers are becoming significant holders of mainstream financial assets by virtue of owning them as collateral. Linkages of crypto-assets with core financial markets and institutions, however, appears to remain limited in scale. The report states that nearly all FSB members have either put in place or are developing regulatory frameworks for crypto-assets and stablecoins. Key challenges in regulatory enforcement include deliberate evasion of regulation by entities, lack of compliance culture and data gaps. The FSB also undertook an analysis

[12] Tokenisation is the process of generating and recording a digital representation of traditional assets on a programmable platform (BIS, 2024).

[13] Bank for International Settlements (BIS) and Committee on Payments and Market Infrastructures (CPMI) (2024), "Tokenisation in the context of money and other assets: concepts and implications for central banks: Report to the G20", October.

[14] The Group of Twenty (G20) is the premier forum for international economic cooperation. It plays an important role in shaping and strengthening global architecture and governance on all major international economic issues.

[15] FSB (2024), "The Financial Stability Implications of Tokenisation", October.

[16] Money which can be potentially used as a settlement currency for payments (*e.g.* commercial bank deposits and central bank deposits) and other financial assets (*e.g.* securities such as mutual fund shares). The report does not examine initiatives involving central bank digital currencies (CBDCs) or crypto-assets.

[17] FSB (2024), "G20 Crypto-asset Policy Implementation Roadmap", October.

of cross-border regulatory and supervisory issues of global stablecoin arrangements in EMDEs. The report[18] posits that country specific macroeconomic and demographic factors have led to a higher level of interest and activity related to stablecoins in EMDEs as compared to AEs. These developments can undermine the effectiveness of monetary policy, circumvent capital controls, strain fiscal resources and threaten financial stability. Inconsistency in thresholds to identify a systemically important stablecoin (*e.g.*, an advanced economy versus a small open emerging economy) remains a unique cross-border regulatory and supervisory challenge.

III.1.3 Banking and Financial Stability

3.9 The 2023 banking turmoil brought to fore a host of issues such as changed depositor behaviour due to technological developments, the advanced pace of bank runs in case of distress, the materiality of additional liquidity risk factors and the role and use of supervisory monitoring tools. The Basel Committee on Banking Supervision (BCBS) progress report[19] on "The 2023 banking turmoil and liquidity risk" highlights the challenges in overseeing banks' liquidity risk due to social media usage, digitalisation of finance and first- and second- round propagation effects of failure of a non-systemic bank. Addressing the same issue, the FSB report[20] titled "Depositor Behaviour and Interest Rate and Liquidity Risks in the Financial System" emphasises the need for enhanced operational readiness for resolution, particularly for banks heavily reliant on uninsured deposits. The report further highlights vulnerabilities beyond banks, including life insurers and non-bank real estate investors, whose interest rate-sensitive assets expose them to heightened solvency and liquidity risks in high interest rate environment.

3.10 The BCBS issued a consultative document[21] on "Principles for the sound management of third-party risk". The principles outline the risks arising from banks' increasing reliance on third-party service providers to access technological expertise, reduce costs, improve efficiency and focus on core activities. The principles establish a common baseline for banks and supervisors for the risk management of such third-party service arrangements and provide the necessary flexibility to accommodate evolving practices and regulatory frameworks across jurisdictions. The BCBS working paper[22] on "Novel risks, mitigants and uncertainties with permissionless distributed ledger technologies" highlights that use of such technologies by banks exposes them to operational risk and to a lesser extent liquidity risk and market risk. Potential mitigants include effective business continuity practices and use of adequate safeguards such as allow-listing[23] and smart contracts.

III.1.4 Non-Banking Financial Intermediation and Financial Stability

3.11 The expansion of non-bank financial intermediation (NBFI), now comprising nearly half of the global financial assets, has not only

[18] FSB (2024), "Report on Cross-border Regulatory and Supervisory Issues of Global Stablecoin Arrangements in Emerging Market and Developing Economies (EMDEs)", July.

[19] BCBS (2024) "The 2023 banking turmoil and liquidity risk: a progress report", October.

[20] FSB (2024), "Depositor Behaviour and Interest Rate and Liquidity Risks in the Financial System", October.

[21] BCBS (2024), "Principles for the sound management of third-party risk", July.

[22] BCBS (2024), "Novel risks, mitigants and uncertainties with permissionless distributed ledger technologies", August.

[23] The consultative document defines 'allow-listing' as programming a token to be accessed only by approved addresses on the blockchain.

increased the sector's role in financing the real economy but also its potential to amplify systemic risks. The FSB has developed a work program to enhance NBFI resilience, aiming to stabilise the demand for liquidity, improve risk monitoring and reduce the need for central bank interventions. The FSB progress report[24] in this regard notes that the current design and implementation of NBFI policies has continued to advance at an uneven pace across jurisdictions. The report also outlines work to assess and address systemic risk in NBFI which is structured in three main areas *viz.,* (i) in-depth assessment and ongoing monitoring of vulnerabilities in NBFI; (ii) development of policies to enhance NBFI resilience; and (iii) monitoring the implementation and assessment of the effects of NBFI reforms. The key deliverables for 2024-25 include: (a) closing identified data gaps for monitoring financial stability risks relating to open-ended funds liquidity mismatch and the use of liquidity management tools; (b) issuance of policy recommendations on liquidity preparedness of market participants for margin and collateral calls; and (c) completion of policy work on transparency in centrally cleared markets.

3.12 The FSB's final report[25] on "Liquidity Preparedness for Margin and Collateral Calls" notes that margin and collateral calls are a necessary protection against counterparty risk, but in times of stress they can amplify the demand for liquidity by market participants and have a systemic impact on broader markets. The policy recommendations include, *inter alia*, (i) establishing contingency funding plans to ensure that liquidity needs can be met in case of increased margin and collateral calls; (ii) regular review of liquidity risk frameworks to ensure ongoing effectiveness; and (iii) tweaking existing liquidity stress tests and scenario designs to cover a range of extreme but plausible scenarios, including both backward-looking and hypothetical scenarios.

III.1.5 Cross-Border Payments and Financial Stability

3.13 Following the GFC, the G20 introduced the Legal Entity Identifier (LEI) system to improve transparency and manage financial risk exposures across entities. Initially deployed in the over-the-counter (OTC) derivatives and securities markets, the LEI has since been adopted within the G20 Roadmap to enhance cross-border payment efficiency by supporting 'Know Your Customer' (KYC) processes and sanctions screening. The FSB October 2024 progress report [26] on "Implementation of the Legal Entity Identifier" underscored the LEI's role in facilitating cross-border transactions. Since 2019, active LEIs have increased by 84 per cent, with 1.5 million renewed and validated for data quality. However, broader LEI adoption faces challenges including limited perceived incentives for voluntary adoption and high costs, especially for low-income jurisdictions. To address these barriers, the FSB recommends sustained efforts to promote LEI use and urges jurisdictions to fully implement previously issued recommendations.

III.1.6 Climate Finance and Financial Stability

3.14 The Network for Greening the Financial System (NGFS) has been playing a pivotal role in addressing the risks associated with climate change across the regulatory, investment and monetary policy fields, and its projects include developing

[24] FSB (2024) "Enhancing the Resilience of Non-Bank Financial Intermediation Progress", July.

[25] FSB (2024) "Liquidity Preparedness for Margin and Collateral Calls: Final report", December.

[26] FSB (2024) "Implementation of the Legal Entity Identifier: Progress report", October.

supervisory practices for managing climate-related risks, designing climate scenarios and guiding central banks on nature-related financial risks and implications of climate change on monetary policy. A conceptual framework[27] on "Nature-related Financial Risks" was published by the NGFS to help develop a common understanding of such risks among central banks and financial supervisors. The framework and its guiding questions are intended to facilitate identification, assessment, management and disclosure of nature-related financial risks by various stakeholders.

3.15 The NGFS report[28] on "Climate change, the macroeconomy and monetary policy" was aimed at identifying the ways in which physical hazards and the transition to net zero can influence variables such as output and inflation. The report also provides guidelines to assist central banks in understanding the macroeconomic impacts of climate-related developments on monetary policy and incorporation of climate related impacts in central banks' modelling toolkits.

3.16 The FSB progress report[29] on "Achieving Consistent and Comparable Climate-Related Disclosures" details the implementation status of sustainability disclosure frameworks and development of global assurance and ethics standards for such disclosures and observes that significant progress has been achieved since 2021 in setting regulations, guidelines or strategic roadmaps for climate-related disclosures.

III.2 Domestic Regulatory Developments

3.17 Since the publication of the June 2024 issue of the FSR, the Sub Committee of the Financial Stability and Development Council (FSDC-SC) chaired by the Governor, Reserve Bank of India met once in September 2024. The Sub-Committee reviewed major global and domestic macroeconomic and financial developments alongwith issues relating to inter-regulatory coordination in the Indian financial sector. Members shared their assessments of potential risks to financial stability and discussed various issues that may have financial stability implications. The Sub-Committee also reviewed the activities of various technical groups under its purview and the functioning of State-level Coordination Committees (SLCCs) in States/ Union Territories (UTs).

3.18 The FSDC-SC resolved to continue its focus on improving financial sector resilience through inter-regulatory coordination while remaining watchful of emerging challenges to the economy and the financial system, including those from global spillovers, cyber risks and climate change.

III.3 Initiatives from Regulators / Authorities

3.19 During the period under review, financial regulators undertook several initiatives to improve the resilience of the Indian financial system (major measures are listed in Annex 3).

III.3.1 Directions on Fraud Risk Management to Regulated Entities

3.20 The RBI issued revised directions on Fraud Risk Management for its regulated entities (REs), outlining a comprehensive framework for prevention, early detection and timely reporting of incidents of fraud to Law Enforcement Agencies (LEAs) and Supervisors. These directions further strengthen the role of the Board in overall

[27] Network for Greening the Financial System (2024), "Nature-related Financial Risks: a Conceptual Framework to guide Action by Central Banks and Supervisors", July.

[28] Network for Greening the Financial system (2024), "Climate change, the macroeconomy and monetary policy", October.

[29] Financial Stability Board (2024) "Achieving Consistent and Comparable Climate-Related Disclosures 2024 Progress Report", November.

governance and oversight of fraud risk management in the REs. The directions emphasise the need for instituting robust internal audit and controls framework in the REs and also provide a revised framework for early warning signals (EWS) and red flagging of accounts (RFA) for early detection of frauds. The directions aim to reduce the number of incidences and the impact of fraudulent activities by better equipping institutions to respond to fraud risks with both preventative and corrective measures. The Reserve Bank's focus on fraud risk management aligns with its broader efforts to enhance financial stability and resilience in an increasingly digital and interconnected economy thereby enhancing customer trust and protecting the financial sector's integrity.

III.3.2 Prompt Corrective Action (PCA) Framework for Primary (Urban) Co-operative Banks (UCBs)

3.21 On a review of the existing Supervisory Action Framework (SAF) for UCBs, a revised framework under the nomenclature "Prompt Corrective Action (PCA) Framework" has been devised by the RBI to enable early supervisory intervention at an appropriate time, requiring the UCBs to initiate and implement remedial measures in a timely manner, to restore financial health. Under this framework, UCBs that breach certain risk thresholds based on capital adequacy, asset quality and/or profitability are placed under corrective action plan. This plan includes, *inter alia*, restrictions on expansion of size of the balance sheet and capital investments, reduction in exposure to high risk-bearing assets and other operational constraints to restore financial health. The PCA framework does not preclude RBI from taking any other action as it deems fit at any time in addition to the corrective actions prescribed in the framework. The provisions of the PCA framework will be effective from April 1, 2025. The PCA Framework shall be applicable to all UCBs under Tier 2, Tier 3 and Tier 4 categories except UCBs under All Inclusive Directions. Tier 1 UCBs, though not covered under the PCA Framework as of now, shall be subject to enhanced monitoring under the extant supervisory framework.

III.3.3 Treatment of Wilful Defaulters and Large Defaulters

3.22 The RBI has come out with a comprehensive guideline outlining the regulatory framework and procedures for classification of borrowers as wilful defaulters to reinforce the accountability of defaulting borrowers and strengthen risk management frameworks of banks. The directions will play a crucial role in maintaining the integrity of the financial system through transparent mechanism for identification and classification of wilful defaulters, incorporating principles of natural justice, specifying measures and consequences for those borrowers who deliberately default on their financial obligations, reporting and dissemination of credit information on large defaulters and preventive measures through proper credit appraisal and monitoring end use of funds.

III.3.4 Cyber Resilience and Digital Payment Security Controls for Non-Bank Payment System Operators

3.23 In order to ensure that the authorised non-bank payment system operators (PSOs) are resilient to existing and emerging information systems and cyber security risks, the RBI issued directions on 'Cyber Resilience and Payment Security Controls' for non-bank PSOs that focus on enhancing the security of digital payment systems in the face of growing cyber threats. These directions aim to improve safety and security of the payment systems operated by PSOs by providing a framework for overall information security preparedness covering,

inter alia, governance controls, information security measures and digital payment measures, with an emphasis on cyber resilience.

3.24 These directions outline mandatory 'Cyber Crisis Management Plan' (CCMP) to detect, contain, respond and recover from cyber threats and cyber attacks. They also specify the minimum information security standards for PSOs in areas, such as identity and access management, network security, vendor risk management, business continuity plan and cloud security. This initiative also addresses the rising reliance on digital payment services, requiring PSOs to adhere to digital payment controls in mobile and card payments. These security measures aim to protect consumers from fraud and ensure trust in digital financial services.

III.3.5 Scheme for Trading and Settlement of Sovereign Green Bonds (SGrBs) in the International Financial Services Centre (IFSC) in India

3.25 With a view to facilitate wider non-resident participation in SGrBs, a scheme for investment and trading in SGrBs by eligible foreign investors in IFSC has been notified by the RBI in consultation with the Government and the International Financial Services Centres Authority (IFSCA). This scheme outlines the eligibility of investors, securities eligible for investment, guidelines for participation in primary and secondary markets, trading and settlement procedure and reporting requirements. At present, foreign portfolio investors (FPIs) registered with the SEBI are permitted to invest in SGrBs. This scheme shall facilitate easier access for non-resident investors to invest and trade in SGrBs through the IFSC, thereby enhancing global climate capital flows into India.

III.3.6 Irregular Practices in Gold Loans

3.26 To address the non-adherence to prudential guidelines by the supervised entities (SEs) in grant of loans against pledge of gold ornaments and jewellery, the RBI has advised SEs to comprehensively review their policies, identify gaps and implement corrective measures within a specified timeframe. The guidelines assume importance in the wake of the significant growth in the gold portfolio in certain SEs and identified gaps like, *inter alia*, deficiencies in use of third-parties for outsourcing, discrepancies in gold valuation, inadequate due diligence and insufficient monitoring of the end use of loan funds.

III.3.7 Recognition of Central Counterparties by Foreign Regulators

3.27 The issues of extraterritoriality of certain foreign regulations concerning domestic central counterparties (CCPs), the derecognition (or the lack of recognition) of Indian CCPs by foreign regulators and how such regulations can create liquidity inefficiencies and disrupt domestic financial stability have been of concern. To address these issues, the RBI has been engaging with foreign regulatory bodies, including the European Securities and Markets Authority (ESMA).

III.3.8 Strengthening of Foreign Portfolio Investors Norms

3.28 To guard against possible circumvention of minimum public shareholding (MPS) norms, the SEBI has mandated disclosure of granular details of all entities holding any ownership, economic interest or control in an FPI, on a full look through basis, without any threshold, by FPIs that fulfil any of the following criteria: (a) holding more than

50 per cent of their Indian equity AUM in a single Indian corporate group, or (b) individually, or along with their investor group (in terms of Regulation 22(3) of the FPI Regulations, 2019), holding more than ₹25,000 crore of equity AUM in the Indian market.

III.3.9 Association of Persons Regulated by the SEBI and their Agents with Certain Persons ('Finfluencers')

3.29 The significant online presence of 'finfluencers[30]' provides them the ability to influence the financial decisions of their followers. These activities fall within the purview of multiple regulatory bodies, however, most 'finfluencers' are neither registered with any of the financial sector regulator nor authorised under the SEBI's Regulations to offer advice or recommendations regarding securities falling under the purview of the SEBI.

3.30 In this context, the SEBI has recently brought out amendments to the SEBI (Intermediaries) Regulations, 2008, Securities Contracts (Regulation) (Stock Exchanges and Clearing Corporations) Regulations, 2018 and the SEBI (Depositories and Participants) Regulations, 2018, which now provide that persons regulated by the SEBI (including recognised stock exchanges, clearing corporations and depositories) and agents of such persons shall not have any direct or indirect association with another person[31] who: (a) provides advice or any recommendation, directly or indirectly, in respect of or related to a security or securities, unless the person is registered with or otherwise permitted by the SEBI to provide such advice or recommendation; or (b) makes any claim of returns or performance, expressly or impliedly, in respect of or related to a security or securities, unless the person has been permitted by the SEBI to make such a claim.

3.31 Entities regulated by the SEBI, including recognised stock exchanges, clearing corporations and depositories, must ensure that neither they nor their agents engage in the prohibited activities without the necessary permissions. Additionally, the SEBI registered entities, which are also regarded as 'finfluencers', are already subject to the advertisement code established by the SEBI, stock exchanges and the relevant regulatory authorities.

III.3.10 Valuation of Additional Tier 1 Bonds ('AT-1 Bonds')

3.32 According to the framework for valuation of bonds with multiple call options laid down in the SEBI Master Circular for Mutual Funds, valuation of perpetual bonds held by MFs is required to be done at the lowest of the value obtained by valuing the bond to various call dates and valuing to the maturity date (the deemed maturity of perpetual bonds has been specified as 100 years from the date of issuance of the bond). Additionally, mutual funds have been permitted to value AT-1 bonds held by them on Yield-to-Call basis. For all other purposes, deemed maturity of all perpetual bonds continues to be in line with the SEBI Master Circular.

III.3.11 Measures to Strengthen Equity Index Derivatives Framework

3.33 The SEBI introduced several measures to strengthen Equity Index Derivatives Framework for increased investor protection and market stability in October 2024 in view of increased retail participation

[30] Financial influencers, commonly known as 'finfluencers', are individuals who provide information, advice, or recommendations on various financial topics, such as investing in securities, personal finance, banking products, insurance and real estate, through engaging content on digital platforms like Instagram, Facebook, YouTube, LinkedIn and X (erstwhile Twitter).

[31] The term "another person" does not include those involved in investor education, as long as they do not participate in the specified prohibited activities.

in equity derivatives and heightened speculative trading volumes in index derivatives on the day of expiry.

3.34 To ensure continued suitability and appropriateness of index derivatives segment for investors, the minimum contract size for index derivatives at the time of introduction has been increased to ₹15 lakh from existing ₹5 lakh. Further, the contract size shall be fixed in such a manner that the value of the derivative contract would be in the range of ₹15 lakh to ₹20 lakh (from existing range of ₹5 lakh to ₹10 lakh). To address heightened activity in index options on expiry day, weekly index derivatives products have been rationalised, tail risk coverage on the day of options expiry has been increased through increase in the margin, calendar spread benefit for options on the expiry day has been discontinued and intraday monitoring of existing position limits at entity level has been stipulated in addition to the existing end of day monitoring. Lastly, upfront collection of option premium from options buyers has been mandated to ensure basic risk hygiene.

III.3.12 Review of Eligibility Criteria for Entry/Exit of Stocks in Derivatives Segment

3.35 With an objective to ensure that only high-quality stocks with sufficient market depth are allowed to trade in the equity derivatives segment, the SEBI revised the eligibility criteria for entry/exit of stocks in the segment in August 2024. The stock's median quarter sigma order size (MQSOS), stock's market wide position limit (MWPL) and the stock's average daily delivery value (ADDV) in the cash market, over the previous six months, on a rolling basis, were raised from ₹25 lakh to ₹75 lakh (due to significant rise in the average market turnover), ₹500 crore to ₹1,500 crore (on account of surge in market capitalisation since the last review) and ₹10 crore to ₹35 crore (owing to over 3x increase in average daily delivery value since the last review), respectively. If a stock in derivatives segment fails to meet any of the above criteria for a continuous period of three months, on a rolling basis, based on the data for previous six months, it shall exit from the derivatives segment. Further, an additional criterion of product success framework (PSF) was introduced for evaluating stocks for exit from the derivatives segment.

III.3.13 Review of Stress Testing Framework for Equity Derivatives Segment

3.36 New stress testing methodologies were adopted to get a better understanding and measurement of the prevalent tail risk in the equity derivatives segment and accordingly, determine the size of the default fund of clearing corporations in the equity derivatives segment. Additionally, keeping in view the increased funding needs of clearing corporations post adoption of new stress testing methodologies in the equity derivatives segment, provisions were incorporated for inter-segment transfer of SGF from equity cash to equity derivatives segment and staggered contribution to the core SGF of equity derivatives segment.

III.3.14 Monitoring of Position Limits for Equity Derivatives Segment

3.37 In October 2024, the SEBI announced an upward revision in the position limits for trading members in the index futures and options contracts, cumulatively for client and proprietary trades, set at ₹7,500 crore or 15 per cent of the total open interest (OI) in the market, whichever is higher, from the earlier mandate of ₹500 crore or 15 per cent of the total OI in the market. The position limits will be applicable for index futures and index options separately and the revised limits are effective immediately.

3.38 The SEBI also decided that in line with the practice in currency derivatives segment, starting April 2025, positions of market participants in the equity derivatives segment (index and stocks) shall be monitored based on the previous day's open interest of the overall market.

III.3.15 Review of Small and Medium Enterprises (SME) framework

3.39 With the objectives of strengthening the framework for public issues by SMEs and to facilitate SMEs having a sound track-record raise funds from the public and get listed on stock exchanges, and to protect the interests of investors in the SMEs, the SEBI has approved amendments to the SEBI (ICDR) Regulations, 2018 and the SEBI (LODR) Regulations, 2015.

3.40 Key changes brought out by the amendments are: a) an SME issuer shall make an IPO, only if the issuer has an operating profit (earnings before interest, depreciation and tax) of ₹1 crore from operations for any two out of the previous three financial years at the time of filing of its draft red herring prospectus; b) offer for sale (OFS) by selling shareholders in SME IPO shall not exceed 20 per cent of the total issue size and selling shareholders cannot sell more than 50 per cent of their holding; c) lock-in on promoters' holding held in excess of minimum promoter contribution will be released in phased manner after one year; d) allocation methodology for non-institutional investors (NIIs) in SME IPOs has been aligned with methodology used for NIIs in Main Board IPOs; e) amount for General Corporate Purpose in SME IPO shall be capped to 15 per cent of amount being raised by the issuer or ₹10 crore, whichever is lower; f) SME issues shall not be permitted, where objects of the issue consist of repayment of loan from promoter, promoter group or any related party, from the issue proceeds, whether directly or indirectly; and g) related party transaction norms, as applicable to listed entities on Main Board, has been extended to SME listed entities, provided that the threshold for considering related party transactions as material shall be 10 per cent of annual consolidated turnover or ₹50 crore, whichever is lower.

III.3.16 Cybersecurity and Cyber Resilience Framework (CSCRF) for the SEBI Regulated Entities

3.41 To ensure robust cybersecurity measures for protection of IT infrastructure and data at its REs, the Cybersecurity and Cyber Resilience Framework (CSCRF) was issued by the SEBI. The primary objectives of CSCRF are to: (a) enhance cybersecurity at REs by establishing cybersecurity standards and guidelines with graded approach; (b) facilitate risk management by providing comprehensive risk assessment guidelines to identify, assess and mitigate cybersecurity risks in a streamlined manner; (c) promote cyber resilience at REs by developing capabilities to not only defend against cyber-attacks but also to recover swiftly from incidents and minimise disruption to securities market operations; (d) enhance efficient audits and compliance; and (e) encourage REs to adopt a culture of continuous improvement and vigilance in cybersecurity practices and to stay updated with evolving cyber threats and technologies.

3.42 The CSCRF has laid down detailed guidelines that outline the responsibilities of REs, including board-level oversight, accountability of REs' MD/CEO, appointment of chief information security officer (CISO), composition of IT Committee for REs and other governance measures with operational controls. It also mandates regular cyber audit and

risk assessment to identify vulnerabilities and enhance the security posture, including a 'Cyber Capability Index' (CCI) to help REs assess their cyber resilience on a periodic basis. Further, the CSCRF has mandated scenario-based cybersecurity drills to handle real world threat scenarios to improve preparedness and strengthen cybersecurity capabilities.

III.3.17 Framework of Financial Disincentives for Surveillance Related Lapses at Market Infrastructure Institutions (MIIs)

3.43 MIIs (*i.e.,* stock exchanges, clearing corporations and depositories), which are systemically important institutions in the Indian securities market and are the first level regulators, need to be well equipped to detect market abuse, including new modus operandi that could be adopted by unscrupulous elements, and take prompt preventive and effective action against such activities.

3.44 In view of certain surveillance related lapses observed at MIIs, the SEBI has implemented a framework that would be applicable to surveillance related lapses emanating from non-adherence to (a) the requisite surveillance activities or (b) decisions taken in the surveillance meetings held with the SEBI, and do not involve any subjective discretionary deviations or discretionary value judgments. The number of financial disincentives for such lapses is determined based on total annual revenue of the MII (an indicator of the size and impact of the MII on the market ecosystem) during the previous financial year and the number of instances of surveillance related lapses during the current financial year. The framework is intended to encourage an MII to be proactive in its surveillance related functions and perform the surveillance activities with utmost efficiency and to constantly monitor the performance and efficiency of its surveillance related functions.

III.3.18 Upstreaming of Clients' Funds by Stock Brokers/ Clearing Members to Clearing Corporations

3.45 To protect the funds of investors from being misused by stock brokers (SBs), such as using funds received from their clients to create Fixed Deposit Receipts (FDRs) and place such FDRs with the banks for obtaining Bank Guarantee (BG), the SEBI has introduced a framework under which stock brokers and clearing members (CMs) shall upstream all client funds to clearing corporations (CCs) to ensure that no client funds are retained by SBs/CMs.

3.46 Under this framework, SBs and CMs must upstream all clear credit balances of clients to CCs on an end-of-day basis wherein the client funds which are not required for meeting margin or settlement obligations must be transferred to CCs daily. Upstreaming can be done in three forms: (a) cash; (b) lien on FDRs created out of clients' funds; and (c) pledge of units of Mutual Fund Overnight Schemes (MFOS) created out of clients' funds. Any clear credit balance that could not be upstreamed to CCs due to receipt of funds from clients beyond cut-off time shall necessarily remain in Up Streaming Client Nodal Bank Account (USCNBA) until it is upstreamed to CC on the next day. Any FDRs shall be created only with banks which satisfy the CCs' exposure norms as specified by the CCs/ SEBI from time to time. FDRs shall be created only from USCNBA and tenure of such FDRs shall not be more than one year. Further, every FDR created out of clients' funds shall necessarily be always lien-marked to one of the CCs. This framework is meant to enhance investor protection, promote market integrity and ensure that client funds are invested in low-risk or risk-free products.

III.3.19 Specific Due Diligence of Investors and Investments of Alternative Investment Funds (AIFs)

3.47 AIFs play a crucial role in connecting sophisticated investors, having increased risk appetite, with companies in need of risk capital. AIFs have a relatively light touch regulatory framework *vis-à-vis* other the SEBI registered investment channels, such as mutual funds (MFs) and portfolio management services (PMS). While this offers flexibility of operations to AIFs, in the past few years, there have been some instances of AIFs facilitating circumvention of extant financial sector regulations, such as (a) facilitating ever-greening of stressed loans of regulated lenders; (b) facilitating investors, who are otherwise ineligible to become Qualified Institutional Buyers, in getting allotments in public offers as QIBs; (c) facilitating investors, who are otherwise ineligible to become Qualified Buyers, in subscribing to Security Receipts as Qualified Buyers in circumvention of SARFAESI Act, 2002; and (d) AIFs with domestic manager/sponsor, investing money received from predominantly foreign investors, to bypass applicable norms governing various routes of foreign investment.

3.48 Accordingly, the SEBI has prescribed a framework to specify the broad principles that AIFs need to adhere to, so as to address the circumventions, under which a set of implementation standards has been formulated to specify the due-diligence checks to be carried out by the specified narrow-based funds. The due diligence is to be carried out with respect to investors and investments of the AIF, prior to making an investment, to prevent facilitation of the identified circumventions. Adherence to these standards by AIFs would result in enhanced trust of investors and all other stakeholders in this asset class in the long run.

III.3.20 Institutional Mechanism by Asset Management Companies (AMCs) for Deterrence of Potential Market Abuse

3.49 To address instances of market abuse including front running and fraudulent transactions in securities, the existing regulatory framework, *viz.*, the SEBI (Mutual Funds) Regulations, 1996 has been amended, under which AMCs are required to put in place a structured institutional mechanism for identification and deterrence of potential market abuse in securities. The said amendments aim to a) enhance responsibility and accountability of management of AMCs for such an institutional mechanism; and b) foster transparency by requiring AMCs to have a whistle blower mechanism.

3.50 The SEBI has also specified the broad framework for implementation of the aforesaid institutional mechanism, consisting of enhanced surveillance systems, internal control procedures and escalation processes, such that the overall mechanism is able to identify, monitor and address specific types of misconduct, including front running, insider trading, misuse of sensitive information, among other things. The requirements related to alert generation and monitoring, reporting and periodic review at the end of AMCs have also been specified. To ensure uniform implementation of the institutional mechanism across the industry, the Association of Mutual Funds in India (AMFI) has issued detailed implementation standards, in consultation with the SEBI, which shall mandatorily be followed by all AMCs.

III.3.21 Use of Artificial Intelligence in the Financial Sector

3.51 Rapid technological advancements and adoption of new technologies offer benefits and create risks to the financial system. Consequently, financial sector regulators and supervisors are reinforcing their efforts to strengthen regulation and oversight to address potential financial

stability risks from emerging technologies. The RBI constituted a Committee in December 2024 to develop a Framework for Responsible and Ethical Enablement of AI (FREE-AI) in the financial sector, comprising of experts from diverse fields. The Committee will assess the current level of adoption of AI in financial services (globally and in India), identify potential risks associated with AI and recommend evaluation, mitigation and monitoring framework for financial institutions. In the securities market, the SEBI has advised market infrastructure institutions and registered intermediaries who use AI tools, either designed by them or procured from third party technology service providers, to take full responsibility for their use of such tools, irrespective of the scale of adoption and ensure privacy, security and integrity of investors' data.

III.4 Other Developments

III.4.1 Customer Protection

3.52 The number of complaints received by the Offices of the Reserve Bank of India Ombudsman (ORBIOs) for the previous two quarters indicates that complaints pertaining to loans and advances and payment modes (*i.e.*, complaints pertaining to mobile/ electronic banking, credit card and ATM/ CDM/ debit card) continue to constitute over 70 per cent of the total number of complaints during Q1 and Q2 of 2024-25 (Table 3.1).

3.53 With the rise in digital transactions, the incidents of cyber frauds using novel modus operandi have increased in recent times. Considering the fact that the financial losses and emotional distress caused by these frauds are substantial, it is imperative that REs undertake wide scale preventive awareness initiatives to caution the public about such frauds and intensify efforts to identify mule accounts.

III.4.2 Enforcement

3.54 During June 2024 to November 2024, the Reserve Bank imposed monetary penalty on 153 REs (five PSBs; five PVBs; three foreign banks, two RRBs, 116 co-operative banks; 14 NBFCs and eight HFCs) and imposed an aggregate penalty of ₹29.64 crore for non-compliance with/contravention of statutory provisions and/ or directions issued by the Reserve Bank.

3.55 During H1:2024-25, the SEBI has undertaken 461 enforcement actions, which included 452 prohibitive directions (Final and Interim orders), cancellations of certificates of registration of five market intermediaries, prohibition on taking up new assignment/clients on three market intermediaries and one warning issued against an intermediary. Penalties amounting to ₹36.58 crore have been imposed against 297 entities while there have been five cancellations of certification of registration and prohibition on taking up new assignment/ clients on three entities during the period H1:2024-25.

Table 3.1: Category of Complaints Received under the RB-IOS, 2021

Sr. No.	Grounds of Complaint	April-June 2024		July-Sept 2024	
		Number	Share (per cent)	Number	Share (per cent)
1	Loans and Advances	22,534	29.68	22,436	30.69
2	Mobile / Electronic Banking	14,401	18.97	12,744	17.43
3	Opening / Operation of Deposit accounts	12,998	17.12	12,858	17.59
4	Credit Card	11,977	15.78	12,172	16.65
5	Other products and services*	5,502	7.25	4,996	6.83
6	ATM / CDM / Debit card	5,416	7.13	4,867	6.66
7	Para-Banking	1,175	1.55	1,051	1.44
8	Remittance and Collection of instruments	950	1.25	933	1.28
9	Pension related	731	0.96	760	1.04
10	Notes and Coins	106	0.14	90	0.12
11	Other products and services*	125	0.16	191	0.26
Total		75,915	100.00	73,098	100.00

Note: * includes bank guarantee/ letter of credit, customer confidentiality, premises and staff, grievance redressal, death/ missing claims *etc.*
Source: RBI.

Table 3.2: Coverage of Deposits

(Amount in ₹crore and No. of Accounts in crore)

Sr. No.	Item	Sep 30, 2023	Mar 31, 2024	Sep 30, 2024	Percentage Variation	
					(3) over (2)	(4) over (3)
	(1)	(2)	(3)	(4)	(5)	(6)
(A)	Number of Registered Banks	2009	1997	1989		
(B)	Total Number of Accounts	287.9	289.7	293.7	0.6	1.4
(C)	Number of Fully Protected Accounts	281.8	283.3	286.9	0.5	1.3
(D)	**Percentage (C)/(B)**	**97.9**	**97.8**	**97.7**		
(E)	Total Assessable Deposits	2,04,18,707	2,18,52,160	2,27,26,920	7.0	4.0
(F)	Insured Deposits	90,32,340	94,12,705	96,74,620	4.2	2.8
(G)	**Percentage (F)/(E)**	**44.2**	**43.1**	**42.6**		

Source: DICGC.

III.4.3 Deposit Insurance

3.56 The Deposit Insurance and Credit Guarantee Corporation (DICGC) extends insurance cover to depositors of all the banks operating in India. As on September 30, 2024, the number of banks registered with the DICGC was 1989, comprising 139 commercial banks (including 11 small finance banks, six payment banks, 43 regional rural banks, two local area banks) and 1850 co-operative banks. The Deposit Insurance Fund (DIF) with the Corporation recorded a year-on-year growth of 16.9 per cent to reach ₹2.14 lakh crore at end-September 2024.

3.57 With the present deposit insurance limit of ₹5 lakh, 97.7 per cent of the total number of deposit accounts (293.7 crore) were fully insured and 42.6 per cent of the total value of all assessable deposits (₹227.3 Lakh crore) was insured as on September 30, 2024 (Table 3.2).

3.58 The insured deposits ratio (*i.e.*, the ratio of insured deposits to assessable deposits) was higher for cooperative banks (63.1 per cent), followed by commercial banks (41.5 per cent) (Table 3.3). Within commercial banks, PSBs have higher insured deposit ratio *vis-à-vis* PVBs.

Table 3.3: Bank Group-wise Deposit Protection Coverage (as on September 30, 2024)

(₹crore)

Bank Groups	No. of Insured Banks	Insured Deposits (ID)	Assessable Deposits (AD)	IDR (ID/AD, per cent)
I. Commercial Banks	**139**	**89,34,151**	**2,15,53,399**	**41.5**
i) Public Sector Banks	12	57,93,657	1,19,84,450	48.3
ii) Private Sector Banks	21	24,76,339	75,95,372	32.6
iii) Foreign Banks	44	49,158	10,86,877	4.5
iv) Small Finance Banks	11	98,498	2,41,745	40.7
v) Payment Banks	6	18,375	18,470	99.5
vi) Regional Rural Banks	43	4,97,161	6,25,151	79.5
vii) Local Area Banks	2	962.2345	1,334	72.1
II. Cooperative Banks	**1,850**	**7,40,469**	**11,73,521**	**63.1**
i) UCBs	1,465	3,73,712	5,56,868	67.1
ii) SCCBs	33	63,262	1,47,586	42.9
iii) District Central Cooperative Banks	352	3,03,496	4,69,067	64.7
Total	**1,989**	**96,74,620**	**2,27,26,920**	**42.6**

Note: 1. IDR: Insured Deposit Ratio is calculated as Insured Deposit divided by Assessable Deposit.
2. The insured deposits to assessable deposits ratio may not tally due to rounding off.

Source: DICGC

Table 3.4: Deposit Insurance Premium

(₹crore)

Period	Commercial Banks	Co-operative Banks	Total
2023-24: HY1	10,962	666	11,628
2023-24: HY2	11,581	670	12,251
2024-25: HY1	12,408	719	13,127

Source: DICGC.

Table 3.5: Deposit Insurance Fund and Reserve Ratio

(₹crore)

As on	Deposit Insurance Fund (DIF)	Insured Deposits (ID)	Reserve Ratio (DIF/ID) (Per cent)
Sep 30, 2023	1,82,701	90,32,340	2.02
Mar 31, 2024	1,98,753	94,12,705	2.11
Sep 30, 2024	2,13,513	96,74,620#	2.21

Note: #Provisional.
Source: DICGC.

3.59 Deposit insurance premium received by the DICGC grew by 12.9 per cent (y-o-y) to ₹13,127 crore during H1:2024-25, of which, commercial banks had a share of 94.5 per cent (Table 3.4).

3.60 The DIF with the DICGC is primarily built out of the premium paid by insured banks, investment income and recoveries from settled claims, net of income tax. The DIF recorded a 16.9 per cent year-on-year increase to reach ₹2.14 lakh crore as on September 30, 2024. The reserve ratio (*i.e.*, ratio of DIF to insured deposits) increased to 2.21 per cent from 2.02 per cent a year ago (Table 3.5).

III.4.4 Corporate Insolvency Resolution Process (CIRP)

3.61 Since the provisions relating to the corporate insolvency resolution process (CIRP) came into force in December 2016, a total of 8002 CIRPs were initiated till September 2024 (Table 3.6), out of which 6039 (75.5 per cent) have been closed. Of the closed CIRPs, around 20.2 per cent have been closed on appeal or review or settled, 18.5 per cent have been withdrawn, around 43.5 per cent have ended in orders for liquidation and 17.7 per cent

Table 3.6: Corporate Insolvency Resolution Process (as on September 30, 2024)

Year/Quarter	CIRPs at the beginning of the Period	Admitted	Number of Closure by				CIRPs at the end of the Period
			Appeal/ Review/ Settled	Withdrawal under Section 12A	Approval of RP	Commencement of Liquidation	
2016 - 17	0	37	1	0	0	0	36
2017 - 18	36	707	95	0	18	91	539
2018 - 19	539	1157	158	97	75	305	1061
2019 - 20	1061	1991	348	220	132	537	1815
2020 - 21	1815	536	92	168	119	349	1623
2021 - 22	1623	891	125	200	143	340	1706
2022 - 23	1706	1262	189	229	187	406	1957
2023 - 24	1957	1004	157	167	270	442	1925
Apr - Jun, 2024	1925	234	35	19	70	80	1955
July – Sept, 2024	1955	183	21	20	54	80	1963
Total	NA	8002	1221	1120	1068	2630	1963

Note: These CIRPs are in respect of 7639 Corporate Debtors. This excludes 1 Corporate Debtor which has moved directly from Board for Industrial and Financial Reconstruction (BIFR) to resolution.
Source: Insolvency and Bankruptcy Board of India (IBBI).

Table 3.7: Sectoral Distribution of CIRPs (as on September 30, 2024)

Sector	Number of CIRPs						
	Admitted	Closed					Ongoing
		Appeal/ Review/ Settled	Withdrawal under Section 12 A	Approval of RP	Commencement of Liquidation	Total	
Manufacturing	**2990**	**420**	**433**	**500**	**1070**	**2423**	**567**
Food, Beverages & Tobacco Products	386	46	57	59	145	307	79
Chemicals & Chemical Products	326	56	64	51	98	269	57
Electrical Machinery & Apparatus	212	27	23	28	95	173	39
Fabricated Metal Products	157	25	28	22	50	125	32
Machinery & Equipment	326	59	57	39	107	262	64
Textiles, Leather & Apparel Products	506	61	75	68	212	416	90
Wood, Rubber, Plastic & Paper Products	352	47	50	62	119	278	74
Basic Metals	495	61	45	129	179	414	81
Others	230	38	34	42	65	179	51
Real Estate, Renting & Business Activities	**1746**	**321**	**272**	**165**	**479**	**1237**	**509**
Real Estate Activities	504	101	74	49	76	300	204
Computer and related activities	225	29	41	17	87	174	51
Research and Development	11	2	3	1	2	8	3
Other Business Activities	1006	189	154	98	314	755	251
Construction	**934**	**182**	**148**	**123**	**198**	**651**	**283**
Wholesale & Retail Trade	**809**	**105**	**79**	**71**	**349**	**604**	**205**
Hotels & Restaurants	**165**	**30**	**27**	**30**	**41**	**128**	**37**
Electricity & Others	**219**	**28**	**21**	**47**	**87**	**183**	**36**
Transport, Storage & Communications	**219**	**25**	**25**	**22**	**92**	**164**	**55**
Others	**920**	**110**	**115**	**110**	**314**	**649**	**271**
Total	**8002**	**1221**	**1120**	**1068**	**2630**	**6039**	**1963**

Note: The distribution is based on the CIN of corporate debtors and as per National Industrial Classification (NIC 2004).
Source: Insolvency and Bankruptcy Board of India (IBBI).

have ended in approval of resolution plans (RPs) (Table 3.7). A total of 1963 CIRPs (24.5 per cent) are ongoing.

3.62 The outcome of CIRPs as on September 30, 2024, shows that out of the operational creditor initiated CIRPs that were closed, 52 per cent were closed on appeal, review, or withdrawal (Table 3.8).

Table 3.8: Outcome of CIRPs, Initiated Stakeholder-wise (as on September 30, 2024)

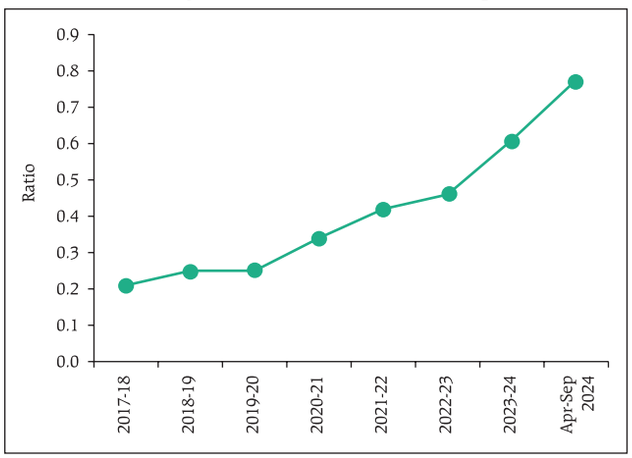
Outcome	Description		Number of CIRPs initiated by			
		Financial Creditor	Operational Creditor	Corporate Debtor	FiSPs	Total
Status of CIRPs	Closure by Appeal/Review/Settled	374	837	10	0	1221
	Closure by Withdrawal u/s 12A	328	784	8	0	1120
	Closure by Approval of RP	633	353	78	4	1068
	Closure by Commencement of Liquidation	1224	1132	274	0	2630
	Ongoing	1147	706	110	0	1963
	Total	**3706**	**3812**	**480**	**4**	**8002**
CIRPs yielding RPs	Realisation by FCs as per cent of Liquidation Value	174.2	129.7	146.3	134.9	161.1
	Realisation by FCs as per cent of their Claims	30.9	25.0	18.1	41.4	31.0
	Average time taken for Closure of CIRP (days)	704	714	572	677	698
CIRPs yielding Liquidations	Liquidation Value as per cent of Claims	5.5	8.9	8.4	-	6.3
	Average time taken for Closure of CIRP (days)	508	504	442	-	499

Note: FiSPs = Financial service providers. A "Financial service provider" means a person engaged in the business of providing financial services (other than banks) in terms of authorisation issued or registration granted by a financial sector regulator.
Source: Insolvency and Bankruptcy Board of India (IBBI).

3.63 The primary objective of the Insolvency and Bankruptcy Code (hereinafter referred as "Code") is rescuing corporate debtors in distress. The Code has rescued 3409 corporate debtors (1068 through resolution plans, 1221 through appeal or review or settlement and 1120 through withdrawal) till September 2024. It has referred 2630 corporate debtors for liquidation. Several initiatives are being taken to improve the outcomes of the Code, including monitoring of cases pending for admission and ongoing CIRPs. Further, the IBBI revised its mechanism for real-time information sharing regarding applications for the initiation of CIRP with the Information Utility (IU). These initiatives have had a substantial impact on the IBC process, as evidenced by the increase in the NCLT-approved resolutions and the admission of cases initiated by Financial Creditors (FCs). The number of cases ending with resolution *vis-à-vis* cases in which liquidation is ordered shows an increasing trend (Chart 3.1).

3.64 Cumulatively till September 30, 2024, creditors have realised ₹3.55 lakh crore under the resolution plans. Creditors have realised around 161 per cent of liquidation value and 86 per cent of fair value. The haircut for creditors relative to the fair value of assets was around 14 per cent, while relative to their admitted claims is around 69 per cent. Furthermore, realisable value through RPs does not include (a) possible realisation through corporate and personal guarantors and recovery against avoidance transactions; (b) the CIRP cost; and (c) other probable future realisations, such as increase in value of diluted equity and funds infused into the corporate debtor, including capital expenditure by the resolution applicants. About 40 per cent of the CIRPs that yielded RPs were defunct companies. In these cases, the claimants have realised 150 per cent of the liquidation value and 19 per cent of their admitted claims.

Chart 3.1: Summary of Outcomes - Resolution to Liquidation ratio



Source: Insolvency and Bankruptcy Board of India (IBBI).

3.65 As a result of the behavioural change effectuated by the Code, many debtors are settling their dues before the start of insolvency proceedings. Till March 2024, 28,818 applications for initiation of CIRPs of corporate debtors, having underlying default of ₹10.22 lakh crore, were withdrawn before their admission.

3.66 At end-September 2024, the total number of CIRPs ending in liquidation was 2630, of which final reports have been submitted for 1113 CDs. These corporate debtors together had outstanding claims of ₹3.25 lakh crore, but the assets were valued at only ₹0.13 lakh crore. The liquidation of these companies resulted in 87 per cent realisation of the liquidation value.

III.4.5 Developments in International Financial Services Centres (IFSC)

3.67 To provide world class regulatory architecture to firms operating from the GIFT-IFSC, many new regulations and frameworks which are aligned to international best practices for regulating financial products, financial services and financial institutions in the IFSC, have been notified by the IFSCA since 2021. The total number of registrations/ authorisations given by the IFSCA reached 687 by the end of September 2024.

3.68 The number of Fund Management Entities (FMEs) registered in the IFSC has almost doubled from 65 in March 2023 to 128 in September 2024. Also, the number of Alternative Investment Funds (AIFs), which have been launched by these FMEs has increased by more than 7 times from 24 in March 2022 to 173 in September 2024 with a total targeted corpus of US$ 40.6 billion. In terms of exchanges at the IFSCA, the monthly turnover on the GIFT-IFSC Exchanges was US$ 102 billion and the average daily turnover of NIFTY derivative contracts on the NSE International Exchange (NSE IX) was US$ 4.8 billion as at end-September 2024. A total of US$ 63.9 billion debt securities had been listed on the IFSC exchanges including US$ 14.8 billion of green bonds, social bonds, sustainable bonds and sustainability-linked bonds till September 2024.

3.69 The banking ecosystem at the GIFT-IFSC comprises 28 banks (IFSC Banking Units), including 12 foreign banks and 16 domestic banks offering a wide spectrum of financial services. These IFSC Banking Units (IBUs) are set up as branches in the GIFT-IFSC and have a whole-stack banking licence. The total banking asset size of 28 IBUs is US$ 70.9 billion as at end September 2024. The cumulative banking transactions have grown from US$ 53 billion in September 2020 to US$ 975.8 billion till end September 2024.

3.70 The India International Bullion Exchange (IIBX) has been formed with the intent of developing India as a vibrant gold trading hub for the national and international markets. Three internationally recognised vault managers have established vaults at the IFSC with capacity of around 450 tonnes for gold and around 3000 tonnes for silver. Furthermore, the import of gold under UAE-India CEPA through IIBX has commenced.

3.71 The IFSCA has developed a Single Window IT System (SWITS) which would contribute to improve the ease of doing business in the GIFT-IFSC, by providing a common application form (CAF), created by merging several existing forms including business-specific annexure forms. The SWITS aims to harmonise and simplify the process of submission of application under various Acts administered by the IFSCA, in addition to the Special Economic Zones (SEZ) Act, 2005. Apart from this, the SWITS also integrates within itself a no objection certificate (NOC) processing module that will ease the process of obtaining NOCs, wherever necessary, from the appropriate regulators, *viz.*, the RBI, the SEBI and the IRDAI.

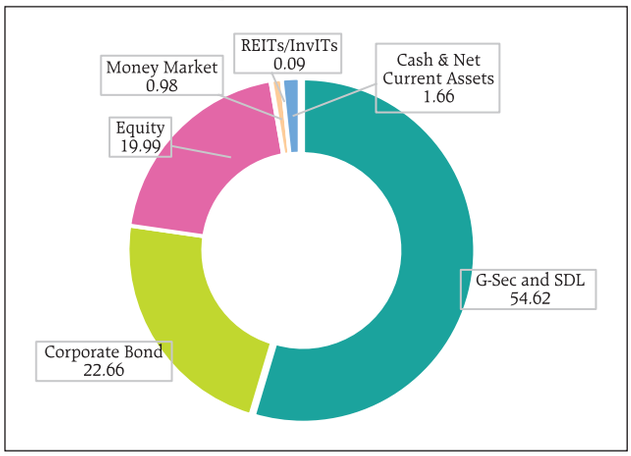
III.4.6 Pension Funds

3.72 The National Pension System (NPS) and the Atal Pension Yojana (APY) have continued to progress in terms of the total number of subscribers and asset under management (AUM). As of September 30, 2024, in terms of number of subscribers, the NPS and the APY have shown a growth of 6.50 per cent since March 2024, whereas the asset under management (AUM) has recorded a growth of 14.06 per cent in the same period. The combined subscriber base under the NPS and the

APY has reached 7.83 crore as at end September 2024, with an AUM of ₹13.3 lakh crore (Chart 3.2), which is primarily invested in fixed income instruments (Chart 3.3).

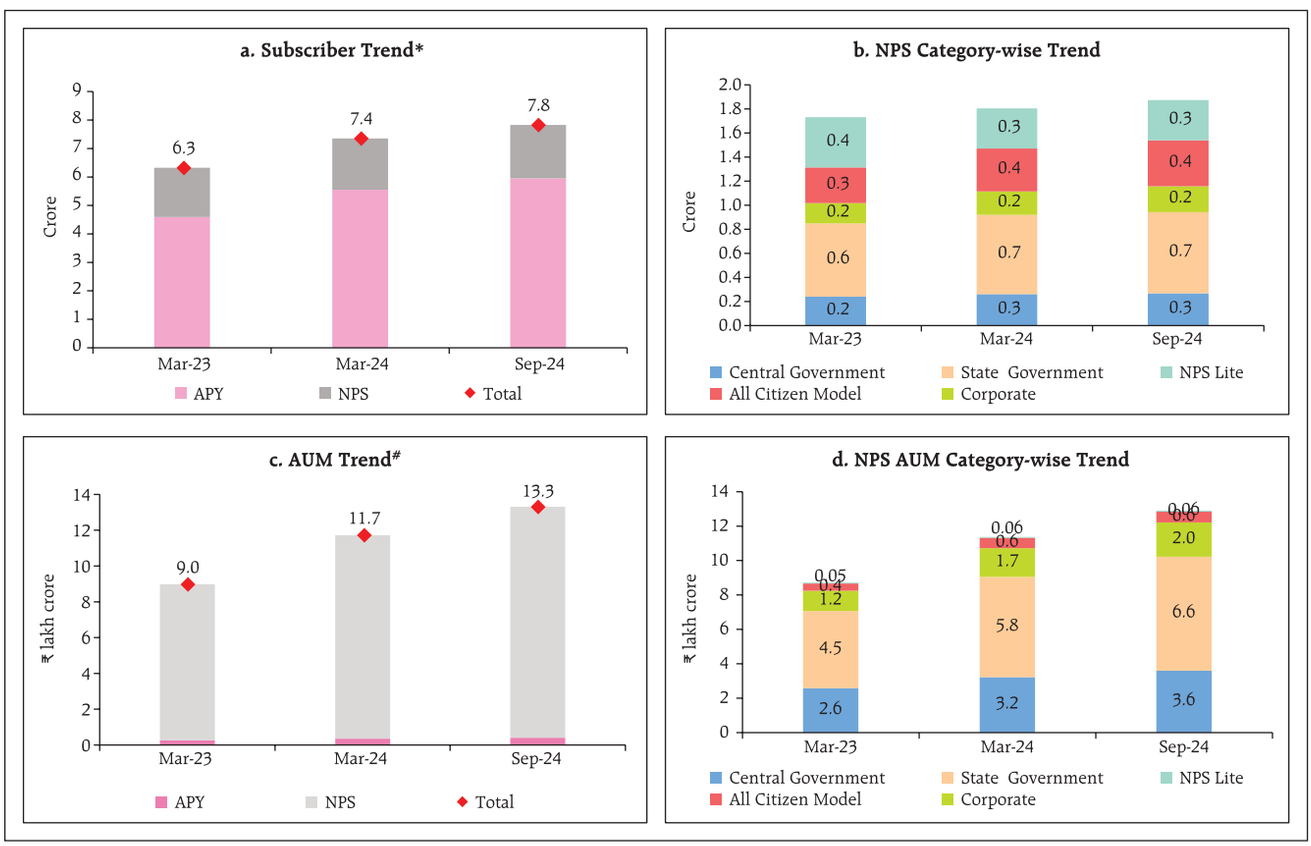
3.73 Points of Presence (PoPs), the distribution channel under the NPS, play an important role in onboarding of subscribers under the NPS/ NPS Vatsalya and providing them various services. There has been a consistent growth in enrolment of new subscribers through PoPs channel as well as strong momentum in corporate sector onboarding. The enrolment under the NPS private sector has seen a growth of more than 55 per cent in the period (April to October 2024) in comparison to the same period in the previous financial year. During this financial year, approximately 2100 new corporates have registered for the NPS until September 30, 2024. Furthermore, the PFRDA organises various campaigns and recognition programs to encourage and honor the efforts of PoPs officials who

Chart 3.3: NPS and APY AUM: Asset Class-wise Bifurcation (per cent of Total AUM)



Source: PFRDA.

Chart 3.2: NPS and APY – Subscribers and AUM Trend



Note: 1. * The total includes subscribers under NPS Vatsalya.
2. # The total also includes AUM from Tier II, TTS and NPS Vatsalya.

Source: PFRDA.

significantly contribute to the NPS expansion. In the current financial year, the ENRICH ELEVATE ENROL – TRIPLE E campaign has been successfully completed. Moreover, to strengthen the distribution channel of the NPS, the PFRDA is engaging with Fintechs to increase penetration through online mode and with regional rural banks (RRBs) to focus on the rural areas.

3.74 In order to boost the enrolments and expand the coverage under the NPS and the APY, the following initiatives were taken: (a) the NPS Vatsalya has been launched which is a contributory pension scheme exclusively for minors with an objective to create a pensioned society, emanating from the vision of "Viksit Bharat@2047", and to encourage empowerment of children. All minors who are citizens of India are eligible to participate in the scheme on a voluntary basis. As of end-September 2024, 33,955 subscribers have been enrolled under the scheme; (b) in addition to the existing 3 life cycle funds, *i.e.,* the Conservative Life Cycle Fund (LC-25), the Moderate Life Cycle Fund (LC-50), the Aggressive Life Cycle Fund (LC-75), a new life cycle fund namely the 'Balanced Life Cycle Fund' has been launched. This life cycle fund is a predetermined mix of equity and debt that balances the risk of ageing with market risk to maximise the return under which equity allocation up to 50 per cent is maintained until the age of 45. This is currently available to subscribers in the private sector (All-Citizen Model and Corporate); and (c) to expand the coverage under the APY, several outreach programs were conducted across India in collaboration with the State Level Bankers' Committees (SLBCs), the Lead District Managers (LDMs) and other stakeholders, with 18 programs completed by September 2024.

III.4.7 Insurance

3.75 The premium income for life insurance sector has been consistently increasing aided by rising disposable income, regulatory reforms, promoting ease of doing business and rising awareness on the need of insurance, among other factors. The total insurance premium collected by life insurers increased to ₹3.99 lakh crore in April - September 2024 from ₹3.51 lakh crore in April – September 2023, registering a growth rate of 13.7 per cent growth (y-o-y). Similarly, new business premium of life insurance industry grew by 19.5 per cent, reaching ₹1.89 lakh crore in April- September 2024 from ₹1.58 lakh crore *vis-à-vis* April-September 2023. The general and health insurance sector covers a wide range of non-life insurance products, including motor, health, property, travel and liability insurance. The increased awareness of risk management and the need for financial protection has contributed to significant growth in recent years, with the total premium underwritten by general and health insurers reaching ₹1.54 lakh crore in the current financial year (April - September 2024), exhibiting a 7.0 per cent growth (y-o-y). Among various lines of business, the health insurance segment (the largest among the non-life insurance sector) has reported the highest growth of 8.95 per cent.

3.76 As part of its shift towards principle-based regulations, aimed to create a more flexible and adaptive insurance sector, the IRDAI has issued a comprehensive Master Circular on life insurance business, superseding the provisions of previous circulars. The Master Circular covers the following important areas relating to the products offered and policyholders: (a) insurers are mandated to have in place a stronger product governance framework requiring internal product management committees

to closely monitor product development, pricing, and design; (b) introduction of a customer information sheet (CIS) to present the policyholder the gist of the benefits and other terms and conditions in a simplified manner; (c) mandating policy loan facility for savings linked products; option of partial withdrawals for pension plans is introduced with greater flexibility in premium payments; (d) the free-look period to be extended to 30 days, allowing customers more time to review policy terms; (e) grievance redressal mechanisms have been reinforced, prioritising prompt and transparent resolutions; and (f) various measures to strengthen governance *viz.,* initiatives targeted at reducing mis-selling, maintaining fair pricing practices, and strengthening product oversight — all with the goal of increasing insurance penetration and bolstering consumer confidence.

3.77 The IRDAI has also issued a comprehensive Master Circular for the general insurance sector, replacing thirteen previous circulars, to simplify and enhance customer-centric insurance solutions. Key aspects covered in the Master Circular are: (a) stringent timelines for settlement of claims and flexibility in policy cancellations; (b) insurers mandated to provide 'Pay as you drive' / 'Pay as you go' / 'Pay as you use' insurance cover and comprehensive cover including coverage for depreciation; and (c) insurers to ensure fair pricing, robust governance and tech-enabled processes for seamless services. This shift allows customers to have a wide range of tailored options, improving their ability to select products that best fit their needs and preferences, thereby enhancing the overall insurance experience.

3.78 For the health insurance sector, the IRDAI has issued a dedicated Master Circular on health insurance products, consolidating all relevant regulatory norms in one accessible location. This Master Circular, which supersedes 55 Circulars, not only serves as a comprehensive guide for policyholders but also emphasises the need for a smoother, faster and more efficient claims process. Key aspects covered include: (a) broader product choices; (b) a simplified customer information sheet (CIS); (c) flexibility for policyholders to choose products that suit their needs; (d) encouraging insurers to provide seamless and tech-driven services targeting 100 per cent cashless claims and ensure transparency with clear procedures for claims; (e) renewability of policies strengthened, with protections against denial except in cases of fraud or misrepresentation; and (f) enhanced customer safeguards, which include stringent timelines for portability, cashless authorisations and oversight of claim repudiations, ensuring higher service standards and trust in the sector.

3.79 Furthermore, in a broader effort to empower policyholders, the IRDAI has issued a Master Circular on protection of policyholders which supersedes 30 Circulars and provides a consolidated source for policyholders' rights and entitlements. It stresses the importance of transparent and efficient claims processing aiming to build trust within the sector. The Circular covers two main aspects *viz.,* one for policyholder guidance at various stages of an insurance contract and another outlining regulatory compliance for insurers. Through these reforms, the IRDAI seeks to promote a more consumer-centric insurance environment with emphasis on greater transparency, ease of access and simplified procedures, fostering a climate of trust and ensuring that the insurance sector remains robust and well-aligned with evolving market needs, ultimately promoting a more inclusive and efficient insurance landscape in India.

Summary and Outlook

3.80 In the midst of challenges posed by emerging risks, global regulatory bodies have undertaken significant measures to address these challenges and strengthen the stability of the financial system. Key efforts have focused on mitigating the risks posed by technological advancements, including the rise of financial technology, the growing threat of cyberattacks and the increasing reliance on third-party service providers. Furthermore, regulators have prioritised enhancement of frameworks to bolster resilience, ensuring that financial institutions are adequately prepared to manage potential disruptions. As the financial landscape continues to evolve, ongoing collaboration and adaptability will be crucial for maintaining a robust, secure and sustainable global financial ecosystem.

3.81 Domestic regulatory initiatives have concentrated on reinforcing the resilience of financial intermediaries and market infrastructure, preventing fraud and enhancing the protection of customers. Regulators have remained vigilant and responsive, adapting to the changing financial environment to further strengthen the robustness of the financial system.

Annex 1

Systemic Risk Survey

In the latest round of the Systemic Risk Survey, all major groups continued to remain in the medium risk category. Global and institutional risks remained unchanged while financial market risks eased marginally. Domestic macroeconomic risks increased on concerns related to domestic growth, inflation and capital flows. Going forward, respondents' perceptions of key risks to financial stability included: geopolitical risks; concerns over domestic growth; cyber security; and climate risk.

The 27th round of the Reserve Bank's Systemic Risk Survey (SRS) was conducted in November 2024 to solicit perceptions of experts, including economists and market participants, on major risks faced by the Indian financial system. In addition to key global and macroeconomic factors, the current round of the survey also gauged sentiments on (i) impact of rising global economic uncertainty on India's macro-financial stability and (ii) revival of private capex cycle.

A summary of feedback received from 51 respondents is presented below.

- The panellists categorised all the major risk groups in medium risk category. Risk perception of macroeconomic risks increased marginally, led by growth and inflation concerns, volatility in capital flows and consumption demand outlook.
- Other major risk categories saw a decrease in/similar risk perception as compared to previous survey round (Figure 1).

Figure 1: Systemic Risk Survey: Major Risk Groups

Major Risk Groups	May-24	Nov-24	Change in Risk Perception[1]
A. Global risks	5.6	5.6	Unchanged
B. Macroeconomic risks	5.2	5.4	Increased
C. Financial market risks	5.8	5.7	Decreased
D. Institutional risks	5.4	5.4	Unchanged

Source: Systemic Risk Survey (May 2024 and November 2024).

Risk Category

8.1 - 10	6.1 - 8	4.1 - 6	2.1 - 4	0 - 2
Very high	**High**	**Medium**	**Low**	**Very low**

- Among global risks, geopolitical conflicts/geo-economic fragmentation is perceived as high risk to domestic financial system. The risk score of commodity price risk and monetary tightening in advanced economies has decreased significantly.
- Among macroeconomic factors, risk perception due to domestic growth, inflation and capital flows has increased substantially as compared to the last survey round. Panellists ranked climate risk in high risk category even though overall its risk score declined marginally.

[1] The risk perception, as it emanates from the systemic risk survey conducted at different time periods (on a half-yearly basis in May and November), may shift from one risk category to the other, reflected by the change in colour. However, within the same risk category (boxes with the same colour), the risk perception may also increase/decrease or remain the same, the shift being indicated accordingly through average numeric values.

- Financial market risks saw a decrease in risk perception in individual risk categories barring foreign exchange rate risks. Equity price volatility remained in high risk category.
- Among institutional risks, outlook on asset quality and profitability has deteriorated as compared to last survey round. Cyber risk continued to remain in high risk category (Figure 2).

Figure 2: Systemic Risk Survey: Risks Identified

Category	Sub-category	May-24	Nov-24	Change in Risk Perception
A. Global Risks	Global growth	5.9	5.9	Unchanged
	Funding risk (External borrowings)	5.3	5.2	Decline
	Commodity price risk (including crude oil prices)	6.4	5.7	Decline
	Monetary tightening in advanced economies	5.4	4.5	Decline
	Geo-political conflict/Geo-economic fragmentation (new addition)	NA	6.8	
B. Macroeconomic Risks	Domestic growth	4.5	5.7	Increase
	Domestic inflation	5.2	5.7	Increase
	Current account deficit	4.5	4.4	Decline
	Capital inflows/ outflows (Reversal of FIIs, Slowdown in FDI)	5.3	6.1	Increase
	Fiscal deficit	4.7	4.6	Decline
	Corporate sector risk	4.6	4.5	Decline
	Real estate prices	5.1	4.9	Decline
	Consumption demand	5.6	5.9	Increase
	Investment growth	5.3	5.5	Increase
	Household savings	5.8	5.6	Decline
	Climate risk	6.9	6.7	Decline
C. Financial Market Risks	Foreign exchange rate risk	5.3	5.9	Increase
	Equity price volatility	6.5	6.5	Unchanged
	Interest rate risk	5.8	5.4	Decline
	Liquidity risk	5.5	5.0	Decline
D. Institutional Risks	Asset quality deterioration	4.8	5.1	Increase
	Banks' exposure to interest rate risk	5.3	5.1	Decline
	Cyber risk	6.8	6.4	Decline
	Operational risk	5.6	5.3	Decline
	Profitability	4.7	5.2	Increase

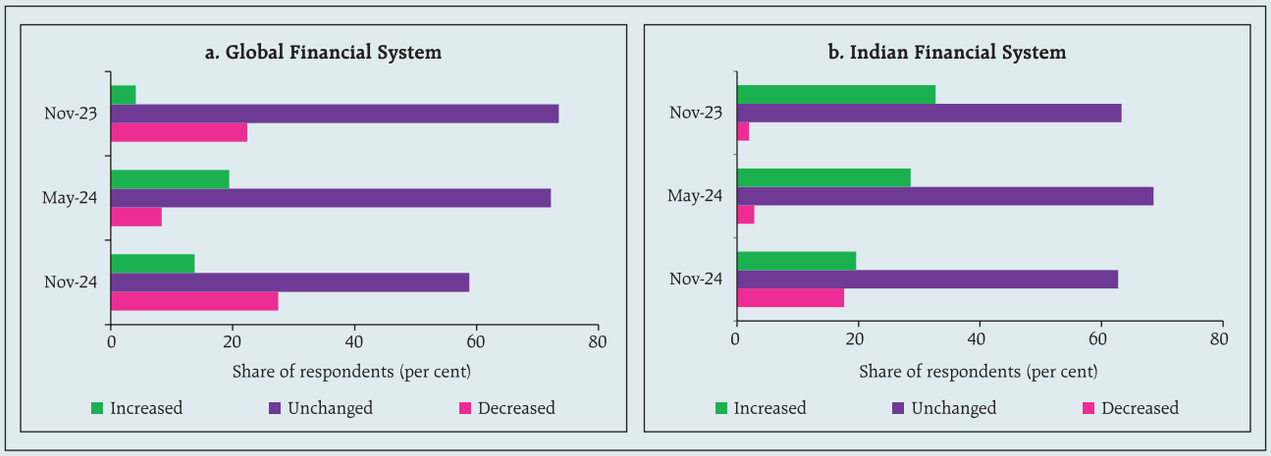
NA : Not Applicable as the risk was included in November round for the first time.

Risk Category

8.1 - 10	6.1 - 8	4.1 - 6	2.1 - 4	0 - 2
Very high	**High**	**Medium**	**Low**	**Very low**

- About three fourths of the respondents expressed higher or similar level of confidence in the stability of the global financial system.

Chart 1: Confidence in the Stability of the Financial System



- One fifth respondents showed higher level of confidence and three fifths showed similar level of confidence in the financial stability. Notably, a higher number of respondents have expressed decreased level of confidence in the stability of the global and domestic financial system from the previous survey rounds (Chart 1 a and b).
- 60 per cent of the respondents assessed better or similar prospects for the Indian banking sector over one year horizon, as compared to 88 per cent respondents in the previous survey round (Chart 2).
- Panellists were divided on the asset quality outlook of the banking sector. About 60 per cent of the respondents expected asset quality to remain stable/improve owing to strong domestic growth and likely reduction in interest rates. However, pockets of stress such as microfinance and personal loans remain key downside risks to asset quality with almost 39 per cent of the panellists seeing a marginal deterioration in the next six months (Chart 3 a).

Chart 2: Prospects of Indian Banking Sector in the Next One Year

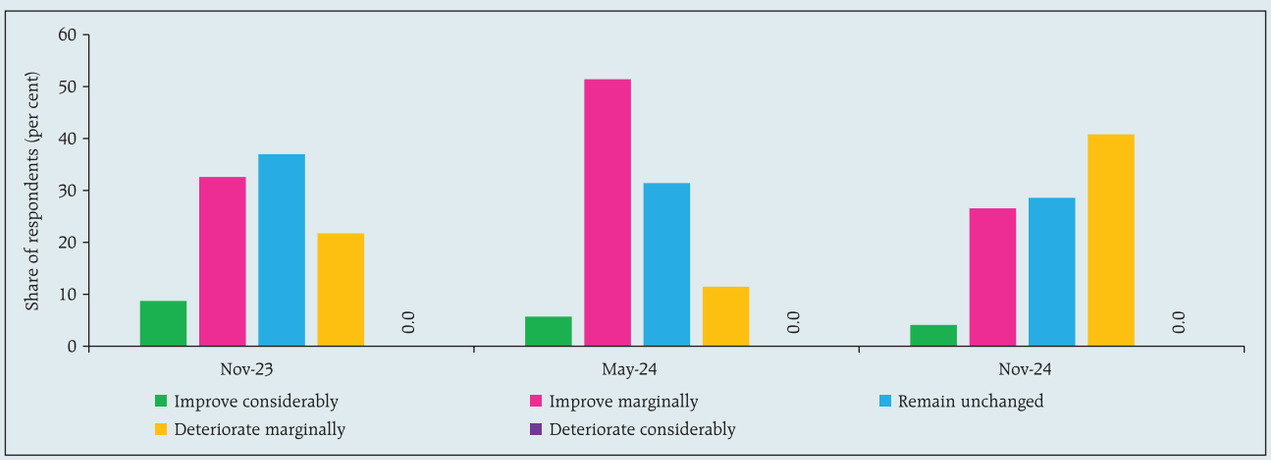
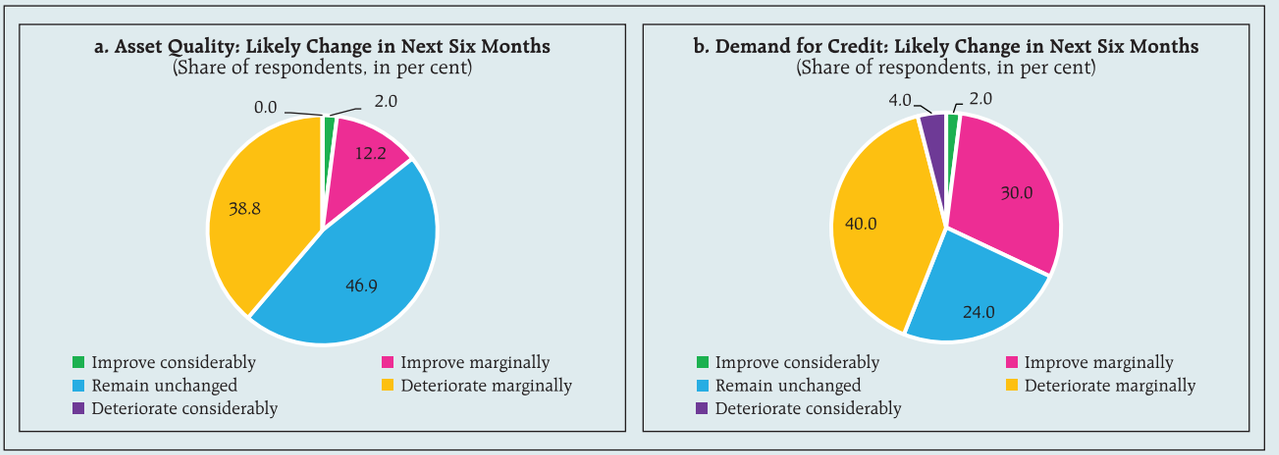


Chart 3: Indian Banking Sector – Outlook



- On credit growth, 40 per cent of the respondents expected credit demand to deteriorate marginally in the near term attributable to subdued urban demand, regulatory focus on unsecured loan growth and stricter underwriting amid rising delinquency levels in select loan segments. Nearly one fourth of the respondents assessed credit demand to remain unchanged (Chart 3 b).
- Respondents were asked for their views on the probable spillover impact of instability in global financial system on India's macro-economic and financial stability. Nearly 95 per cent of the respondents perceived medium/limited impact of such global events on Indian financial stability in the near term (Chart 4).
- About three fifths of the respondents expected high/medium impact of global economic uncertainty on domestic macroeconomic stability (Chart 5).
- Around half of the panellists perceived that revival of private capex cycle is unlikely to materialise in the coming one year (Chart 6).

Chart 4: Spillover Impact of Instability in Global Financial System
(Share of respondents, in per cent)

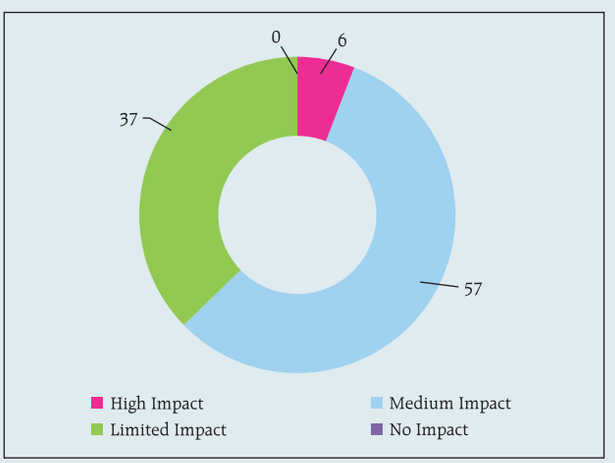


Chart 5: Impact of Rising Global Economic Uncertainty on Domestic Macroeconomic Stability
(Share of respondents, per cent)

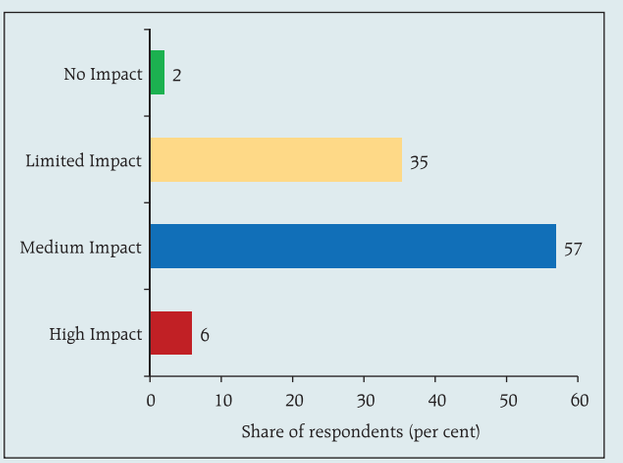


Chart 6: Possibility of Revival of Private Capex Cycle in India
(Share of respondents, in per cent)

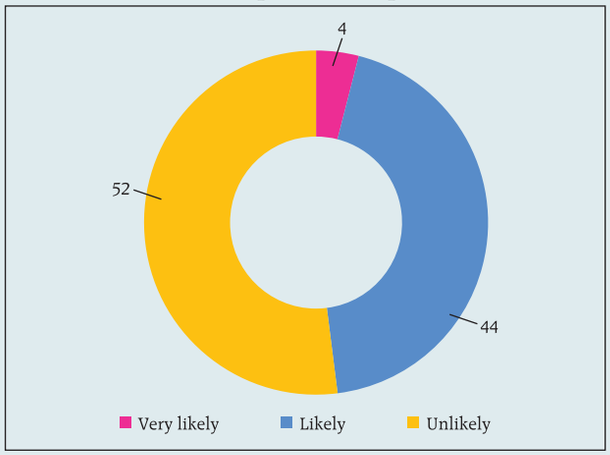
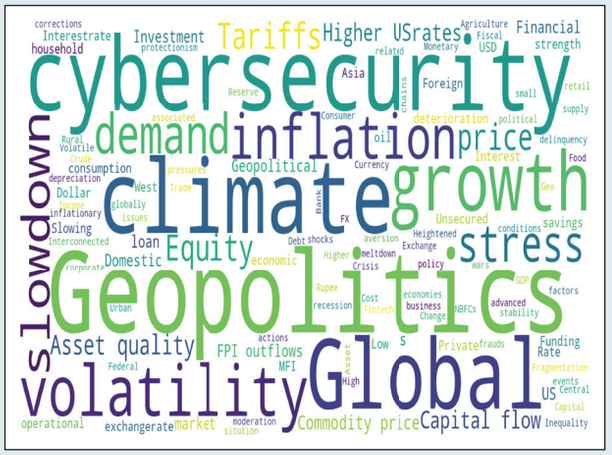


Figure 3: Word Cloud of Key Risks
(Next 6-12 Months)



Risks to Financial Stability

Going forward, respondents identified the following risks to domestic financial stability (Figure 3):

- Geopolitical conflicts
- Global growth and inflation concerns
- Capital outflows and impact on Indian Rupee
- Increase in trade tariffs and impact on global trade
- Slowdown in domestic growth and consumption demand
- Climate risks
- Cybersecurity concerns

Annex 2

Methodologies

2.1 Scheduled Commercial Banks

(a) Banking stability map and indicator

The banking stability map and indicator present an overall assessment of changes in underlying conditions and risk factors that have a bearing on the stability of the banking sector during a period. The six composite indices represent risk in six dimensions - soundness, asset quality, profitability, liquidity, efficiency and sensitivity to market risk. Each composite index is a relative measure of risk during the sample period used for its construction, where a higher value would mean higher risk in that dimension.

The financial ratios used for constructing each composite index are given in Table 1. Each financial ratio is first normalised for the sample period using the following formula:

$$Y_t = \frac{X_t - min(X_t)}{max(X_t) - min(X_t)}$$

where X_t is the value of the ratio at time t. If a variable is negatively related to risk, then normalisation is done using 1-Y_t . Composite index of each dimension is then calculated as a simple average of the normalised ratios in that dimension. Finally, the banking stability indicator is constructed as a simple average of these six composite indices. Thus, each composite index and the overall banking stability indicator takes values between zero and one.

Table 1: Ratios used for constructing the Banking Stability Map and Indicator

Dimension	Ratios*			
Soundness	CRAR #	Net NPAs to Capital	Tier 1 Capital to Assets #	
Asset Quality	Gross NPAs to Total Advances	Provisioning Coverage Ratio #	SMA-1 and SMA-2 Loans to Total Advances	Restructured Standard Advances to Standard Advances
Profitability	Return on Assets #	Net Interest Margin #	Growth in Earnings Before Provisions and Taxes #	Interest Margin to Gross Income #
Liquidity	Liquid Assets to Total Assets #	Liquidity Coverage Ratio #	Non-Bank Advances to Customer-Deposits	
Efficiency	Cost to Income	Business (Credit + Deposits) to Staff Expenses #	Staff Expenses to Operating Expenses	
Sensitivity to market risk	RWA (market risk) to Capital	PV01 of HFT and AFS Investments-to-Total Capital	Total Net Open Position in Forex-to-Total Capital	

Note: ** Some of the ratios comprising various dimensions have been replaced from this issue.*
 # Negatively related to risk.

(b) Single factor sensitivity analysis — Stress testing

As part of quarterly surveillance, stress tests are conducted covering credit risk, interest rate risk, liquidity risk *etc.* and the resilience of commercial banks in response to these shocks is studied. The analysis is done on individual SCBs as well as on the system level.

I. Credit risk (includes concentration risk)

To ascertain the resilience of banks, the credit portfolio was given a shock by increasing GNPA ratio for the entire portfolio. For testing the credit concentration risk, default of the top individual borrower(s) and the largest group borrower(s) was assumed. The assumed increase in GNPAs was distributed across sub-standard, doubtful and loss categories in the same proportion as prevailing in the existing stock of NPAs. However, for credit concentration risk (exposure based), the additional GNPAs under the assumed shocks were considered to fall into sub-standard category only and for credit concentration risk (based on stressed advances), stressed advances were considered to fall into loss category. The provisioning requirements were taken as 25 per cent, 75 per cent and 100 per cent for sub-standard, doubtful and loss advances respectively. These norms were applied on additional GNPAs calculated under a stress scenario. As a result of the assumed increase in GNPAs, loss of income on the additional GNPAs for one quarter was also included in total losses, in addition to the incremental provisioning requirements. The estimated provisioning requirements so derived were deducted from banks' capital and stressed capital adequacy ratios were computed.

II. Sectoral credit risk

To ascertain the sectoral credit risk of individual banks, the credit portfolios of a particular sector was given a shock by increasing GNPA ratio for the sector. Sector specific shocks based on standard deviation (SD) of GNPA ratios of a sector are used to study the impact on individual banks. The additional GNPAs under the assumed shocks were considered to fall into sub-standard category only. As a result of the assumed increase in GNPAs, loss of income on the additional GNPAs for one quarter was also included in total losses, in addition to the incremental provisioning requirements. The estimated provisioning requirements so derived were deducted from banks' capital and stressed capital adequacy ratios were computed.

III. Interest rate risk

Under assumed shocks of shift in the INR yield curve, there could be losses on account of the fall in value of the portfolio or decline in income.

For interest rate risk in the investment portfolio: AFS, FVTPL (including HFT book) and HTM categories, a duration analysis approach was considered for computing the valuation impact (portfolio losses). The portfolio losses on these investments were calculated for each time bucket of AFS, FVTPL (including HFT book) and HTM categories based on the applied shocks. These estimated losses were reduced from banks' capital and market risk weighted losses from RWA to arrive at stressed capital ratios.

Interest rate risk of banks refers to the risk to a bank's capital and earnings arising from adverse movements in interest rates that affect bank's books. The impact on earnings is measured using the traditional gap analysis (TGA) and the capital impact is measured by duration gap analysis (DGA). The focus of TGA is to measure the level of a bank's exposure to interest rate risk in terms of the sensitivity of its net interest income (NII) to interest rate movements over one-year horizon. It involves bucketing of all rate-sensitive assets (RSA), rate-sensitive liabilities (RSL), and off-balance sheet items as per residual maturity/ re-pricing date, in various time bands and computing earnings-

at-risk (EAR) *i.e.*, loss of income under different interest rate scenarios over a time horizon of one year. Advances, investments, swaps/ forex swaps and reverse repos are the major contributors to RSA whereas deposits, swaps /forex swaps and repos are the main elements under RSL. The DGA involves bucketing of all RSA and RSL as per residual maturity/ re-pricing dates in various time bands and computing the modified duration gap (MDG) to estimate the impact on the market value of equity. MDG is calculated with the following formula: MDG = [MDA - MDL * (RSL / RSA)], where MDA and MDL are the weighted averages of the modified duration (MD) of items of RSA and RSL, respectively. Thereafter, change in market value of equity (MVE) is computed as $\Delta E/ E = -[MDG]*RSA* \Delta i/ E$, where Δi is the change in interest rate and E is equity (*i.e.* net worth).

IV. Equity price risk

Under the equity price risk, the impact of the shock of a fall in the equity price index, by certain percentage points, on bank capital was examined. The loss due to the fall in the value of the portfolio on account of change in equity prices is deducted from the bank's capital to arrive at the stressed capital.

(c) Bottom-up stress testing: Derivatives portfolios of select banks

Stress tests on derivatives portfolio (in terms of notional value) were carried out by a sample of 25 banks, constituting the major active authorised dealers and interest rate swap counterparties. Each bank in the sample was asked to assess the impact of stress conditions on their respective derivatives portfolio.

In case of domestic banks, the derivatives portfolio of both domestic and overseas operations was included. In case of foreign banks, only the domestic (Indian) position was considered for the exercise. Derivatives trades where hedge effectiveness was established were exempted from the stress tests, while all other trades were included.

The stress scenarios incorporated four shocks consisting of the spot USD-INR rate and domestic interest rates as parameters (Table 2).

Table 2: Shocks for sensitivity analysis

	Domestic interest rates	
Shock 1	Overnight	+2.5 percentage points
	Up to 1-year	+1.5 percentage points
	Above 1-year	+1.0 percentage points
	Domestic interest rates	
Shock 2	Overnight	-2.5 percentage points
	Up to 1-year	-1.5 percentage points
	Above 1-year	-1.0 percentage points
	Exchange rates	
Shock 3	USD-INR	+20 per cent
	Exchange rates	
Shock 4	USD-INR	-20 per cent

2.2 Primary (Urban) Co-operative Banks

Single factor sensitivity analysis — Stress testing

Stress testing of UCBs was conducted with reference to the reported position as of September 2024. The banks were subjected to baseline, medium and severe stress scenarios in the areas of credit risk, market risk and liquidity risk as follows:

I. Credit Default Risk

- Under credit default risk, the model aims to assess the impact of stressed credit portfolio of a bank on its CRAR.
- The arithmetic mean of annual growth rate of GNPAs was calculated separately for each NPA class (sub-standard, doubtful 1 (D1), doubtful 2 (D2), doubtful 3 (D3) and loss assets) based on reported data between 2009 and 2024 for the UCB sector as a whole. This arithmetic mean of annual growth rate formed the baseline scenario, which was further stressed by applying shocks of 1.5 standard deviation (SD) and 2.5 SD to generate medium and severe stress scenarios for each category separately. These were further adjusted based on NPA divergence level.
- Based on the above methodology, the annual NPA growth rate matrix arrived at under the three scenarios are as below.

(per cent)

	Increase in Substandard Assets	Increase in D1 assets	Increase in D2 assets	Increase in D3 assets	Increase in Loss assets
Baseline	21.71	17.10	15.93	14.38	29.83
Medium Stress	62.37	46.09	39.56	49.27	169.57
Severe Stress	89.47	65.42	55.32	72.53	262.72

II. Credit Concentration Risk

- The impact on CRAR, under assumed scenarios of top 1, 2, 3 single borrower exposures moving to 'loss advances' category requiring 100 per cent provisioning, was assessed. These exposures may not necessarily be 'standard advances' but are identified based on their potential to require higher provisioning, thereby reflecting more impactful stress scenario.

III. Interest Rate Risk in Trading Book

- Duration analysis approach was adopted for analysing the impact of upward movement of interest rates on the AFS and HFT portfolio of UCBs.
- Upward movement of interest rates by 50 bps, 100 bps and 150 bps were assumed under the three stress scenarios and consequent provisioning impact on CRAR was assessed.

IV. Interest Rate Risk in Banking Book

- The banking book of UCBs was subjected to interest rate shocks of 50 bps, 100 bps and 150 bps under three stress scenarios and its impact on net interest income was assessed.

V. Liquidity risk

- The stress test was conducted based on cumulative cash flows in the 1-28 days' time bucket. The cash inflows and outflows were stressed under baseline, medium, and severe scenarios.
- While the inflows are stressed uniformly at 5 per cent under all the stress scenarios, outflows are stressed based on worst negative deposit growth recorded across quarters for the periods ranging across past ten years (2014 - 2024). Since UCBs are primarily dependent on deposits as major source of funds, negative growth in deposits is considered as representative of stressed outflows. Further, three months period is considered as representative of 1-28 days' bucket as this is the closest short-term period for which deposits data is available for all the banks (given that all the banks submit quarterly returns). The average of worst negative deposit growth rate for ten years is considered as baseline scenario, which is further stressed by 1.5 SD and 2.5 SD to generate medium and severe stress scenarios for outflows.
- The banks with negative cumulative mismatch (cash inflow less cash outflow) exceeding 20 per cent of the outflows were considered to be under stress on the basis of the circular RBI/2008-09/174 UBD. PCB. Cir. No12/12.05.001/2008-09 dated September 17, 2008, which stipulates that the mismatches (negative gap between cash inflows and outflows) during 1-14 days and 15-28 days' time bands in the normal course should not exceed 20 per cent of the cash outflows in each time band.

2.3 Non-Banking Financial Companies (NBFCs)

Single factor sensitivity analysis- Stress Testing

Credit and liquidity risk stress tests for NBFCs have been performed under baseline, medium and high risk scenarios.

I. Credit risk

Major items of the balance sheet of NBFCs over one year horizon were projected by applying moving average and smoothing techniques. Assets, advances to total assets ratio, earnings before profit and tax (EBPT) to total assets ratio, risk-weight density and slippage ratio were projected over the next one year; and thereafter, based on these projections – new slippages, provisions, EBPT, risk-weighted assets and capital were calculated for the baseline scenario. For the medium and high-risk scenarios, GNPA ratios under baseline scenario were increased by 1 SD and 2 SD and accordingly new capital and CRAR were calculated.

II. Liquidity Risk

Stressed cash flows and mismatch in liquidity position were calculated by assigning predefined stress percentage to the overall cash inflows and outflows in different time buckets over the next one year. Projected outflows and inflows as on September 2024 over the next one year were considered for calculating the liquidity mismatch under the baseline scenario. Outflows and inflows of the sample NBFCs were applied a shock of 5 per cent and 10 per cent for time buckets over the next one year for the medium and high-risk scenarios, respectively. Cumulative liquidity mismatch due to such shocks was calculated as per cent of cumulative outflows and, NBFCs with negative cumulative mismatch were identified.

2.4 Stress Testing Methodology of Mutual Funds

The SEBI has mandated all open-ended debt schemes (except overnight schemes) to conduct stress testing. Accordingly, Association of Mutual Funds in India (AMFI) prescribed the "Best Practice Guidelines on Stress Testing by Debt Schemes of Mutual Funds". The stress testing is carried out internally by all Asset Management Companies (AMCs) on a monthly basis and when the market conditions require so. A uniform methodology is being followed across the industry for stress testing with a common outcome, *i.e.*, impact on NAV as a result of the stress testing.

Stress testing parameters

The stress testing is conducted on the three risk parameters, *viz.*, interest rate risk, credit risk and liquidity risk.

A. Interest Rate Risk Parameter

For interest rate risk parameter, AMCs subject the schemes at portfolio level to the following scenarios of interest rate movements and assess the impact on NAV.

a) The highest increase in G-Sec yield in the last 120 months (1-year G-Secs or 10-year G-Secs whichever is higher on month-on-month basis comparing maximum yield of a month to minimum yield of previous month).

b) Two-third of the highest increase in G-Sec yield in the last 120 months.

c) One-third of the highest increase in G-Sec yield in the last 120 months

B. Credit Risk Parameter

For credit risk parameter, AMCs may subject the securities held by the scheme to the following:

1. Calculate the probability of downgrade of each security. In this regard, to incorporate all possible downgrade scenarios (notches) for each security, probability tables published by rating agencies are being used.
2. Further, each potential notched down rating will correspond to a change in valuation yield for the security corresponding to that change in rating. The change in valuation yields for the respective rating changes is derived from the valuation matrix used by the valuation agencies.
3. The sum product of probability of downgrade within investment grade and change in yield on that downgrade of a security, is then multiplied by the duration of that security and the weightage of that security in the portfolio. Separately, the sum product of probability of downgrade below investment grade with haircut applicable on that downgrade of any security, is multiplied with the weightage of that security in the portfolio. These two sum products are added to get the aggregate potential impact at a security level.
4. The summation of all these security level outputs is considered as the portfolio level credit impact.

C. Liquidity Risk Parameter

For liquidity risk parameter, the following analysis is being undertaken:

1. Data for past periods of stress (*viz.* stress scenarios during the years 2008, 2013, 2018, 2020) along with rise in yields for a given credit rating, type of security, *etc.* in respective matrices for the relevant duration bucket is considered.
2. The change in median yield differential over G-Sec during stress period compared to the preceding normal period (normal period is a period starting 6 months prior to the start of the stress period and ending at the start of the stress period) is considered as rise in spread for the purpose of stress testing.
3. AMCs take yield spike as higher than the AMFI-specified values for stress testing based on market scenarios.
4. These calculations are again reiterated for individual securities based on respective ratings, matrix-based sector as provided in the matrix files and duration bucket and aggregated at the portfolio level to get the portfolio level output.

AMCs additionally consider extreme stress scenarios of time bound liquidation (*viz* 5 days, 3 days and 1 day) of full portfolios and its impact on NAV by applying suitable haircuts.

2.5 Methodology for Stress Testing Analysis at Clearing Corporations

SEBI has specified the granular norms related to core settlement guarantee fund (SGF); stress testing and default procedures to create a core fund (called core SGF) within the SGF against which no exposure is given and which is readily and unconditionally available to meet settlement obligations of clearing corporation in case of clearing member(s) failing to honour settlement obligation; align stress testing practices of clearing corporations with Principles for Financial Market Infrastructures (norms for stress testing for credit risk, stress testing for liquidity risk and reverse stress testing including frequency and scenarios); capture the risk due to possible default in institutional trades in stress testing; harmonise default waterfalls across clearing corporations; limit the liability of non-defaulting members in view of the Basel capital adequacy requirements for exposure towards central counterparties (CCPs); ring-fence each segment of clearing corporation from defaults in other segments; and bring in uniformity in the stress testing and the risk management practices of different clearing corporations especially with regard to the default of members.

Stress testing is carried out at clearing corporations (CCs) to determine the minimum required corpus (MRC), which needs to be contributed by clearing members (CMs) to the core SGF. The MRC is determined separately for each segment (*viz.* cash market, equity derivatives, currency derivatives, commodity derivatives, debt and tri-party repo segment) every month based on stress testing subject to the following:

i. The MRC is fixed for a month.

ii. By 15th of every month, CCs review and determine the MRC for next month based on the results of daily stress tests of the preceding month.

iii. For every day of the preceding month, uncovered loss numbers for each segment are estimated based on stress test and highest of such numbers is taken as worst-case loss number for the day.

iv. Average of all the daily worst case loss numbers determined in (iii) above is calculated.

v. The MRC for next month is at least the higher of the average arrived in at step (iv) above and the segment MRC as per previous review.

For determining the MRC for cash, equity derivatives and currency derivatives segment, CCs calculate the credit exposure arising out of a presumed simultaneous default of top two CMs. The credit exposure for each CM is determined by assessing the close-out loss arising out of closing open positions (under stress testing scenarios) and the net pay-in/ pay-out requirement of the CM against the required margins and other mandatory deposits of the CM. The MRC or average stress test loss of the month is determined as the average of all daily worst case loss scenarios of the month. The actual MRC for any given month is determined as at least the higher of the average stress test loss of the month or the MRC arrived at any time in the past. For the debt segment, the trading volume is minimal, and hence the MRC for the core SGF is calculated as higher of ₹4 crore or aggregate losses of top two CMs, assuming close out of obligations at a loss of four per cent less required margins. The tri-party repo segment and commodity derivatives segment also follow the same stress testing guiding principles as prescribed for equity cash, equity derivatives and currency derivatives segments. For commodity derivatives segment, however, MRC is computed as the maximum of either credit exposure on account of the default of top two CMs or 50 per cent of credit exposure due to simultaneous default of all CMs. Further, the minimum threshold value of MRC for commodity derivatives segment of any stock exchange is ₹10 crore.

CCs carry out daily stress testing for credit risk using at least the standardized stress testing methodology prescribed by SEBI for each segment. Apart from the stress scenarios prescribed for cash market and derivatives market segments, CCs also develop their own scenarios for a variety of 'extreme but plausible market conditions' (in terms of both defaulters' positions and possible price changes in liquidation periods, including the risk that liquidating such positions could have an impact on the market) and carry out stress testing using self-developed scenarios. Such scenarios include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions. Also, for products for which specific stress testing methodology has not been prescribed, CCs develop extreme but plausible market scenarios (both hypothetical and historical) and carry out stress tests based on such scenarios and enhance the corpus of SGF, as required by the results of such stress tests.

2.6 Interconnectedness — Network analysis

Matrix algebra is at the core of the network analysis, which uses the bilateral exposures between entities in the financial sector. Each institution's lendings to and borrowings from all other institutions in the system are plotted in a square matrix and are then mapped in a network graph. The network model uses various statistical measures to gauge the level of interconnectedness in the system. Some of the important measures are given below:

I. *Connectivity Ratio*: This statistic measures the extent of links between the nodes relative to all possible links in a complete graph. For a directed graph, denoting total number of out-degrees as $K = \sum_{i=1}^{N} k_i$ and the total number of nodes as N, connectivity ratio is given as $\frac{K}{N(N-1)}$.

II. *Cluster coefficient:* Clustering in networks measures how interconnected each node is. Specifically, there should be an increased probability that two of a node's neighbours (banks' counterparties in case of a financial network) are neighbours to each other also. A high clustering coefficient for the network corresponds with high local interconnectedness prevailing in the system. For each bank with k_i neighbours the total number of all possible directed links between them is given by k_i (k_i-1). Let E_i denote the actual number of links between bank *i*'s k_i neighbours. The clustering coefficient Ci for bank *i* is given by the identity:

$$C_i = \frac{E_i}{k_i(k_i - 1)}$$

The clustering coefficient (C) of the network as a whole is the average of all C_i's:

$$C = \frac{\sum_{i=1}^{N} C_i}{N}$$

III. *Tiered network structures:* Typically, financial networks tend to exhibit a tiered structure. A tiered structure is one where different institutions have different degrees or levels of connectivity with others in the network. In the present analysis, the most connected banks are in the innermost core. Banks are then placed in the mid-core, outer core and the periphery (the respective concentric circles around the centre in the diagram), based on their level of relative connectivity. The range of connectivity of the banks is defined as a ratio of each bank's in-degree and out-degree divided by that of the most connected bank. Banks that are ranked in the top 10 percentile of this ratio constitute the inner core. This is followed by a mid-core of banks ranked between 90 and 70 percentile and a 3rd tier of banks ranked between the 40 and 70 percentile. Banks with a connectivity ratio of less than 40 per cent are categorised in the periphery.

IV. *Colour code of the network chart*: The blue balls and the red balls represent net lender and net borrower banks respectively in the network chart. The colour coding of the links in the tiered network diagram represents the borrowing from different tiers in the network (for example, the green links represent borrowings from the banks in the inner core).

(a) Solvency contagion analysis

The contagion analysis is in the nature of a stress test where the gross loss to the banking system owing to a domino effect of one or more banks failing is ascertained. We follow the round by round or sequential algorithm for simulating contagion that is now well known from Furfine (2003). Starting with a trigger bank i that fails at time 0, we denote the set of banks that go into distress at each round or iteration by Dq, q= 1,2, …For this analysis, a bank is considered to be in distress when its Tier I capital ratio goes below 7 per cent. The net receivables have been considered as loss for the receiving bank.

(b) Liquidity contagion analysis

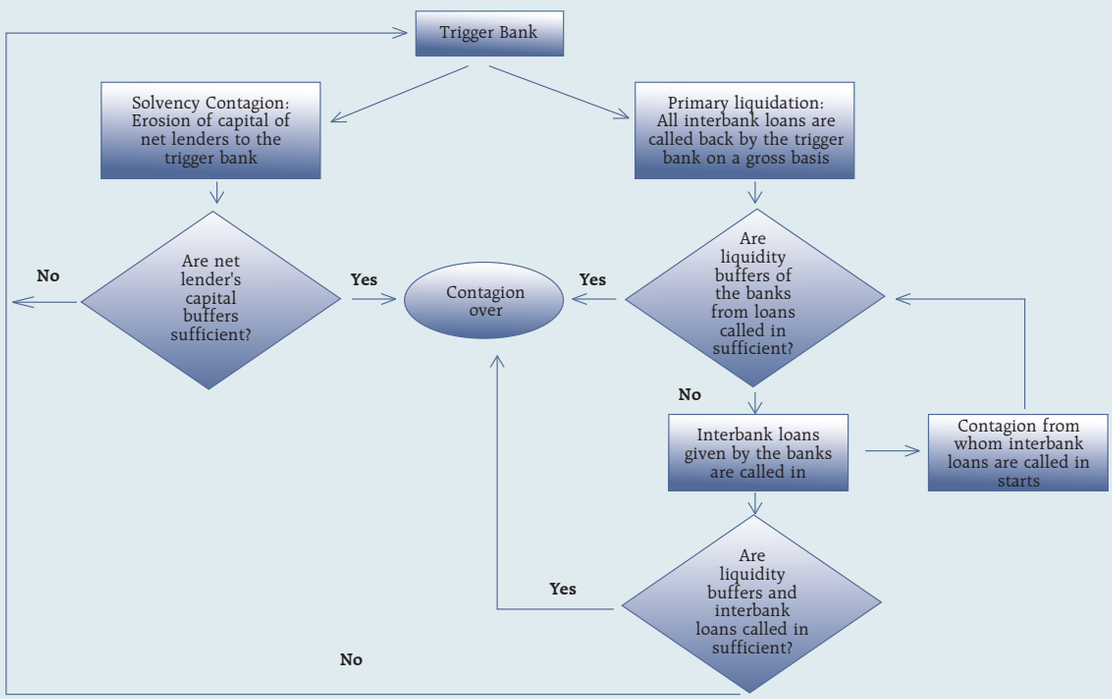
While the solvency contagion analysis assesses potential loss to the system owing to failure of a net borrower, liquidity contagion estimates potential loss to the system due to the failure of a net lender. The analysis is conducted on gross exposures between banks comprising both fund based ones and derivatives. The basic assumption for the analysis is that a bank will initially dip into its liquidity reserves or buffers to tide over a liquidity stress caused by the failure of a large net lender. The items considered under liquidity reserves are: (a) excess CRR balance; (b) excess SLR balance; and (c) 18 per cent of NDTL. If a bank is able to meet the stress with liquidity buffers alone, then there is no further contagion.

However, if the liquidity buffers alone are not sufficient, then a bank will call in all loans that are 'callable', resulting in a contagion. For the analysis only short-term assets like money lent in the call market and other very short-term loans are taken as callable. Following this, a bank may survive or may be liquidated. In this case there might be instances where a bank may survive by calling in loans, but in turn might propagate a further contagion causing other banks to come under duress. The second assumption used is that when a bank is liquidated, the funds lent by the bank are called in on a gross basis (referred to as primary liquidation), whereas when a bank calls in a short-term loan without being liquidated, the loan is called in on a net basis (on the assumption that the counterparty is likely to first reduce its short-term lending against the same counterparty. This is referred to as secondary liquidation).

(c) Joint solvency-liquidity contagion analysis

A bank typically has both positive net lending positions against some banks while against some other banks it might have a negative net lending position. In the event of failure of such a bank, both solvency and liquidity contagion will happen concurrently. This mechanism is explained by the following flowchart:

Flowchart of Joint Liquidity-Solvency contagion due to a bank coming under distress



The trigger bank is assumed to have failed for some endogenous reason, *i.e.*, it becomes insolvent and thus impacts all its creditor banks. At the same time it starts to liquidate its assets to meet as much of its obligations as possible. This process of liquidation generates a liquidity contagion as the trigger bank starts to call back its loans.

Since equity and long-term loans may not crystallise in the form of liquidity outflows for the counterparties of failed entities, they are not considered as callable in case of primary liquidation. Also, as the RBI guideline dated March 30, 2021 permits the bilateral netting of the MTM values in case of derivatives at counterparty level, exposures pertaining to derivative markets are considered to be callable on net basis in case of primary liquidation.

The lender/creditor banks that are well capitalised will survive the shock and will generate no further contagion. On the other hand, those lender banks whose capital falls below the threshold will trigger a fresh contagion. Similarly, the borrowers whose liquidity buffers are sufficient will be able to tide over the stress without causing further contagion. But some banks may be able to address the liquidity stress only by calling in short term assets. This process of calling in short term assets will again propagate a contagion.

The contagion from both the solvency and liquidity side will stop/stabilise when the loss/shocks are fully absorbed by the system with no further failures.

2.7 Financial System Stress Indicator (FSSI)

FSSI is compiled using risk factors spread across five financial market segments (equity, forex, money, government debt and corporate debt), three financial intermediary segments (banks, NBFCs and AMC-MFs) as well as real sector (Table 3). FSSI lies between zero and unity, with higher value indicating more stress. For its construction, the risk factors pertaining to each component segment are first normalised using min-max method and thereafter aggregated based on simple average into a sub-indicator 'y_i' representing the ith market/ sector. Finally, the composite FSSI is obtained as,

$$FSSI_t = \sum_{i=1}^{9} w_i y_{it}$$

where the weight 'w_i' of each sub-indicator 'y_i' is determined from its sample standard deviation 's_i', as,

$$w_i = \frac{1/s_i}{\sum_{i=1}^{9}(1/s_i)}$$

Table 3: Risk factors constituting each component of FSSI

Equity Market	1. Difference between NIFTY 50 monthly returns and its maximum over a two-year rolling window 2. NIFTY 50 Market capitalisation-to-GDP ratio 3. NSE-VIX Index 4. Net Equity FPI flows	
Government Debt Market	5. Realised volatility in 10-year G-sec yield 6. Term Spread: Spread between 10-year G-sec yield and 3-month T-Bill rate 7. Increase in the 10-year G-sec yield compared to the minimum over a two-year rolling window 8. Net Debt FPI flows	
Forex Market	9. Difference between rupee dollar exchange rate and its maximum over a two-year rolling window. 10. m-o-m appreciation/depreciation of rupee dollar exchange rate 11. GARCH (1,1) volatility of rupee dollar exchange rate 12. Difference between 3-month forward premia and its historical maximum.	
Money/Short Term Market	13. Spread between weighted average call rate and weighted average market repo rate 14. Spread between 3-month CD rate and 3-month T-Bill rate 15. Spread between 3-month non-NBFC CP rate and 3-month T-Bill rate 16. Realised volatility of 3-month CP rate 17. Spread between 3-month OIS rate and 3-month T-Bill rate	
Corporate Bond Market	18. Yield spread between 3-year AAA corporate bonds and 3-year G-sec 19. Difference between 3-year BBB and 3-year AAA corporate bond yield 20. Difference between 3-year BBB corporate bond yield and its maximum	
Banking Sector	SCBs	21. CRAR (SCBs) 22. RoA (SCBs) 23. LCR (SCBs) 24. Cost-to-Income (SCBs) 25. Stressed Assets Ratio (SCBs) 26. Banking Beta: Cov(r,m)/Var(m), over 2-year moving window. r = Bank NIFTY y-o-y, m = NIFTY 50 y-o-y
	UCBs	27. GNPA ratio (UCBs) 28. CRAR (UCBs) 29. RoA (UCBs)
NBFC Sector	30. GNPA ratio 31. CRAR 32. RoA 33. Spread between 3-month NBFC CP rate and 3-month T-Bill rate	
AMC-MF Sector	34. Mutual fund redemptions: y-o-y 35. Mutual fund net inflows	
Real Sector	36. GDP growth 37. CPI inflation 38. Current account balance as a share of GDP 39. Gross fiscal deficit as a share of GDP	

Annex 3

Important Domestic Regulatory Measures

1. Reserve Bank of India (RBI)

Date	Regulation	Rationale
July 10, 2024	**Basel III Capital Regulations - Eligible Credit Rating Agencies:** On review, the Reserve Bank has permitted banks to use the ratings of the Brickwork Ratings India Private Limited (CRA) for risk weighting their claims for capital adequacy purposes, subject to limiting the threshold of exposures that can be rated by the CRA.	To ensure that regulatory capital computation by banks is undertaken in a prudent manner.
July 24, 2024	**Master Direction - Overseas Investment:** Overseas Investments by persons resident in India are governed by the provisions of Foreign Exchange Management (Overseas Investment) Rules, 2022 (OI Rules) notified by the Central Government. These directions lay down the modalities as to how the foreign exchange business has to be conducted by the authorised persons with their customers/ constituents with a view to implement the OI Rules and the OI Regulations. It covers the regulatory requirements for both overseas direct and portfolio investments and stipulates the permissible investment limits and approvals required therein. It also covers the reporting requirements and restrictions for resident investors making overseas investments.	For effective implementation of the provisions of the Overseas Investment Rules and Regulations.
July 29, 2024	**'Fully Accessible Route' for Investment by Non-residents in Government Securities – Exclusion of new issuances in 14-year and 30-year tenor securities:** On a review and in consultation with the Government, it was decided to exclude all new Central Government Securities of 14-year and 30-year tenors from the Fully Accessible Route (FAR).	To refine FAR, based on observed investor preference.

Date	Regulation	Rationale
August 08, 2024	**Frequency of Reporting of Credit Information by Credit Institutions (CI) to Credit Information Companies:** In order to ensure that the credit information reports (CIRs) provided by the companies reflect a more recent information, the frequency of reporting of credit information by CIs to the companies has been increased from monthly to fortnightly basis or such shorter intervals as mutually agreed upon between the CI and the credit information company, with effect from January 01, 2025.	For enabling lenders to make informed credit decisions based on more current information.
August 19, 2024	**Framework for Self-Regulatory Organisations (SROs) in Financial Markets:** In the backdrop of evolution of financial markets with increasing financial market participants, growing scale of operations, increasing adoption of innovative technologies and enhanced customer outreach, a need was felt to develop better industry standards for self-regulation. Accordingly, a framework for recognition of SROs in financial markets regulated by the Reserve Bank has been put in place.	Development of better industry standards for self-regulation.
August 22, 2024	**Inclusion of Recurring Payments for FASTag, National Common Mobility Card (NCMC), *etc.* with Auto-Replenishment Facility under the E-Mandate Framework:** It was decided to include auto-replenishment of balances in FASTag and NCMC under the e-mandate framework. Since the payments for auto-replenishment are recurring in nature but without any fixed periodicity, they will be exempted from the requirement of pre-debit notification to the customer.	To enhance convenience in making travel/mobility related payments while using NCMC/ FASTag.

Date	Regulation	Rationale
October 10, 2024	**Implementation of Credit Information Reporting Mechanism Subsequent to Cancellation of Licence or Certificate of Registration (CoR):** Entities whose licence or CoR has been cancelled by the Reserve Bank of India, can no longer be deemed as Credit Institutions (CIs) under the Credit Information Companies (Regulation) Act, 2005 (CICRA) and their credit information cannot be accepted by the Credit Information Companies. This affects the borrowers of those CIs whose repayment history is not updated even if they continue to repay/ clear their dues. It has now been mandated that CIs will continue to report credit information to credit information company even after cancellation of their licence or CoR.	To alleviate the challenges faced in maintaining acurate credit information for borrowers associated with these CIs, ensuring data continuity and reliability of lenders.
October 11, 2024	**Facilitating Accessibility to Digital Payment Systems for Persons with Disabilities – Guidelines:** Payment System Participants were advised to review their payment systems / devices and make necessary modifications so that these systems / devices could be accessed by Persons with Disabilities with ease.	To increase accessibility of Payment Systems for Persons with Disabilities.
October 18, 2024	**The Reserve Bank of India (Access Criteria for NDS-OM) Directions, 2024:** On a review of the access criteria for the NDS-OM platform, the Reserve Bank has extended direct access to NDS-OM to a broader set of regulated entities and the process for seeking direct access to NDS-OM has been streamlined.	Streamlining the process to access NDS-OM platform for entities eligible to invest in Government securities.
October 28, 2024	**Issue of Revised Directions for Central Counterparties:** Some of the major changes in the revised Directions include increased representation of independent directors in Board meetings as well as in important committees such as Nomination and Remuneration Committee, Risk Management Committee and Audit Committee.	To strengthen corporate governance in central counterparties.

Date	Regulation	Rationale
November 07, 2024	**'Fully Accessible Route' for Investment by Non-residents in Government Securities – Inclusion of Sovereign Green Bonds:** Sovereign Green Bonds of 10-year tenor issued by the Government in the second half of the fiscal year 2024-25 have been designated as 'specified securities' under the Fully Accessible Route (FAR).	For ease of access to non-resident investors to invest and trade in sovereign green bonds.
November 08, 2024	**Reporting of Foreign Exchange Transactions to Trade Repository:** Authorized Dealers are required to report all over-the-counter (OTC) foreign exchange and foreign currency interest rate derivative contracts executed directly or through their overseas entities—including branches, IFSC Banking Units, wholly owned subsidiaries, and joint ventures—to the Trade Repository (TR) of the Clearing Corporation of India Ltd. (CCIL). To ensure completeness of transaction data for all foreign exchange instruments in the TR, the reporting requirement shall be expanded to include foreign exchange spot transactions (including value cash and value tomorrow) in a phased approach.	To capture complete transaction data of authorized dealers or their overseas entities in all foreign exchange instruments.
November 11, 2024	**Operational Framework for Reclassification of Foreign Portfolio Investment to Foreign Direct Investment (FDI):** Schedule II of the Foreign Exchange Management (Non-debt Instruments) Rules, 2019 stipulates that foreign portfolio investments, including those made with a foreign portfolio investor group, must remain below 10 percent of the fully diluted total paid-up equity capital. If this limit is breached, foreign portfolio investors are required to either divest or reclassify such holdings as FDI. The Reserve Bank provided an operational framework for such reclassification to the AD Category-I banks for facilitating the reporting of such transactions.	To provide step-by-step operational guidelines to foreign portfolio investors for reclassifying their investments to FDI after necessary approvals, as applicable and reporting requirements thereafter.

Date	Regulation	Rationale
December 6, 2024	**Collateral-free Agriculture Loan –– Enhancement of Limit:** In view of overall inflation and rise in agricultural input costs, the Reserve bank has raised the limit for collateral free agricultural loans including loans for allied activities from the existing level of ₹1.6 lakh to ₹2 lakh per borrower. The banks have been advised to give effect to the revised instructions expeditiously and in any case not later than January 1, 2025.	To enhance coverage of small and marginal farmers in the formal credit system.

2. Securities and Exchange Board of India (SEBI)

Date	Regulation	Rationale
May 27, 2024	**Framework for Issuance of Subordinate Units by Privately Placed Infrastructure Investment Trusts (InvITs):** The proposed framework provides clarity on the usage of subordinate units as an instrument to bridge the valuation gap arising on acquisition of an infrastructure asset by a privately placed InvIT thereby providing flexibility in asset acquisition transaction along with promoting ease of doing business.	To provide a framework for issuance of subordinate units by a privately placed InvITs.
May 29, 2024	**Norms for Acceptable Collaterals and Exposure of Clearing Corporations (CCs):** The existing collaterals accepted by CCs have been reviewed and revised, and prudential norms for exposure of CCs have been introduced.	To further strengthen the risk management framework of Clearing Corporations and ensure their operational resilience.
June 05, 2024	**Enhancement of Operational Efficiency and Risk Reduction – Pay-out of Securities directly to Client Demat Account.**	To protect client's securities from being misused by the stock brokers by mandating pay-out of securities directly to client's demat account by Clearing Corporations.
June 05, 2024	**Disclosures of Material Changes and Other Obligations for Foreign Portfolio Investors and Framework for Providing Flexibility to Foreign Portfolio Investors in Dealing with their Securities Post Expiry of their Registration.**	To facilitate ease of compliance by foreign portfolio investors.

Date	Regulation	Rationale
June 19, 2024	**Contribution to Core Settlement Guarantee Fund and Default Waterfall for Limited Purpose Clearing Corporation (LPCC).**	To enable direct participation in the LPCC for transacting in tri-party repo for corporate bonds.
June 20, 2024	**Modification in Duration for Call Auction in Pre-Open Session for Initial Public Offer (IPO) and Relisted Scrips:** The current provisions have been modified and additional surveillance measures at stock exchanges have been introduced.	To curb misuse of the call auction in pre-open session for Initial Public Offer (IPO) and relisted scrips.
June 20, 2024	**System Audit Framework of Professional Clearing Members (PCMs).**	To ensure robustness of IT systems of PCMs and compliance with various guidelines issued by the SEBI and Clearing Corporations.
June 25, 2024	**Statutory Committees at Market Infrastructure Institutions (MIIs):** The composition and terms of reference (ToRs) of various Statutory Committees of MIIs have been modified.	To enhance effective oversight of the functioning of Stock Exchanges, CCs and Depositories.
June 27, 2024	**Reduction of Trading Lot for Privately Placed InvITs to ₹25 lakh as Part of Measures Towards Ease of Doing Business:** The trading lot for privately placed InvITs is reduced to ₹25 lakh to allow broader base of investors to participate in the market which shall also promote diversification of investment portfolios, thus enabling investors to better manage risk.	To promote ease of doing business for InvITs and facilitate increase in liquidity for units of privately placed InvITs.
June 27, 2024	**Participation by Non-Resident Indians (NRIs), Overseas Citizens of India (OCIs) and Resident Indian (RI) Individuals in the SEBI Registered Foreign Portfolio Investors based in the International Financial Services Centres in India.**	To channel more NRI/OCI/RI investments into Indian securities market by facilitating greater participation of NRIs/OCIs/RIs in the corpus of the foreign portfolio investors.
June 28, 2024	**Facility for Basic Services Demat Account (BSDA) for Financial Inclusion and Ease of Investing.**	To achieve wider financial inclusion by boosting participation of investors in securities market by enhancing the limit for a demat account to be categorized as BSDA.

Date	Regulation	Rationale
July 04, 2024	**Brokers' Institutional Mechanism for Prevention and Detection of Fraud or Market Abuse:** Stock brokers shall put in place the following institutional mechanisms: (a) Systems for surveillance of trading activities and internal controls; (b) Obligations of the stock broker and its employees; (c) Escalation and reporting mechanisms; and (d) Whistle Blower Policy.	To instil confidence in securities market by prevention of fraud or market abuse.
July 08, 2024	**Streamlining of Prudential Norms for Passive Schemes regarding Exposure to Securities of Group Companies of the Sponsor of Mutual Funds:** Equity oriented ETFs and Index Funds, based on widely tracked and non-bespoke indices, with collective asset under management (AUM) of ₹20,000 crore and above are now allowed to take exposure up to the weightage of the constituents in the underlying index. This exposure is subject to an overall cap of 35 per cent of net asset value of the schemes in the group companies of the sponsor.	To streamline the extant prudential norms applicable to investments by passively managed mutual fund schemes in the group companies of their sponsors.
July 13, 2024	**Unit Based Employee Benefit for Real Estate Investment Trusts (REITs) and InvITs.**	To facilitate and provide flexibility in employee compensation as well as alignment of interests with unitholders.
July 19, 2024	**Enabling the SEBI-registered Credit Rating Agencies (CRAs) and ESG Rating Providers (ERPs) to undertake rating activities under the IFSCA**	To permit the SEBI-registered CRAs and ERPs to undertake rating activities in the IFSC-GIFT city, in line with an activity-based regulatory approach.
August 06, 2024	**Board Nomination Rights to Unitholders of REITs and InvITs:** The amendment to the respective master circulars of REITs and InvITs provided clarity on the availability of the right to a unitholder to nominate a director on the Board of Directors of the Manager/ Investment Manager of REIT/InvIT, where such nomination right is also available to a unitholder in terms of the SEBI Debenture Trustees Regulations.	To facilitate ease of doing business for REITs and InvITs.

Date	Regulation	Rationale
August 22, 2024	**Review of Statement of Investor Complaints and Timeline for Disclosure of Statement of Deviation(s):** The amendment to the respective master circulars of REITs and InvITs align the provisions related to statement of investor complaints and timelines for disclosure of statement of deviation for InvITs and REITs with the SEBI (Listing Obligations and Disclosure Requirements) Regulations.	To facilitate ease of doing business for REITs and InvITs.
August 30, 2024	**Review of Eligibility Criteria for Entry/Exit of Stocks in Equity Derivatives Segment**	To ensure that only high-quality stocks with sufficient market depth are allowed to trade in equity derivatives segment.
September 12, 2024	**Modifications in Guidelines for Business Continuity Plan (BCP) and Disaster Recovery (DR) of Market Infrastructure Institutions (MIIs)**	To ease compliance and to protect the interests of investors by ensuring that data loss is minimal after any technical glitch.
September 20, 2024	**Flexibility in Participation of Mutual Funds in Credit Default Swaps (CDS):** Such flexibility to participate in CDS shall serve as an additional investment product for mutual funds and also aid in increasing liquidity in the corporate bond market.	To allow greater flexibility to mutual funds to both buy and sell CDS with adequate risk management measures.
September 25, 2024	**Amendment to the SEBI (Delisting of Equity Shares) Regulations, 2021:** The amendments are (a) introduction of fixed price process as an alternative to reverse book building process (RBB); (b) introduction of an alternate delisting framework for listed investment holding companies (IHC) through scheme of arrangement by way of selective capital reduction; (c) modification of counter-offer mechanism in case of delisting through RBB process; and (d) introduction of adjusted book value as an additional parameter for determining floor price for delisting, except for Public Sector Undertakings.	To facilitate ease of doing business, to protect the interests of investors and to provide flexibility in the voluntary delisting framework.

Date	Regulation	Rationale
September 26, 2024	**Reduction in the Timeline for Listing of Debt Securities and Non-Convertible Redeemable Preference Shares (NCRPS) to T+3 working days from existing T+6 working days:** With a view to align the listing timeline in case of public issue of debt securities and NCRPS with that of non-convertible securities issued on private placement basis and specified securities, listing timeline in case of public issue of debt securities and NCRPS is reduced to T+3 working days from the existing timeline of T+6 working days.	To facilitate faster access to funds for issuers and for investors to have early credit and liquidity of their investments.

3. Insurance Regulatory and Development Authority of India (IRDAI)

Date	Regulation	Rationale
May 17, 2024	**Master Circular on Actuarial, Finance and Investment Functions of Insurers.**	To provide necessary guidance to all insurers on aspects pertaining to various provisions of the IRDAI (Actuarial, Finance and Investment Functions of Insurers) Regulations,2024.
May 22, 2024	**Master Circular on Corporate Governance for Insurers.**	To provide various operational and procedural aspects, for adoption of the IRDAI (Corporate Governance for Insurers) Regulations, 2024 by all insurers.
May 28, 2024	**Circular on Unsolicited Commercial Communications (UCC) through Telecom Resources.**	For wider dissemination amongst insurers and insurance intermediaries about the recent guidelines from the Telecom Regulatory Authority of India (TRAI) aimed at controlling UCC through unauthorized telecom resources.
May 29, 2024	**Master Circular on Health Insurance Business.**	To specify requirements to be complied with by Insurers offering Health Insurance Business subsequent to the notification of the IRDAI (Insurance Products) Regulations, 2024.

Date	Regulation	Rationale
May 31, 2024	**Master Circular on Reinsurance:** The circular provides directions/guidelines on various provisions of the IRDAI (Registration and Operations of Foreign Reinsurers Branches and Lloyd's India) Regulations, 2024 and the IRDAI (Reinsurance) Regulations, 2018.	To strengthen and harmonise the regulatory framework for reinsurance operations.
June 11, 2024	**Master Circular on General Insurance Business:** The circular provides guidance on the operational aspects relating to general insurance products subsequent to the notification of the IRDAI (Insurance Products) Regulations, 2024.	To facilitate a shift from rule based to principle-based regulations thereby enhancing the ease of doing business and encouraging innovation, enabling faster adaptation to changing market dynamics and allow for reduction in the response time for emerging market needs.
June 12, 2024	**Master Circular on Life Insurance Products.**	To provide necessary guidance on aspects pertaining to various provisions of the IRDAI (Insurance Products) Regulations, 2024 pertaining to life insurance products.
June 19, 2024	**Master Circular on Operations and Allied Matters of Insurers.**	To provide guidance to all REs on aspects relating to, *inter alia*, advertisement, opening of places of business of Insurers, outsourcing of activities of Insurers, grievance redressal, usage of trade logo, unclaimed amounts of policyholders, policyholders' engagement and awareness and servicing of policies in case of exit of distribution channel.
August 12, 2024	**Circular on Prevention of Money-Laundering (Maintenance of Records) Amendment Rules, 2024.**	To reflect the amendments made in the PML Rules.

Date	Regulation	Rationale
September 05, 2024	**Master Circular on Protection of Policyholders' Interests:** The circular specifies broad requirements to be complied with by an insurer under the IRDAI (Protection of Policyholders' Interests, Operations and allied Matters of insurers) Regulations, 2024.	To enable policyholders to know their rights and obligations at various stages of an insurance policy.

4. Pension Fund Regulatory and Development Authority (PFRDA)

Date	Regulation	Rationale
April 25, 2024	**Master Circular - Service Charges for Points of Presence (POPs) under the NPS (All Citizen and Corporate)/ NPS Lite:** The circular serves as a consolidated directive regarding Service Charges for PoPs and includes updates to the charge structure for PoPs, aiming to incentivise their active participation in promoting the National Pension Scheme and enhancing customer service delivery. Furthermore, the circular provides specific guidelines regarding the service charge framework, persistency charges, and the methods of disclosure to subscribers.	To simplify compliance by merging relevant past directives and revisions into a single document, thereby ensuring clarity and consistency.
April 26, 2024	**Pension Fund Regulatory and Development Authority (Mechanism for Making and Review of Regulations) Regulations, 2024.**	To formalise the regulations review process in the authority for the future and to lay down a framework for review.
May 03, 2024	**Appeal with Ombudsman for Resolution of Grievances under the National Pension System ("NPS") & the Atal Pension Yojana ("APY"):** The notification defines the roles, powers, and responsibilities of the Ombudsman in grievance redressal while establishing clear timelines, permissible formats, and procedures for appeals. It aims to streamline and clarify processes, rights, and obligations under pension schemes regulated/administered by the PFRDA by consolidating existing regulations and directives into one document to ensure ease of compliance and operational efficiency.	To enhance transparency, ensure equitable access to dispute resolution and promote subscriber confidence by providing structured and accessible mechanisms to address complaints effectively.

Date	Regulation	Rationale
May 03, 2024	**Extending APY to all Central Recordkeeping Agencies.**	To promote competition and efficiency amongst the agencies registered with the PFRDA.
June 26, 2024	**Same Day Investment of the NPS contributions (T+0) received by Trustee Bank effective from 1st July 2024:** The notification introduces same-day investment (T+0) for contributions to the NPS received by the Trustee Bank before 11 AM on settlement days. Previously, investments were processed on the following day (T+1).	To enhance the efficiency of fund deployment and benefit subscribers through faster investment.
August 01, 2024	**Circular on Information & Cybersecurity Policy Guidelines- 2024 for Intermediaries/Regulated entities:** The circular consolidates and updates earlier directives on cybersecurity, incorporating best practices and aligning with modern regulatory and technological standards. The guidelines also emphasise compliance with global standards, structured incident response, regular audits, and alignment with regulations like the Information Technology Act and the Digital Personal Data Protection Act.	To mitigate risks from emerging cyber threats, enhance data protection and maintain subscriber trust.
August 28, 2024	**Introduction of the NPS Contributions through the Bharat Bill Payment System (BBPS).**	To facilitate recurring the NPS investment, allowing both lump sum and SIP payments, providing convenience, accessibility and cost efficiency to the NPS subscribers.
September 18, 2024	**The NPS Vatsalya Scheme:** The PFRDA introduced the "NPS Vatsalya" scheme, a contributory pension initiative for minors designed to foster a pensioned society in line with the vision of "Viksit Bharat@2047". With features like low minimum contributions, partial withdrawals for education and medical needs, and flexible options for continuation or exit upon adulthood, the scheme is tailored to safeguard the financial future of minors.	To empower children by offering a structured pension framework, to inculcate early financial discipline and ensure long-term financial security for minors by promoting a culture of savings and retirement planning from an early age.

Date	Regulation	Rationale
September 23, 2024	**Master Circular - Guidelines on Know Your Customer / Anti-Money Laundering / Combating the Financing of Terrorism (KYC/AML/CFT):** The circular consolidates and streamlines guidelines related to KYC, AML, and CFT for entities involved in the pension system regulated by the PFRDA. It outlines comprehensive compliance requirements, including Client Due Diligence (CDD), reporting obligations, and record-keeping standards for reporting entities.	To strengthen the framework for preventing financial crimes and enhancing transparency and accountability within the pension ecosystem.

5. Insolvency and Bankruptcy Board of India (IBBI)

Date	Regulation	Rationale
May 09, 2024	**Circular regarding Uploading of Judicial Orders related to Insolvency Proceedings by the Insolvency Professionals (IPs):** The IBBI issued a circular requiring IPs to upload judicial orders pertaining to their assignments on the dashboard provided by the Board for this purpose. The Circular indicates the categories of judicial forums and types of orders (process milestones, actionable points for the IBBI or the MCA, important issues relating to vires, interpretation and applicability of the provisions of the Code, Rules and Regulations) that are to be uploaded by IPs.	To ensure that important judicial orders which have significant impact on the ongoing processes under the Code are available for facilitation of stakeholders and the IBBI in a timely manner.
June 28, 2024	**Circular regarding Filing Forms to Monitor Corporate Liquidation and Voluntary Liquidation Processes:** The IBBI issued two circulars to introduce a set of electronic forms capturing the details and progress of corporate liquidation processes and voluntary liquidation processes that need to be filed by liquidators on the electronic platform developed by the Board for this purpose.	To facilitate systematic and transparent record-keeping and seamless reporting of corporate liquidation and voluntary liquidation processes by liquidators.

August 06, 2024	**Guidelines for Committee of Creditors (CoC):** Given that the members of the CoC largely represent financial creditors and most of them are under regulatory oversight of financial sector regulators other than the IBBI, a set of self-regulating Guidelines for CoC were issued by the IBBI for improved functioning of the CoC. The guidelines provide for various measures pertaining to objectivity and integrity, independence and impartiality, professional competence and participation, cooperation, supervision and timelines, confidentiality, costs, meetings of the CoC, sharing of information and feasibility and viability of the corporate debtor.	To foster more effective and time bound decision making and stem the value erosion, through curtailment of procedural delays and enhancement of transparency and coordinated approach of decision making by the members of the CoC.
August 12, 2024	**Circular regarding Generation of Valuation Report Identification Number (VRIN):** The IBBI issued a circular requiring Registered Valuers (RVs)/ Registered Valuer Entities (RVEs) to generate a unique VRIN for each valuation report prepared by them under the Insolvency and Bankruptcy Code, using the online module developed by IBBI for the same. The circular requires the RV/ RVE to mention the VRIN on the front page of the valuation report. Further, the IPs shall not accept any valuation reports without VRIN. The circular shall be applicable to all the cases where the date of valuation report is on or after the date of this circular.	To ensure authenticity of valuations done under the Code and to have a unique reference number for each valuation report.
August 13, 2024	**Amendment to the Information Utilities (IU) Regulations:** The IBBI issued the IBBI (Information Utilities) (Amendment) Regulations, 2024 to, *inter alia*, provide for increasing the number of days allowed to the debtor to confirm the information of default, after reminding him at least three times, from three days to seven days.	To streamline the process of authentication on information of debt and default and issuance of record of default (RoD) by the IU.

August 13, 2024	**Amendment to Inspection and Investigation Regulations:** The IBBI issued the IBBI (Inspection and Investigation) (Amendment) Regulations, 2024 to modify the timeline for disposal of a show cause notice (SCN) by the Disciplinary Committee (DC) of the Board from 35 days of the date of the issuance of the SCN to 60 days from the due date for receipt of reply to the SCN.	To streamline the timeline for disposal of SCNs by the DC of the Board.
September 24, 2024	**Amendment to the Insolvency and Bankruptcy Board of India (Insolvency Resolution Process for Corporate Persons) Regulations (CIRP Regulations):** The CIRP (Second Amendment) Regulations, 2024 provide that the IP recommended for appointment by the interim resolution professional (IRP) to act as an interim representative for a class of creditors shall be entitled to attend the meetings of the CoC and perform such duties as provided under Section 25A during the period when the application for appointment of the authorised representative (AR) is under consideration of the adjudicating authority (AA) for approval.	To protect the interest for a particular class of creditors by allowing their AR to participate in meetings of the CoC in the interim period between submission of application for appointment and approval of appointment by the AA.

6. International Financial Services Centres Authority (IFSCA)

Date	Regulation	Rationale
April 05, 2024	**Circular on Ease of Doing Business - Filing of Schemes or Funds under the IFSCA (Fund Management) Regulations 2022:** The circular enables the Fund Management Entities (FMEs) to launch their respective schemes or funds, except retail schemes, upon filing the documents to the authority along with disclosures and compliance with the requirements stipulated in the circular.	To enhance the ease of doing business for FMEs registered with the IFSCA.
April 19, 2024	**Circular on Import of Gold and Silver by Indian Banks through the India International Bullion Exchange (IFSC) Ltd. [IIBX].**	To permit Indian banks, authorized by the RBI to import gold/silver, to directly access the trading system of the IIBX, without the need for a Bullion Trading Member, for undertaking such import on behalf of their clients.

Date	Regulation	Rationale
May 01, 2024	**Circular - 'Qualified Suppliers' for Supply of Bullion on IIBX.**	To widen the scope of participation of the IFSC entities and pool of suppliers on the IIBX.
May 02, 2024	**Circular for Facilitating Investments by NRIs and OCIs into Indian Securities through Schemes / Funds in an IFSC.**	To facilitate increased investments by NRIs and OCIs in the Indian securities through the IFSC Funds.
May 02, 2024	**Issuance of Derivative Instruments against Indian Securities by Non-Bank Entities.**	To permit non-bank entities in the GIFT-IFSC, registered with the SEBI as foreign portfolio investors, to issue derivative instruments with Indian securities as underlying, in the GIFT-IFSC.
May 08, 2024	**Additional Requirements for carrying out the Permissible Activities by Finance Company as a Lessor under 'Framework for Ship Leasing':** This circular prohibits a Lessor, under the 'Framework for Ship Leasing', to undertake transactions which involve transfer, in any form, of the ownership and/ or leasehold right of a ship or ocean vessel from a person resident in India to an entity set up in the IFSC, for the purpose of providing services solely to person resident in India.	To address the issue of shifting of business activity, presently done onshore within India to the IFSC, without any substantive contribution to the overall economy.
May 21, 2024	**MoU between the IFSCA and the Financial Intelligence Unit - India (FIU-IND).**	To facilitate co-operation in the areas of mutual interest including sharing of relevant information, conducting outreach and training activities for regulated entities, and compliance with each other's obligations under the relevant international standards.

Date	Regulation	Rationale
June 14, 2024	**Interest on Current account – Amendment to ACDE Module (Module No.11) of COB Directions v6.0 (IFSCA Banking Handbook).**	To permit IFSC Banking Units to determine the interest rate on current account, the manner of calculation of such interest, periodicity of credit of such interest and other related matters.
July 08, 2024	**Direct Market Access (DMA) and Sponsored Access (SA) Facilities for Participants in the IIBX.**	To expand the scope of the extant DMA to include Bullion Exchanges, Bullion Trading Members and Bullion Clearing Members within the IFSC.
July 11, 2024	**Permission to Participate in the Synthetic Securitisation Program of Parent Bank.**	To permit IBUs to participate in the synthetic securitisation program of their Parent bank subject to certain prudential requirements.
July 25, 2024	**Credit Rating Agencies in the IFSC.**	To allow the SEBI registered credit rating agencies to provide rating services in the IFSC, requiring them to register with the IFSCA and comply with relevant regulations and guidelines.
July 31, 2024	**Circular on Enabling Credit Rating Agencies to undertake Additional Activities relating to Environmental, Social and Governance (ESG) Ratings and Data Products Providers.**	To enable credit rating agencies registered with the IFSCA to undertake additional activities pertaining to ESG Ratings and Data Products Providers.
August 29, 2024	**The IFSCA (Listing) Regulations, 2024:** The regulations are expected to promote ease of doing business for the issuers to access capital market through listing of securities on the stock exchanges in the IFSC with greater flexibility and efficiency.	To enable Indian and foreign issuers to access capital through issue and listing of securities on the stock exchanges in the IFSC.

Date	Regulation	Rationale
September 05, 2024	**Maintenance of Net Worth by Capital Market Intermediaries (CMIs).**	To specify that all CMIs, who fail to maintain stipulated net worth, shall not undertake any existing or new business activity till the time, their net worth is restored.
September 24, 2024	**Trading and Settlement of the Sovereign Green Bonds (SGrBs) in the IFSC:** With a view to facilitate wider non-resident participation in the SGrBs, a scheme for trading and settlement of the SGrBs in the IFSC has been introduced.	To facilitate easier access for non-resident investors to invest and trade in the SGrBs through the IFSC, thereby enhancing global climate capital flows into India.
September 30, 2024	**Use of Single Window IT System *inter-alia* for Registration and Approval from the IFSCA, the SEZ authorities, the GSTN, the RBI, the SEBI and the IRDAI:** The IFSCA has developed a Single Window IT System (SWITS) which, *inter alia*, contains a Common Application Form (CAF), created by merging several existing forms including business-specific Annexure Forms. The SWITS also integrates within itself a No objection Certificate (NoC) processing module that will ease the process of obtaining NoCs, wherever necessary, from the appropriate regulators *viz.* the RBI, the SEBI and the IRDAI.	To harmonise and simplify the process of submission of application under various Acts administered by the IFSCA, in addition to the Special Economic Zones (SEZ) Act, 2005.
October 01, 2024	**Master Circular for Credit Rating Agencies.**	To supersede all the circulars and guidelines issued by the SEBI (prior to October 01, 2020) in respect of credit rating agencies registered with the IFSCA and to provide guidance on the regulatory framework for credit rating agencies to undertake permissible activities.