

RESERVE BANK OF INDIA
BULLETIN



OCTOBER 2024

VOLUME LXXVIII NUMBER 10

Chair

Michael Debabrata Patra

Editorial Committee

Muneesh Kapur

Ajit R. Joshi

Rekha Misra

Praggya Das

Sunil Kumar

Snehal Herwadkar

Pankaj Kumar

V. Dhanya

Shweta Kumari

Anirban Sanyal

Sujata Kundu

Editor

G. V. Nadhanael

The Reserve Bank of India Bulletin is issued monthly by the Department of Economic and Policy Research, Reserve Bank of India, under the direction of the Editorial Committee.

The Central Board of the Bank is not responsible for interpretation and opinions expressed. In the case of signed articles, the responsibility is that of the author.

© Reserve Bank of India 2024

All rights reserved.

Reproduction is permitted provided an acknowledgment of the source is made.

For subscription to Bulletin, please refer to Section 'Recent Publications'

The Reserve Bank of India Bulletin can be accessed at <https://bulletin.rbi.org.in>

CONTENTS

Monetary Policy Statement (October 7-9) 2024-25

Governor's Statement: October 9, 2024	1
Resolution of the Monetary Policy Committee (MPC) October 7 to 9, 2024	9
Statement on Developmental and Regulatory Policies	11
Monetary Policy Report – October 2024	13

Speeches

Central Banking at Crossroads Shri Shaktikanta Das	109
Central Banking in the 21 st Century: Changing Paradigm Shri Shaktikanta Das	113
Assessing Inflation Targeting Michael Debabrata Patra	119
Central Banks and Financial Stability Shri Swaminathan J.	125
Governance in SFBs - Driving Sustainable Growth and Stability Shri Swaminathan J.	127
Reaching the Unreached – Ensuring Last Mile Connectivity of Banking Services Shri Swaminathan J.	131

Articles

State of the Economy	135
Monetary Policy Transmission in India: The Recent Experience	189
Nowcasting Food Inflation in India: Leveraging Price and Non-Price Signals through Machine Learning	203
How Indian Banks are Adopting Artificial Intelligence?	219
COVID-19 and Performance of MSME Clusters in India	235
Cash Usage Indicator for India	255
New Digital Economy and the Paradox of Productivity	271

Current Statistics

Recent Publications

335

**MONETARY POLICY STATEMENT
(OCTOBER 7~9) 2024~25**

Governor's Statement

Governor's Statement*

Shaktikanta Das

The flexible inflation targeting (FIT) framework has completed 8 years since its introduction in 2016. This is a major structural reform of 21st century in India. It stands out for its committee approach to decision making; transparency of policy making process and communication; accountability hinging upon quantitatively defined inflation target; and operational independence. Over the years, the framework has matured across various interest rate cycles and monetary policy stances.

When I look back, I can say with confidence that FIT has served us well over the years and has proved its mettle. It brought about an era of price stability in the pre-COVID-19 period, with inflation averaging around the target rate of 4 per cent. Thereafter, despite continuing global turmoil from multiple sources in the last four years or so, the flexibility embedded in the FIT framework has helped us to effectively address these unprecedented challenges, while supporting growth. Monetary policy in India was able to respond to the economic slowdown decisively and swiftly in the wake of COVID-19 pandemic and again pre-emptively during the build-up of inflationary pressures after the war began in Ukraine in early 2022. The prevailing well balanced growth-inflation dynamics is a testimony to the success of the FIT framework.

Decisions and Deliberations of the Monetary Policy Committee (MPC)

The Monetary Policy Committee (MPC), with new external members, met on 7th, 8th and 9th October, 2024. After assessing the evolving macroeconomic and financial conditions and the outlook, the MPC decided by a majority of 5 out of 6 members to keep the policy repo rate unchanged at 6.50 per cent. Consequently, the standing deposit facility (SDF) rate remains at

6.25 per cent and the marginal standing facility (MSF) rate and the Bank Rate at 6.75 per cent. Further, the MPC decided unanimously to change the stance to 'neutral' and to remain unambiguously focused on a durable alignment of inflation with the target, while supporting growth.

The MPC noted that currently the macroeconomic parameters of inflation and growth are well balanced. Headline inflation is on a downward trajectory, though its pace has been slow and uneven. Going forward, the moderation in headline inflation is expected to reverse in September and likely to remain elevated in the near-term due to adverse base effects, among other factors. Food inflation pressures could see some easing later in this financial year on the back of strong *kharif* sowing, adequate buffer stocks and good soil moisture conditions which are conducive for *rabi* sowing. Adverse weather events continue to pose contingent risks to food inflation. Core inflation, on the other hand, appears to have bottomed out.¹ Fuel component of CPI remains in contraction.²

Domestic growth has sustained its momentum, with private consumption and investment growing in tandem. Resilient growth gives us the space to focus on inflation so as to ensure its durable descent to the 4 per cent target. In these circumstances, the MPC decided to remain watchful of the evolving inflation outlook in the coming months. Keeping in view the prevailing inflation and growth conditions and the outlook, the MPC considered it appropriate to change the stance to 'neutral' and to remain unambiguously focused on a durable alignment of inflation with the target, while supporting growth.

¹ Core (CPI excluding food and fuel) inflation increased during July-August 2024 to 3.4 per cent on an average with pick up in core services inflation, reflecting the impact of the revision in mobile phone tariffs.

² CPI fuel inflation has remained in deflation for twelfth consecutive month since September 2023. In August 2024, deflation in CPI fuel was at (-)5.3 per cent as compared to (-)5.5 per cent in July and (-)3.6 per cent in June. This was on account of moderation in electricity prices inflation and LPG prices remaining in the deflationary zone, reflecting the cumulative impact of price cut in August 2023 and March 2024.

* Governor's Statement - October 9, 2024.

Assessment of Growth and Inflation

Global Growth

The global economy has remained resilient since the last meeting of the MPC,³ although downside risks from increasingly intense geopolitical conflicts, geoeconomic fragmentation, financial market volatility and elevated public debt continue to play out. Manufacturing is showing signs of slowdown, while services activity is holding up.⁴ World trade is exhibiting improvement.⁵ Inflation is softening, supported by lower energy prices. Growing divergence in inflation-growth dynamics across countries has resulted in varying monetary policy responses.⁶

Domestic Growth

Real gross domestic product (GDP) grew by 6.7 per cent in Q1:2024-25, led by a revival in private consumption⁷ and improvement in investment. The share of investment in GDP reached its highest since 2012-13.⁸ Government expenditure, on the other hand, contracted during the quarter.⁹ On the supply side, gross value added (GVA) expanded by 6.8 per cent

³ The OECD in its Interim Economic Outlook (September 2024) revised up global growth forecast for 2024 by 10 bps to 3.2 per cent from May 2024 projections and retained it at 3.2 per cent for 2025.

⁴ Global manufacturing PMI remained in contraction in September 2024 at 48.8 from 49.6 in August. The global services sector continued to expand with the PMI remaining in the expansion zone for the twentieth consecutive month at 52.9 in September.

⁵ World merchandise trade volume growth remained positive during April-July 2024 vis-à-vis contraction in the corresponding months in 2023.

⁶ Since the last MPC meeting, the US, Euro Area, New Zealand, Sweden, Canada, Czech Republic, Switzerland, Iceland among advanced economies (AEs) and Mexico, Colombia, Peru, Chile, Hungary, Philippines, Indonesia and South Africa among emerging market economies (EMEs) have cut their policy rates. Russia and Brazil, on the other hand, raised their benchmark rates.

⁷ Private final consumption expenditure (PFCE) growth accelerated to a seven-quarter high of 7.4 per cent in Q1:2024-25.

⁸ Growth in gross fixed capital formation (GFCF) was 7.5 per cent in Q1:2024-25 (6.5 per cent in Q4:2023-24) and the share of GFCF in GDP stood at 34.8 per cent – the highest since Q2:2012-13.

⁹ Government final consumption expenditure (GFCE) contracted by 0.2 per cent during Q1:2024-25. Revenue expenditure net of interest payments and subsidies of central government contracted by 1.5 per cent, while that of state governments grew marginally by 0.9 per cent during the quarter.

surpassing GDP growth, aided by strong industrial and services sector activities.¹⁰

High frequency indicators available so far suggest that domestic economic activity continues to be steady. The main components from the supply side – agriculture, manufacturing and services – remain resilient. Agricultural growth has been supported by above normal south-west monsoon rainfall¹¹ and better *kharif* sowing¹². Higher reservoir levels¹³ with good moisture conditions of soil augur well for the ensuing *rabi* crop. Manufacturing activity is gaining on the back of improving domestic demand, lower input costs¹⁴ and a supportive policy environment.¹⁵ Eight core industries output fell by 1.8 per cent in August on a high base.¹⁶ Excess rainfall also damped production in certain sectors such as electricity, coal and cement in August. The purchasing managers' index (PMI) for manufacturing at 56.5 for September remained elevated. The services sector continues

¹⁰ Gross value added (GVA) growth rose sequentially in Q1:2024-25, but the increase in subsidies – 3.6 per cent by the Union government and 30.9 per cent by the states – offset the gains from showing up in GDP growth. As a result, net taxes on products increased by 4.1 per cent in Q1:2024-25 as against 22.2 per cent in Q4:2023-24.

¹¹ During the current Southwest Monsoon season, the cumulative rainfall has been 8 per cent above the Long Period Average (LPA), compared to 6 per cent below LPA during the corresponding period last year.

¹² The total area sown under *kharif* crops, as of September 27, 2024, at 1108.6 lakh hectares is 101.1 per cent of the full season normal area. It is 1.9 per cent and 1.7 per cent higher than last year and the normal area as on date, respectively. Further, the area under major crops viz. rice, pulses, coarse cereals, oilseeds, and sugarcane is higher over last year; however, it is lower in the case of cotton.

¹³ All-India water storage in 155 major reservoirs stood at 88 per cent of the total capacity as of October 3, 2024, as against 74 per cent a year ago and decadal average of 77 per cent. The current storage level translates into 18.3 per cent above the level in the corresponding period of last year and 14.0 per cent over the last ten years' average.

¹⁴ In Q2:2024-25, the World Bank commodity price index declined by 3.8 per cent on quarter-on-quarter (q-o-q) basis and 4.1 per cent on year-on-year (y-o-y) basis. Brent crude oil prices also declined by 5.6 per cent (q-o-q) and 7.6 per cent (y-o-y) during the quarter. Firms polled in the Reserve Bank enterprise surveys expect input cost pressures to ease.

¹⁵ Government schemes such as Production Linked Incentive (PLI) scheme, Pradhan Mantri Awas Yojana (PMAY) [expanded to construct 3 crore additional houses], Pradhan Mantri Gram Sadak Yojana (PMGSY) [launching of phase IV], National Infrastructure Pipeline (NIP) and viability gap funding would provide impetus to capital formation.

¹⁶ Index of eight core industries had recorded high growth of 13.4 per cent during August 2023.

to grow at a strong pace.¹⁷ PMI services at 57.7 in September indicates robust expansion.¹⁸

On the demand side, rural demand¹⁹ is trending upwards while urban demand²⁰ continues to hold firm. Government consumption is improving.²¹ Investment activity remains buoyant,²² with government capex rebounding from a contraction observed in the first quarter.²³ Private investment continues to gain steam²⁴ on the back of expansion in non-food bank credit,²⁵ higher capacity utilisation²⁶ and rising

¹⁷ E-way bills increased by 18.5 per cent in September 2024. GST revenues at Rs. 1.73 lakh crore rose by 6.5 per cent and toll collections expanded by 6.5 per cent during September. Port cargo posted a healthy growth 6.7 per cent in August 2024. Aggregate bank credit and deposits registered robust growth of 14.4 per cent and 12.0 per cent, respectively, as on September 20, 2024.

¹⁸ India continues to record the highest PMI reading among major economies for both manufacturing and services since July 2022 and April 2023, respectively.

¹⁹ Wholesale two-wheeler sales expanded by 10.7 per cent in July-August 2024. The demand under Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) declined by 16.6 per cent during July-September, reflecting improvement in farm sector employment. Rural areas are recording higher FMCG sales growth than the urban areas since Q4:2023-24.

²⁰ Consumer durables posted a growth of 8.2 per cent in July 2024. Domestic air passengers rose by 7.6 per cent in July 2024 and 6.7 per cent in August.

²¹ Central government revenue expenditure (net of interest payments and subsidies) grew by 9.6 per cent in July-August, after contracting by 1.5 per cent in the previous quarter. This will boost Government consumption which was lagging in Q1.

²² Steel consumption rose by 10.0 per cent in August 2024, while cement production increased modestly by 1.0 per cent in July-August. Imports of capital goods expanded by 8.7 per cent during August 2024, while capital goods production increased sharply by 12.0 per cent in July 2024.

²³ Central government capex increased by 25.8 per cent in July-August 2024 after contracting by 35 per cent in Q1:2024-25.

²⁴ The interest coverage ratio for corporates in Q1:2024-25 touched a nine-quarter high due to sustained operating profit growth and lower interest expenses. Furthermore, the working capital cycle has significantly shortened, indicating a positive outlook.

²⁵ Bank credit to food processing, textiles, chemicals, base metal, and engineering goods increased y-o-y by 14.4 per cent, 6.4 per cent, 15.9 per cent, 16.1 per cent, and 16.6 per cent respectively in August 2024. Among infrastructure sectors, bank credit recorded growth of 4.1 per cent, 4.2 per cent and (-) 1.7 per cent, respectively, in power, roads, and telecommunication during August 2024.

²⁶ Seasonally adjusted capacity utilisation (CU) increased to 75.8 per cent in Q1:2024-25 from 74.6 per cent in Q4:2023-24.

investment intentions.²⁷ On the external front, services exports is supporting overall growth.²⁸

Looking ahead, India's growth story remains intact as its fundamental drivers – consumption and investment demand – are gaining momentum. Prospects of private consumption, the mainstay of aggregate demand, look bright on the back of improved agricultural outlook and rural demand. Sustained buoyancy in services would also support urban demand. Government expenditure of the centre and the states is expected to pick up pace in line with the Budget Estimates. Investment activity would benefit from consumer and business optimism, government's continued thrust on capex and healthy balance sheets of banks and corporates. Taking all these factors into consideration, real GDP growth for 2024-25 is projected at 7.2 per cent, with Q2 at 7.0 per cent; Q3 at 7.4 per cent; and Q4 at 7.4 per cent. Real GDP growth for Q1:2025-26 is projected at 7.3 per cent. The risks are evenly balanced.

Inflation

As anticipated, headline CPI inflation softened significantly in July and August²⁹, with base effect playing a major role in July. Food inflation experienced a certain degree of correction during these two months.³⁰ Considerable divergence, however, was

²⁷ As per RBI Surveys, manufacturers' investment intentions for 2024-25 improved, with most firms planning similar or higher investments compared to last year.

²⁸ India's merchandise exports contracted by 9.3 per cent (y-o-y) to US\$ 34.7 billion mainly due to unfavourable base effect, while imports rose by 3.3 per cent to US\$ 64.3 billion in August 2024. Non-oil non-gold imports expanded by 5.4 per cent during August 2024. Services exports grew by 10.9 per cent and services imports expanded by 12.1 per cent, in July-August 2024.

²⁹ Headline inflation moderated sharply to 3.6 per cent in July from 5.1 per cent in June by 1.5 percentage points due to base effect of 2.9 per cent, which more than offset a momentum (month-over-month) increase of 1.5 per cent. Headline inflation edged up by 5 bps to 3.65 per cent in August from 3.60 per cent in July. With index remaining flat (zero momentum), a modest unfavourable base effect of 5 bps pushed up headline inflation.

³⁰ Food inflation moderated to an average of 5.2 per cent during July-August from an average of 8.0 per cent during the previous 8 months (November 2023 to June 2024). Vegetable price inflation corrected to 6.8 per cent in July from 29.3 per cent in June. Vegetables inflation, however, increased to 10.7 per cent in August. As a result, the contribution of food to headline inflation fell to an average of around 68 per cent during July and August as compared to 76.3 per cent in June.

observed within the food sub-groups.³¹ Deflation in fuel group deepened on softening electricity and LPG prices.³² Core inflation, on the other hand, edged up in July and August.³³

The CPI print for the month of September is expected to see a big jump due to unfavourable base effects³⁴ and pick up in food price momentum,³⁵ caused by the lingering effects of a shortfall in the production of onion, potato and chana dal (gram) in 2023-24, among other factors.³⁶ The headline inflation trajectory, however, is projected to sequentially moderate in Q4 of this year due to good *kharif* harvest, ample buffer stocks of cereals and a likely good crop in the ensuing *rabi* season. Unexpected weather events and worsening of geopolitical conflicts constitute major upside risks to inflation. International crude oil prices have become volatile in October.³⁷ The recent uptick in food and metal prices, as seen in the Food and Agricultural Organisation (FAO) and the World

³¹ Price inflation in vegetables at 10.7 per cent and pulses inflation at 13.6 per cent (in double-digits since June 2023) in August was in sharp contrast to a deflation of (-)4.4 per cent in spices and (-)0.9 per cent in oils and fats.

³² Deflation in fuel group was at (-)5.3 per cent in August, with LPG and electricity prices, on a year-on-year basis, at (-)24.6 per cent and per cent 4.9 per cent, respectively.

³³ Core inflation from an all-time low of 3.1 per cent in the 2012=100 series in June edged up to 3.4 per cent in July. In August, core inflation was at 3.3 per cent. Services inflation from a historic low of 2.7 per cent in June increased to 3.4 per cent in August 2024. CPI 'telephone charges: mobile', on a year-on-year basis, increased from 1.0 per cent in June 2024 to 10.5 per cent in August 2024.

³⁴ CPI headline inflation would experience an unfavourable base effect of 1.1 percentage points in September 2024.

³⁵ Sharp increase in edible oil prices was seen since the second half of September. Firmness in prices was also seen in wheat, gram and key vegetables like onion and tomato.

³⁶ As per the third advance estimate of horticultural production for 2023-24 released on September 20, 2024, vegetables production declined by (-)3.2 per cent over 2022-23, majorly due to decline in production of onions by (-)19.7 per cent and potatoes by (-)5.1 per cent, while production of tomatoes and non-TOP vegetables increased by 4.4 per cent and 1.4 per cent, respectively. As per final crop production estimates for 2023-24, the *rabi* chana dal (gram) production registered a decline by (-)10.0 per cent over 2022-23.

³⁷ Indian basket crude oil prices registered a month-on-month decline of around (-)7.0 per cent and (-)5.8 per cent in August and September, respectively. However, in October so far, the Indian basket crude oil prices increased by 7.6 per cent and was at USD 78.84 per barrel as on October 7, 2024.

Bank price indices for September, if sustained, can add to the upside risks.³⁸ Taking into account all these factors, CPI inflation for 2024-25 is projected at 4.5 per cent, with Q2 at 4.1 per cent; Q3 at 4.8 per cent; and Q4 at 4.2 per cent. CPI inflation for Q1:2025-26 is projected at 4.3 per cent. The risks are evenly balanced.

What do these Inflation and Growth Conditions mean for Monetary Policy?

The developments since the August meeting of the MPC indicate further progress towards realising a durable disinflation towards the target. Despite the near-term upsides to inflation from food prices, the evolving domestic price situation signals moderation in headline inflation thereafter. The agricultural crop outlook is turning out to be favourable, with improving prospects of *kharif* and *rabi* output. These factors could lead to an easing of food inflation pressures, but this optimism is subject to weather related shocks, if any. Core inflation is likely to remain broadly contained on continuing transmission of past monetary policy actions unless, of course, there are surprises in global commodity prices.

The prevailing and expected inflation-growth balance have created congenial conditions for a change in monetary policy stance to neutral. Even as there is greater confidence in navigating the last mile of disinflation, significant risks – I repeat significant risks – to inflation from adverse weather events, accentuating geopolitical conflicts and the very recent increase in certain commodity prices continue to stare at us. The adverse impact of these risks cannot be underestimated.

It is with a lot of effort that the inflation horse has been brought to the stable, i.e., closer to the target

³⁸ The FAO food price index for September released on October 4, 2024 showed an increase of 3.0 per cent (month-on-month) with all categories including meat, dairy, cereals, oils and sugar registering a pick up. Even though the World Bank's international commodity price index (released on October 2) for September declined by (-)3.8 per cent over August, driven mainly by a decline in energy prices by (-)7.1 per cent, food prices increased by 3.1 per cent and metal prices by 1.8 per cent.

within the tolerance band compared to its heightened levels two years ago. We have to be very careful about opening the gate as the horse may simply bolt again. We must keep the horse under tight leash, so that we do not lose control. Going forward, we need to closely monitor the evolving conditions for further confirmation of the disinflationary impulses.

Liquidity and Financial Market Conditions

System liquidity remained in surplus during August-September and early October, with a pickup in government spending and decline in currency in circulation.³⁹ Liquidity conditions, however, had turned into deficit for a brief period during the latter half of September with the build-up of government cash balances on account of tax related outflows.⁴⁰ In sync with the shifting liquidity conditions, the Reserve Bank proactively conducted two-way operations⁴¹ to ensure alignment of inter-bank overnight rate with the policy repo rate.⁴²

Across the term money market segments, the yields on 3-month treasury bills (T-bills) and

commercial papers (CPs) issued by non-banking financial companies (NBFCs) eased, while that on certificates of deposit (CDs) firmed up marginally.⁴³ The 10 year G-Sec yield softened in August-September on global and domestic cues, including policy pivot in the US and in some major economies, improved global investor sentiment, benign domestic inflation and accelerated fiscal consolidation.⁴⁴ The term premium (10 year G-Sec yield *minus* 3-month T-bill yield) has remained stable in recent months.⁴⁵ Transmission to the credit market has been satisfactory.⁴⁶

Moving forward, the Reserve Bank will continue to be nimble and flexible in its liquidity management operations. We will deploy an appropriate mix of instruments to modulate both frictional and durable liquidity so as to ensure that money market interest rates evolve in an orderly manner.

During the current financial year (up to October 8), the exchange rate of the Indian rupee (INR) remained largely range-bound.⁴⁷ The INR also continued to be the least volatile among peer EME currencies. This was so even during the high volatility episode, following

³⁹ Government cash balances with the Reserve Bank, on an average, declined to ₹2.8 lakh crore during August-October (up to October 7) from ₹3.6 lakh crore during June-July. Notes in circulation reduced by ₹0.19 lakh crore during the period August-October (up to October 7).

⁴⁰ System liquidity, as measured by the net position under the liquidity adjustment facility (net LAF) was, on an average, in surplus of about ₹1.3 lakh crore during August-September. System liquidity turned into deficit of about ₹0.18 lakh crore for a brief period during September 21-25, 2024. While higher government spending eased liquidity during August-September (up to September 15), the build-up of government cash balances because of advance tax payments and goods and services tax (GST) related outflows exerted pressure on liquidity in the latter half of September. Average system liquidity is in surplus of about ₹2.3 lakh crore in October (up to October 7).

⁴¹ During August-October (up to October 7), four main and 30 fine-tuning variable rate reverse repo (VRRR) auctions (1 to 7 days maturity) mopped up surplus liquidity cumulatively amounting to ₹11.5 lakh crore. During September 17-24, 2024, one main and 3 fine-tuning variable rate repo (VRR) operations (1 to 3 days maturity) injected liquidity to the extent of ₹2.1 lakh crore.

⁴² The weighted average call rate (WACR) averaged 6.53 per cent during August – September as against 6.55 per cent during June – July. The weighted average call rate (WACR) averaged 6.44 per cent during October (up to October 7). Rates in the collateralised segment – the triparty and market repo rates – although relatively softer, moved in tandem with the WACR.

⁴³ Average yields on T-bills and CPs moderated to 6.58 per cent and 7.67 per cent, respectively, in August – October (up to October 7) from 6.77 per cent and 7.77 per cent, respectively, during June - July, while that on CDs firmed up to 7.25 per cent from 7.13 per cent during the same period.

⁴⁴ The 10-year G-Sec yield averaged 6.83 per cent during August – September 2024 as compared to 6.98 per cent during June – July 2024. The 10-year G-Sec yield further moderated to an average of 6.79 per cent in October (up to October 7).

⁴⁵ On an average, the term premium was 25 bps during August-October (up to October 7) as compared to 21 bps during June-July.

⁴⁶ In response to the cumulative policy repo rate hike of 250 bps since May 2022, the weighted average lending rates (WALRs) on fresh and outstanding rupee loans of SCBs have increased by 190 bps and 119 bps, respectively, during May 2022 to August 2024, while the weighted average domestic term deposit rate (WADTDR) on fresh and outstanding deposits of SCBs increased by 243 bps and 190 bps, respectively, during the same period.

⁴⁷ On a financial year basis (up to October 8), the Indian rupee (INR) registered lower depreciation (-0.7 per cent) against the US dollar as compared to some of its emerging market peers like Philippine peso, Russian ruble, Turkish lira, Brazilian real, Argentine peso and Mexican peso. During 2024-25 (up to October 8), the INR was the least volatile (in terms of coefficient of variation) amongst peer EME currencies including Chinese yuan, Vietnamese dong, Philippine peso, Turkish lira and Chilean peso.

the unwinding of yen carry trade in early August 2024.⁴⁸ The lower volatility of the INR reflects India's strong macroeconomic fundamentals and improved external sector outlook.

Financial Stability

The health parameters of banks and NBFCs continue to be strong.⁴⁹ There has been some recent commentary on likelihood of stress buildup in a few unsecured loan segments like loans for consumption purposes, micro finance loans and credit card outstandings. The Reserve Bank is closely monitoring the incoming information and will take measures, as may be considered necessary. Banks and NBFCs, on their part, need to carefully assess their individual exposures in these areas, both in terms of size and quality. Their underwriting standards and post-sanction monitoring have to be robust. Continued attention also needs to be given to potential risks from inoperative deposit accounts, cybersecurity landscape, mule accounts, etc.

NBFCs, in particular, have registered an impressive growth over the last few years. This has resulted in more credit flow to the remote and underserved segments, bolstering financial inclusion. While the overall NBFC sector remains healthy, I have a few messages to the outliers.

⁴⁸ The Bank of Japan's decision to raise interest rates on July 31, 2024 resulted in a meltdown in US stocks followed by world-wide volatility; however, the turmoil was short-lived and financial markets recovered quickly.

⁴⁹ Gross non-performing assets (GNPA) ratio of banks was 2.7 per cent as at end-June 2024, the lowest since end-March 2011. The annualised slippage ratio, which measures new NPA accritions as a percentage of standard advances, was at 1.3 per cent as at end-June 2024, as against 1.6 per cent a year ago. The provision coverage ratio, capital to risk-weighted assets ratio, and liquidity coverage ratio were 76.5 per cent, 16.8 per cent, and 130.1 per cent, respectively in June 2024. The annualized return on assets (RoA) and return on equity (RoE) stood at 1.4 per cent and 14.5 per cent, respectively, in June 2024. The net interest margin moderated to 3.5 per cent in June 2024 vis-à-vis 3.7 per cent in June 2023.

Key health parameters of NBFC sector are also moving in tandem with the banking sector. GNPA and NNPA ratios of NBFC sector (excluding NBFCs under resolution) in June 2024 were 2.6 per cent and 1.1 per cent, respectively, as compared with 3.2 per cent and 1.2 per cent in the same quarter of the previous year.

- i. First, it is observed that some NBFCs are aggressively pursuing growth without building up sustainable business practices and risk management frameworks, commensurate with the scale and complexity of their portfolio. An imprudent 'growth at any cost' approach would be counter productive for their own health.
- ii. Second, driven by the significant accretion to their capital from both domestic and overseas sources, and sometimes under pressure from their investors, some NBFCs – including microfinance institutions (MFIs) and housing finance companies (HFCs) – are chasing excessive returns on their equity. While such pursuits are in the domain of the Boards and Managements of NBFCs, concerns arise when the interest rates charged by them become usurious and get combined with unreasonably high processing fees and frivolous penalties. These practices are sometimes further accentuated by what appears to be a 'push effect', as business targets drive retail credit growth rather than its actual demand. The consequent high-cost and high indebtedness could pose financial stability risks, if not addressed by these NBFCs.
- iii. Third, the NBFCs may review their prevailing compensation practices, variable pay and incentive structures some of which appear to be purely target driven in certain NBFCs. Such practices may result in adverse work culture and poor customer service.

To sum up, it is important that NBFCs, including MFIs and HFCs, follow sustainable business goals; a 'compliance first' culture; a strong risk management framework; a strict adherence to fair practices code; and a sincere approach to customer grievances. The

Reserve Bank is closely monitoring these areas and will not hesitate to take appropriate action, if necessary. Self-correction by the NBFCs would, however, be the desired option.

External Sector

India's current account deficit (CAD) widened to 1.1 per cent of GDP in Q1:2024-25 on account of a higher trade deficit.⁵⁰ Buoyancy in services exports⁵¹ and strong remittance receipts⁵² are expected to keep CAD within the sustainable level.

On the external financing side, foreign portfolio investment (FPI) flows have seen a turnaround from net outflows of US\$ 4.2 billion in April-May 2024 to net inflows of US\$ 19.2 billion during June-October (till October 7, 2024). Foreign direct investment (FDI) flows remain strong in 2024-25 as both gross and net FDI inflows improved in April-July 2024.⁵³ While external commercial borrowings moderated, non-resident deposits recorded higher net inflows compared to last year.⁵⁴ India's foreign exchange reserves have already crossed a new milestone of US\$ 700 billion. Overall, India's external sector remains resilient as key external sector vulnerability indicators continue to improve.⁵⁵ We remain confident of meeting our external financing requirements comfortably.

⁵⁰ India's current account deficit (CAD) widened to US\$ 9.7 billion (1.1 per cent of GDP) in Q1:2024-25 from US\$ 8.9 billion (1.0 per cent of GDP) in Q1:2023-24 and against a surplus of US\$ 4.6 billion (0.5 per cent of GDP) in Q4:2023-24.

⁵¹ As per provisional figures, India's services exports grew by 10.9 per cent during July-August 2024. Net services exports grew by 9.6 per cent during July-August 2024.

⁵² Inward remittances to India increased by 8.9 per cent in Q1:2024-25 to US\$ 29.5 billion from US\$ 27.1 billion in Q1:2023-24.

⁵³ Gross foreign direct investment (FDI) inflows grew by around 23 per cent to US\$ 27.5 billion in April-July 2024-25 from US\$ 22.4 billion during the same period a year ago. Net FDI inflows increased by 28.9 per cent to US\$ 4.9 billion in April-July 2024-25 from US\$ 3.8 billion a year ago.

⁵⁴ Net inflows under external commercial borrowings to India moderated to US\$ 3.6 billion during April-August 2024-25 as compared with US\$ 4.3 billion a year ago. Non-resident deposits recorded a higher net inflow of US\$ 5.8 billion in April-July 2024-25 than US\$ 3.0 billion a year ago.

⁵⁵ India's CAD/GDP ratio stood at 0.7 per cent in 2023-24 (2.0 per cent during 2022-23), and 1.1 per cent during Q1:2024-25 (1.0 per cent in Q1:2023-24). India's external debt to GDP ratio declined marginally to 18.8 per cent at end-June 2024 from 18.9 per cent at end-March 2024.

Additional Measures

I shall now announce certain additional measures.

Responsible Lending Conduct – Levy of Foreclosure Charges/ Pre-payment Penalties on Loans

The Reserve Bank has taken several measures over the years to safeguard consumer's interest. As part of these measures, Banks and NBFCs are not permitted to levy foreclosure charges/ pre-payment penalties on any floating rate term loan sanctioned to individual borrowers for purposes, other than business. It is now proposed to broaden the scope of these guidelines to include loans to Micro and Small Enterprises (MSEs). A draft circular in this regard shall be issued for public consultation.

Discussion Paper on Capital Raising Avenues for Primary (Urban) Co-operative Banks

The Reserve Bank has undertaken several initiatives in recent years to strengthen the Urban Co-operative Banking (UCB) Sector. Such initiatives include issuance of regulatory guidelines in 2022 for issue and regulation of share capital and securities by UCBs. To provide more flexibility and avenues for UCBs to raise capital, a Discussion Paper on Capital Raising Avenues for UCBs will be issued for feedback and suggestions from stakeholders.

Creation of Reserve Bank Climate Risk Information System (RB-CRIS)

Climate change is emerging as a significant risk to the financial system world over. This makes it necessary for regulated entities to undertake robust climate risk assessment, which is sometimes hindered by gaps in high quality climate related data. To bridge these data gaps, the Reserve Bank proposes to create a data repository, namely, the Reserve Bank – Climate Risk Information System (RB-CRIS).

UPI - Enhancement of Limits

UPI has transformed India's financial landscape by making digital payments accessible and inclusive

through continuous innovation and adaptation. To further encourage wider adoption of UPI and make it more inclusive, it has been decided to (i) enhance the per-transaction limit in UPI123Pay from ₹5,000 to ₹10,000; and (ii) increase the UPI Lite wallet limit from ₹2,000 to ₹5,000 and per-transaction limit from ₹500 to ₹1,000.

Introduction of Beneficiary Account Name Look-up Facility

At present, UPI and Immediate Payment Service (IMPS) provide a facility for the remitter of funds to verify the name of the receiver (beneficiary) before executing a payment transaction. It is now proposed to introduce such a facility for the Real Time Gross Settlement System (RTGS) and the National Electronic Funds Transfer (NEFT) system. This facility will enable the remitter to verify the name of the account holder before effecting funds transfer to him/her through RTGS or NEFT. This will also reduce the possibility of wrong credits and frauds.

Conclusion

Today, the Indian economy presents a picture of stability and strength. The balance between inflation

and growth is well-poised. India's growth story remains intact. Inflation is on a declining path, although we still have a distance to cover. The external sector demonstrates the strength of the economy. Forex reserves are scaling new peaks. Fiscal consolidation is underway. The financial sector remains sound and resilient. Global investor optimism in India's prospects is perhaps at its highest ever. We are, however, not complacent, especially amidst rapidly evolving global conditions.

The monetary policy action today reflects the MPC's assessment that, at the current juncture, it would be appropriate to have greater flexibility and optionality to act in sync with the evolving conditions and the outlook. We stand unambiguously committed to ensure durable alignment of inflation with the target, while supporting growth. In the prevailing macroeconomic conditions and the outlook, Mahatma Gandhi's words remain highly relevant: "*When the method is good, ... Success is bound to come in the end. ...*"⁵⁶

Thank you. Namaskar.

⁵⁶ The Collected Works of Mahatma Gandhi, Volume 82; Harijan, 19.04.1942.

MONETARY POLICY STATEMENT (OCTOBER 7~9) 2024~25

Resolution of the Monetary Policy Committee (MPC)
October 7-9, 2024

Monetary Policy Statement, 2024-25 Resolution of the Monetary Policy Committee (MPC) October 7 to 9, 2024*

Monetary Policy Decisions

After assessing the current and evolving macroeconomic situation, the Monetary Policy Committee (MPC) at its meeting today (October 9, 2024) decided to:

- Keep the policy repo rate under the liquidity adjustment facility (LAF) unchanged at 6.50 per cent.

Consequently, the standing deposit facility (SDF) rate remains unchanged at 6.25 per cent and the marginal standing facility (MSF) rate and the Bank Rate at 6.75 per cent.

- The MPC also decided to change the monetary policy stance to 'neutral' and to remain unambiguously focused on a durable alignment of inflation with the target, while supporting growth.

These decisions are in consonance with the objective of achieving the medium-term target for consumer price index (CPI) inflation of 4 per cent within a band of +/- 2 per cent, while supporting growth.

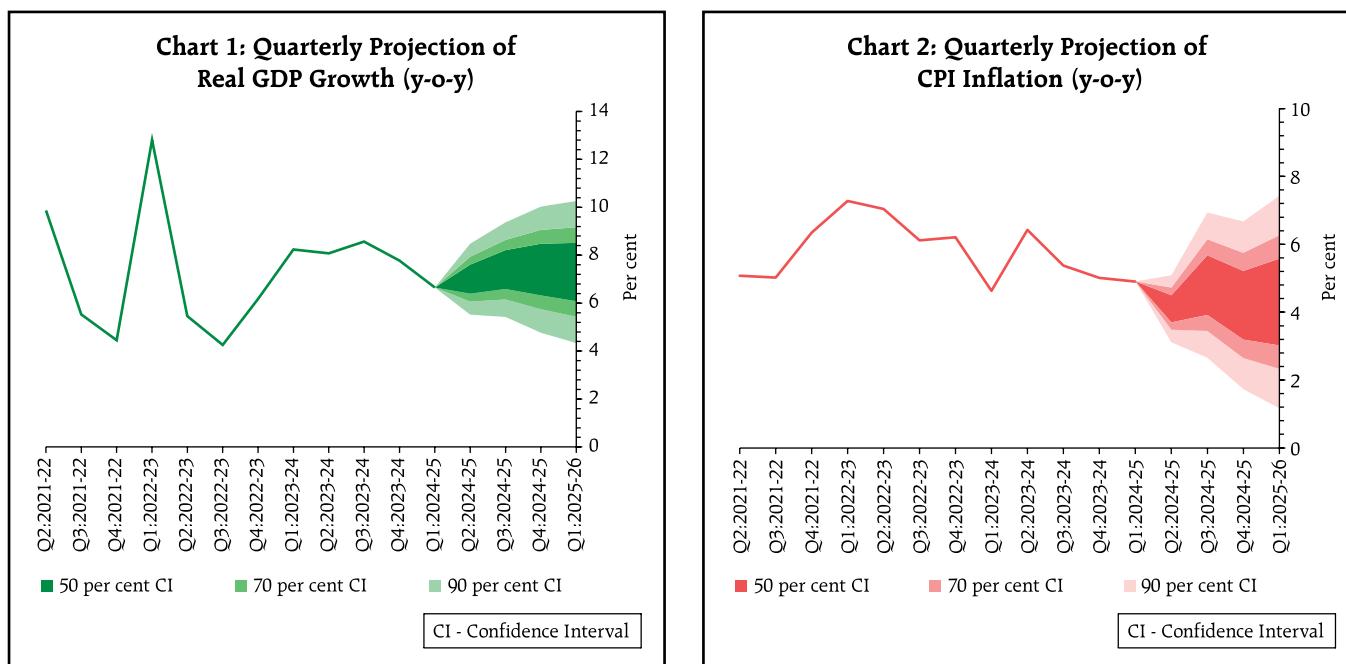
Growth and Inflation Outlook

The global economy has remained resilient and is expected to maintain stable momentum over the rest of the year, amidst downside risks from intensifying geopolitical conflicts. In India, real gross domestic product (GDP) registered a growth of 6.7 per cent in Q1:2024-25, driven by private consumption and investment. Looking ahead, the agriculture sector

is expected to perform well on the back of above normal rainfall and robust reservoir levels, while manufacturing and services activities remain steady. On the demand side, healthy *kharif* sowing, coupled with sustained momentum in consumer spending in the festival season, augur well for private consumption. Consumer and business confidence have improved. The investment outlook is supported by resilient non-food bank credit growth, elevated capacity utilisation, healthy balance sheets of banks and corporates, and the government's continued thrust on infrastructure spending. External demand is expected to get support from improving global trade volumes. Taking all these factors into consideration, real GDP growth for 2024-25 is projected at 7.2 per cent with Q2 at 7.0 per cent; Q3 at 7.4 per cent; and Q4 at 7.4 per cent. Real GDP growth for Q1:2025-26 is projected at 7.3 per cent (Chart 1). The risks are evenly balanced.

Headline inflation declined sharply to 3.6 and 3.7 per cent in July and August respectively from 5.1 per cent in June. Going forward, the September inflation print may see a significant pick-up as base effects turn adverse and food prices register an upturn. Food inflation, however, is expected to ease by Q4:2024-25 on better *kharif* arrivals and rising prospects of a good *rabi* season. Sowing of key *kharif* crops are higher than last year and the long-period average. Sufficient buffer stocks for cereals are available for ensuring food security. Adequate reservoir levels, the likelihood of a good winter and favorable soil moisture conditions augur well for the ensuing *rabi* season, though adverse weather events remain a risk. Firms polled in the Reserve Bank enterprise surveys expect input cost pressures to ease; however, the very recent upturn in key commodity prices, especially metals and crude oil needs to be closely monitored. Taking all these factors into consideration, CPI inflation for 2024-25 is projected at 4.5 per cent with Q2 at 4.1 per cent; Q3 at 4.8 per cent; and Q4 at 4.2 per cent. CPI inflation for Q1:2025-26 is projected at 4.3 per cent (Chart 2). The risks are evenly balanced.

* Released on October 9, 2024.



Rationale for Monetary Policy Decisions

The MPC noted that the domestic growth outlook remains resilient supported by domestic drivers – private consumption and investment. This provides headroom for monetary policy to focus on the goal of attaining a durable alignment of inflation with the target. The MPC reiterates that enduring price stability strengthens the foundations of a sustained period of high growth. After a transient spike in the near term, headline inflation is expected to moderate as projected above. With better prospects for both *kharif* and *rabi* crops and ample buffer stocks of foodgrains, there is now greater confidence on the disinflation path later in the financial year. Keeping in view the prevailing and expected inflation-growth dynamics, which are well balanced, the MPC decided to change the monetary policy stance from withdrawal of accommodation to 'neutral' and remain unambiguously focused on a durable alignment of inflation with the target, while supporting growth. The change in stance provides flexibility to the MPC while enabling it to monitor the progress on disinflation which is still incomplete. Risks stem from uncertainties relating to heightened

global geo-political risks, financial market volatility, adverse weather events and the recent uptick in global food and metal prices. Hence, the MPC has to remain vigilant of the evolving inflation outlook. Accordingly, the MPC decided to keep the policy repo rate unchanged at 6.50 per cent in this meeting.

Shri Saugata Bhattacharya, Professor Ram Singh, Dr. Rajiv Ranjan, Dr. Michael Debabrata Patra and Shri Shaktikanta Das voted to keep the policy repo rate unchanged at 6.50 per cent. Dr. Nagesh Kumar voted to reduce the policy repo rate by 25 basis points.

Dr. Nagesh Kumar, Shri Saugata Bhattacharya, Professor Ram Singh, Dr. Rajiv Ranjan, Dr. Michael Debabrata Patra and Shri Shaktikanta Das voted for a change in stance from withdrawal of accommodation to 'neutral' and to remain unambiguously focused on a durable alignment of inflation with the target, while supporting growth.

The minutes of the MPC's meeting will be published on October 23, 2024.

The next meeting of the MPC is scheduled during December 4 to 6, 2024.

**MONETARY POLICY STATEMENT
(OCTOBER 7~9) 2024~25**

Statement on Developmental and Regulatory Policies

Statement on Developmental and Regulatory Policies

This Statement sets out various developmental and regulatory policy measures relating to (i) Regulations; and (ii) Payment Systems.

I. Regulations

1. Responsible Lending Conduct – Levy of Foreclosure Charges/ Pre-payment Penalties on Loans

In terms of extant guidelines, banks and NBFCs are not permitted to levy foreclosure charges/ pre-payment penalties on any floating rate term loan sanctioned to individual borrowers with or without co-obligant(s), for purposes other than business. With a view to safeguard customers' interest through better transparency and customer centricity by lenders, it has been decided to broaden the scope of such regulations to cover loans to Micro and Small Enterprises (MSEs) extended by the Regulated Entities of the Reserve Bank. A draft circular in this regard shall be issued for public consultation.

2. Discussion Paper on Capital Raising Avenues for Primary (Urban) Co-operative Banks

The initial set of guidelines on issue and regulation of share capital and securities for Primary (Urban) Co-operative Banks (UCBs) to ensure alignment with the Banking Regulation (Amendment) Act, 2020 were issued in 2022. However, these guidelines did not cover the newly enabled capital related provisions such as issuance of special shares, issuance of shares at a premium, etc., which are new to co-operative banking sector. The Report of the Expert Committee on Primary (Urban) Co-operative Banks chaired by Shri. N.S. Vishwanathan, former Deputy Governor, RBI, had provided broad guiding principles through its recommendations on these provisions.

A Working Group was constituted in RBI to further operationalise the broad-based recommendations of the Expert Committee on the newly enabled capital related provisions. Based on the recommendations of the Working Group, a Discussion Paper on Capital Raising Avenues for Primary (Urban) Co-operative Banks will be issued for eliciting feedback and suggestions from stakeholders.

3. Creation of Reserve Bank Climate Risk Information System (RB-CRIS)

Climate change is emerging as one of the significant risks to the financial system. It is crucial for regulated entities to undertake climate risk assessments for ensuring stability of their balance sheets and that of the financial system. Such an assessment requires, among other things, high quality data relating to local climate scenarios, climate forecasts, and emissions. The available climate related data is characterised by various gaps such as fragmented and varied sources, differing formats, frequencies and units. To bridge these gaps, the Reserve Bank proposes to create a data repository namely, the Reserve Bank – Climate Risk Information System (RB-CRIS) comprising of two parts. The first part will be a web-based directory, listing various data sources, (meteorological, geospatial, etc.) which will be publicly accessible in the RBI website. The second part will be a data portal comprising of datasets (processed data in standardised formats). The access to this data portal will be made available only to the regulated entities in a phased manner.

II. Payment Systems

4. UPI - Enhancement of limits:

In order to encourage wider adoption of UPI, it has been decided to enhance the limits for the following products of UPI:

- i) **UPI123Pay:** UPI123 was launched in March 2022, with a view to enable feature-phone

users to use UPI. This facility is now available in 12 languages. Currently, the per-transaction limit in UPI123Pay is capped at ₹5000. In order to widen the use-cases, in consultation with the stakeholders, it has been decided to enhance the per-transaction limit to ₹10,000. Necessary instructions will be issued to NPCI shortly.

- ii) **UPI Lite:** A limit of ₹500 per transaction and an overall limit of ₹2000 per UPI Lite wallet, is presently applicable, with the facility of auto-replenishment. To widen the scope of usage of this product, it has now been decided to increase the UPI Lite wallet limit to ₹5,000 and per-transaction limit to ₹1,000. The Framework for facilitating small value payments in offline digital mode, issued by the Reserve Bank, under which UPI Lite has been enabled, will be suitably amended.

5. Introduction of beneficiary account name look-up facility

Payment Systems like UPI and IMPS provide a facility to the remitter to verify the name of the receiver (beneficiary) before initiating a payment transaction. There have been requests to introduce such a facility for Real Time Gross Settlement System (RTGS) and National Electronic Funds Transfer (NEFT) systems.

Accordingly, to enable remitters in RTGS and NEFT to verify the name of the beneficiary account holder before initiating funds transfer, it is now proposed to introduce a 'beneficiary account name look-up facility'. Remitters can input the account number and the branch IFSC code of the beneficiary, following which the name of the beneficiary will be displayed. This facility will increase customer confidence as it would reduce the possibility of wrong credits and frauds. Detailed guidelines will be issued separately.

MONETARY POLICY STATEMENT (OCTOBER 7~9) 2024~25

Monetary Policy Report - October 2024

I. Macroeconomic Outlook

The outlook for domestic economic activity remains resilient buoyed by strong consumption and investment activities. Geopolitical conflicts, uncertain global outlook, volatile global financial markets amidst changing perceptions on monetary policy trajectories, and climate shocks are the key risks to the outlook. Monetary policy remains steadfast on aligning inflation with the target on a durable basis, setting strong foundations for a sustained period of high growth.

I.1 Key Developments since the April 2024 MPR

Since the release of the April 2024 Monetary Policy Report (MPR), global economic activity has shown resilience in the face of continuing geopolitical tensions and intermittent financial market volatility. Disinflation in headline inflation has been slow due to stubborn services inflation which is keeping core inflation (*i.e.*, CPI inflation excluding food & fuel) elevated, relative to the headline. Several central banks have started easing monetary policy while others have maintained a restrictive stance, leading to divergence in policy pathways.

Financial markets have been on edge, with incoming data shifting expectations about the direction of monetary policy. Sovereign bond yields have trended downwards on anticipation of policy pivots. Global equity markets have exhibited resilience, recovering quickly and regaining risk-taking appetite in spite of stretched valuations and still high leverage. Capital flows to emerging market economies (EMEs) have resumed *albeit* amidst heightened volatility. The US dollar index peaked in mid-June and receded thereafter on signs of cooling labour market conditions and easing inflation. Supply chain pressures have inched up since May driven by conflicts in the Middle East. Global commodity prices declined on the back of softening prices of base metals, agricultural products,

and energy, however, price pressures have increased recently amidst heightened geopolitical tensions. Brent crude oil prices, that were hovering around US dollar (US\$) 90 per barrel in April 2024, have since declined – even dipping below US\$ 70 briefly – due to slowdown in demand and the Organization of the Petroleum Exporting Countries (OPEC) *plus'* intent to gradually restore supplies. Of late, the US dollar index, sovereign bond yields and crude oil prices have inched up. International prices of most agricultural commodities have risen due to increase in prices of vegetable oil, dairy and meat.

Turning to the domestic economy, real gross domestic product (GDP) grew by 6.7 per cent in Q1:2024-25 as per the National Statistical Office (NSO). Private consumption expenditure registered a growth of 7.4 per cent, contributing 63 per cent to overall GDP growth. Consumption spending has been robust in Q1:2024-25, supported by rural demand which is expected to improve further on the back of favourable monsoon, higher sowing activity and moderating inflation. Investment activity also maintained its momentum in Q1, supported by high capacity utilisation, continued buoyancy in steel consumption and capital goods imports. On the supply side, real gross value added (GVA) expanded by 6.8 per cent in Q1, with industry and services sectors being the key drivers.

Headline consumer price index (CPI) inflation moderated to 4.4 per cent in April-August 2024 from 5.2 per cent in H2:2023-24. Base effects continue to have an outsized role in monthly inflation prints. Consequently, the moderation in headline inflation has been uneven. Core inflation was on a steadily declining path—in May 2024, it fell to its lowest level of 3.1 per cent in the current series (since January 2012) before increasing in July-August. Food price inflation, on the other hand, remained elevated, averaging 6.9 per cent over the last five months (April-August 2024).

and contributing 72.5 per cent of headline inflation during the period. Recognising the risks from volatile and elevated food prices and its likely adverse impact on inflation expectations and spillovers to core inflation, the Monetary Policy Committee (MPC) kept the policy repo rate unchanged at 6.5 per cent through H1 and remained resolute in its commitment to aligning inflation with the target, while supporting growth.

Monetary Policy Committee Meetings: April 2024 - September 2024

When the MPC met in April 2024, global economy was showing resilience and inflation was trending down. Financial markets were responding to the timing and pace of monetary policy trajectories, with heightened uncertainty pushing up gold prices on safe haven demand. The domestic economic momentum appeared strong, supported by healthy bank and corporate sector balance sheets and upbeat business and consumer sentiments. Hence, the real GDP growth projection for 2024-25 was retained at 7 per cent. CPI headline inflation had softened in January-February 2024 from its December high although food inflation edged up. The MPC noted the uncertainties around the inflation trajectory stemming from weather-driven food price shocks, cost push pressures, firming crude oil prices due to geopolitical tensions and volatility in financial markets, and retained the projection of CPI inflation for 2024-25 at 4.5 per cent. The MPC observed that food price pressures have been interrupting the ongoing disinflation process, posing challenges for the final descent of inflation to the target. Considering that the path of disinflation has to be sustained till inflation reaches the 4 per cent target on a durable basis, MPC also decided, by a 5-1 majority, to keep the policy repo rate unchanged at 6.5 per cent. The MPC decided by a majority of 5-1 to remain focused on withdrawal of accommodation so as to ensure that inflation progressively aligns with the target, while supporting growth.

At the time of June 2024 meeting, global growth was sustaining momentum. Central banks remained

steadfast and data-dependent in their fight against inflation, acknowledging that the final leg of disinflation might be tough. High frequency indicators for domestic economic activity showed resilience, with expectations of above normal monsoon brightening the prospects of agriculture sector and rural demand. Investment demand in the private sector was buoyed by high capacity utilisation and healthy balance sheet of banks and corporates while improving world trade was expected to support external demand. The projection of real GDP growth for 2024-25 was revised upwards by 20 basis points from the previous meeting to 7.2 per cent. In India, headline CPI inflation moderated for three successive months to 4.8 per cent in April 2024. Food inflation was persistently high while core inflation had fallen to historic lows. Nevertheless, the future inflation trajectory remained uncertain due to supply shocks, input cost pressures and crude oil price volatility. The projection of CPI inflation for 2024-25 was retained at 4.5 per cent. The MPC noted that while the growth-inflation balance had moved favourably since its previous meeting, risks to inflation remain from recurring food price shocks and monetary policy has to stay watchful of the spillovers of food price pressures to core inflation and inflation expectations. Accordingly, the MPC decided by a majority of 4-2 to keep the policy rate unchanged at 6.5 per cent. The MPC voted with a 4-2 majority to continue with the stance of withdrawal of accommodation.

In the run up to August 2024 meeting, headline inflation, after remaining steady at 4.8 per cent during April and May 2024, increased to 5.1 per cent in June 2024, primarily driven by the food component even though fuel prices remained in deflation and core inflation touched new lows. Assuming a normal monsoon, CPI inflation projection for 2024-25 was retained at 4.5 per cent. Domestic economic activity was strengthening, with the pick-up in southwest monsoon rainfall and improved spatial spread translating into higher *kharif* sowing. Other high frequency indicators suggested expansion in services activity. A revival in private consumption

has been underway with rural demand catching up with urban consumption. The pickup in investment activity gathered strength as reflected by expansion in steel consumption, high capacity utilisation and the government's thrust on infra-spending. The projection of real GDP growth for 2024-25 was retained at 7.2 per cent. The MPC observed that risks from volatile and elevated food prices remain high, which may adversely impact inflation expectations and result in spillovers to core inflation. Accordingly, the MPC decided by a majority of 4-2 to keep the policy repo rate unchanged at 6.5 per cent while retaining the stance of withdrawal of accommodation.

The MPC's voting pattern reflects the diversity in individual members' assessments, expectations and policy preferences - a characteristic also reflected in voting patterns of other central banks (Table I.1). With the emerging view that the disinflation process is in its final leg, a larger number of central banks have begun an easing cycle while others have retained policy rates at restrictive levels. EME central banks that began policy rate easing have undertaken larger cuts since

Table I.1 Monetary Policy Committees and Policy Rate Voting Patterns

Country	Policy Meetings: April 2024 - September 2024			
	Total meetings	Meetings with full consensus	Meetings without full consensus	Variation in policy rate (basis points)
Brazil	4	3	1	0
Chile	5	4	1	-175
Colombia	4	0	4	-200
Czech Republic	4	2	2	-150
Hungary	5	5	0	-150
India	3	0	3	0
Japan	4	3	1	15
South Africa	3	2	1	-25
Sweden	4	4	0	-75
Thailand	3	0	3	0
UK	4	0	4	-25
US	4	3	1	-50

Sources: Central bank websites.

April 2024 while two major advanced economies (AEs) - the US and the United Kingdom - have begun their policy pivot in the second half of 2024.

Macroeconomic Outlook

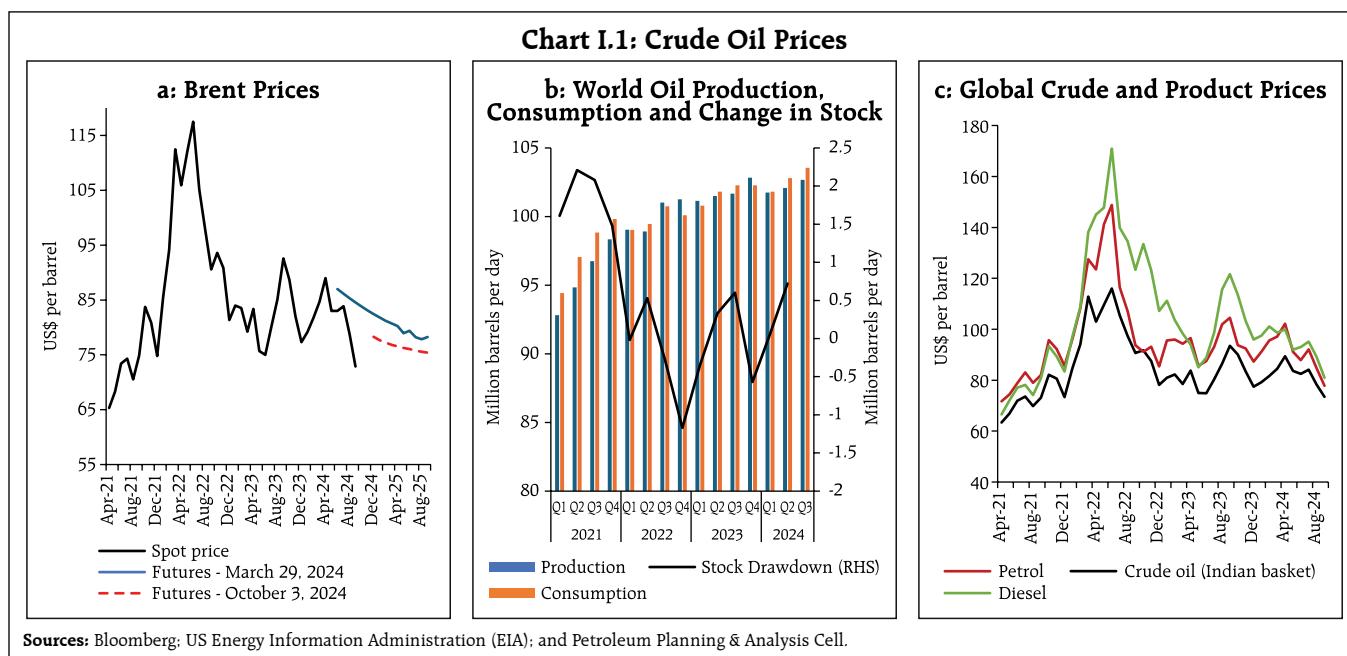
Chapters II and III analyse macroeconomic developments relating to inflation and economic activity during H1:2024-25 (April-September 2024). Turning to the baseline assumptions, international crude prices exhibited sizeable two-way movements in H1, receding from their five-month peak of US\$ dollar (US\$) 91 per barrel in early April 2024 to US\$ 77 per barrel by early June 2024 on slowing demand in Organization for Economic Cooperation and Development (OECD) countries and easing supply conditions. In September 2024, they were settling around US\$ 71-78 per barrel. While global growth uncertainties on the demand side and geopolitical tensions on the supply side impart significant volatility to the outlook (Charts I.1a and I.1b), easing

Table I.2: Baseline Assumptions for Projections

Indicator	MPR April 2024	MPR October 2024
Crude Oil (Indian basket)	US\$ 85 per barrel during 2024-25	US\$ 80 per barrel during H2:2024-25
Exchange rate	₹ 83/US\$ during 2024-25	₹ 83.5/US\$ during H2:2024-25
Monsoon	Normal for 2024-25	Normal for 2025-26
Global growth	3.1 per cent in 2024 3.2 per cent in 2025	3.2 per cent in 2024 3.3 per cent in 2025
Fiscal deficit (per cent of GDP)	To remain within BE 2024-25 Centre: 5.1 Combined: 7.7	To remain within BE 2024-25 Centre: 4.9 Combined: 7.3
Domestic macroeconomic/structural policies during the forecast period	No major change	No major change

- Notes:** 1. The Indian basket of crude oil represents a derived numeraire comprising sour grade (Oman and Dubai average) and sweet grade (Brent) crude oil.
 2. The exchange rate path assumed here is for the purpose of generating the baseline projections and does not indicate any 'view' on the level of the exchange rate. The Reserve Bank is guided by the objective of containing excess volatility in the foreign exchange market and not by any specific level of and/or band around the exchange rate.
 3. BE: Budget estimates.
 4. Combined fiscal deficit refers to that of the Centre and States taken together.

Sources: RBI estimates; Budget documents; and International Monetary Fund (IMF).

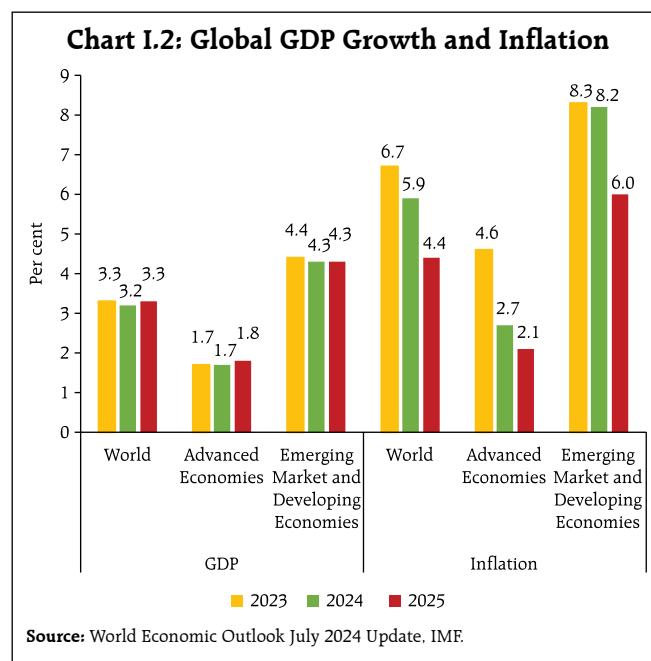


global demand-supply refinery divergences have reduced the wedge between global petroleum product prices and crude prices (Chart I.1c). Considering these factors, crude prices (Indian basket) are assumed at US\$ 80 per barrel in the baseline as compared with US\$ 85 in the April 2024 MPR (Table I.2).

Second, the nominal exchange rate of the Indian rupee (₹) saw two-way movements in the range of ₹83-84 per US\$ in H1, with a depreciating bias since July 2024. Taking into consideration the uncertainty around US dollar movements, the ebbs and flows of global capital flows and international crude oil prices, the exchange rate is assumed at INR 83.5 per US dollar in the baseline as against INR 83 in the April 2024 MPR.

Third, repeated geopolitical tensions, rekindled fears of a potential recession in key economies and financial market volatility in response to monetary policy divergence weigh heavily on global growth prospects. The global composite purchasing managers' index (PMI) has exhibited moderation since May 2024 with PMI manufacturing in contraction zone since July 2024. The IMF retained the global growth estimate for 2024 at 3.2 per cent and revised upwards its growth

forecast for 2025 to 3.3 per cent in its July World Economic Outlook (WEO) compared with April 2024 update. With modest recovery on the global front, the projection for global growth in 2024 and 2025 is still below the historical annual average¹ of 3.8 per cent. Inflation is projected to fall from 5.9 per cent in 2024 to 4.4 per cent in 2025. The pace of decline in inflation to targets, however, is likely to be faster in



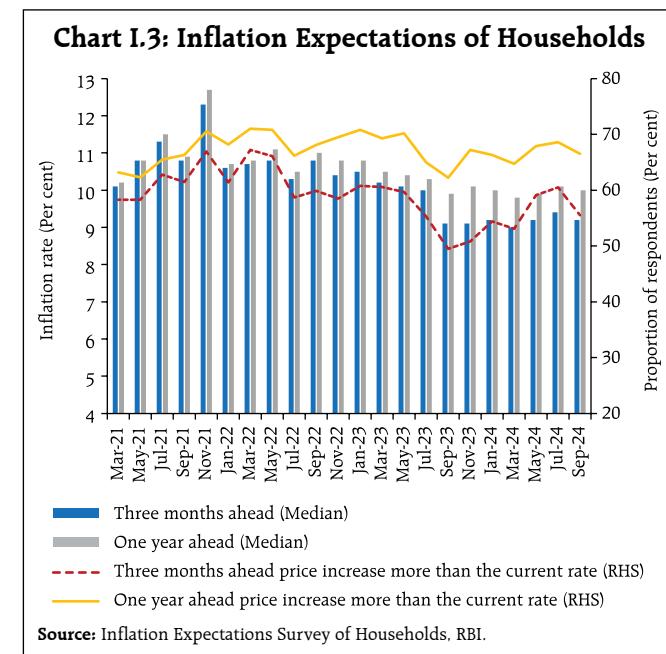
¹ Historical annual average during 2000 - 2019.

AEs *vis-à-vis* EMEs (Chart I.2). Global trade growth is estimated to rebound to 3.1 per cent in 2024 from 0.8 per cent in 2023, notwithstanding the surge in cross-border trade restrictions that pose risks to the global trade outlook.

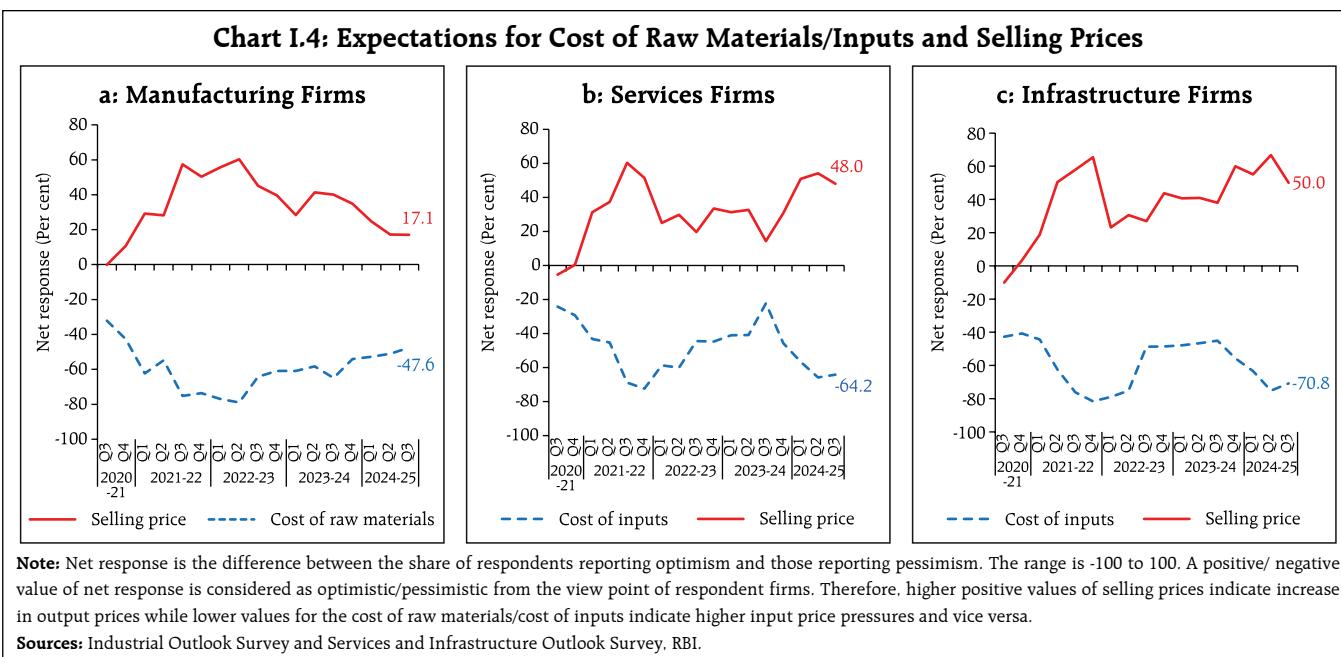
I.2 The Outlook for Inflation

In H1:2024-25 (up to August), headline inflation remained within the tolerance band while food inflation remained elevated and persistent (Chapter II). In the September 2024 round of the Reserve Bank's survey², the three months and one year ahead median inflation expectations of urban households reduced by 20 and 10 bps to 9.2 per cent and 10.0 per cent, respectively, *vis-à-vis* the previous round. The proportion of respondents expecting the general price level to increase by more than the current rate declined for both horizons *vis-à-vis* the previous round (Chart I.3).

Manufacturing firms polled in the July - September 2024 round of the Reserve Bank's industrial outlook survey expect pressures from cost of raw materials to continue, with some softening and selling price



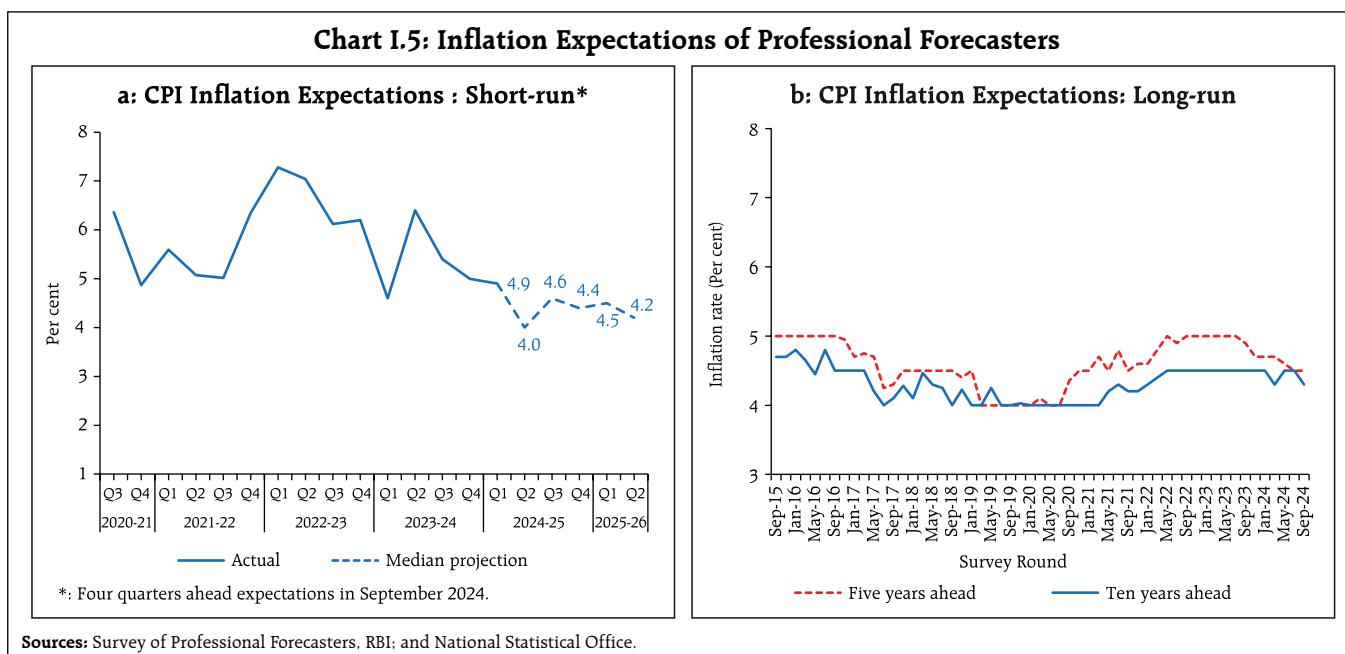
growth momentum to continue in Q3:2024-25 (Chart I.4a).³ Services sector companies and infrastructure firms expect input cost pressures to persist and selling prices growth to moderate in Q3:2024-25 (Charts I.4b and I.4c).⁴ In the PMI surveys for September



² The Reserve Bank's inflation expectations survey of households is being conducted in 19 cities since March 2021 (18 cities in the previous rounds) and the results of the September 2024 round are based on responses from 6,076 households.

³ The results of the July-September 2024 round of the industrial outlook survey are based on responses from 1,300 companies.

⁴ Based on 622 services companies and 139 infrastructure firms polled in the July-September 2024 round of the services and infrastructure outlook survey.



2024, input price indices of both manufacturing and services firms increased *vis-à-vis* the previous month while output prices decreased for both firms.

Professional forecasters surveyed by the Reserve Bank in September 2024 expect headline CPI inflation to increase from 4.0 per cent in Q2:2024-25 to 4.6 per cent in Q3, 4.4 per cent in Q4 and 4.2-4.5 per cent in H1:2025-26 (Chart I.5a and Table I.3).⁵ Core inflation (*i.e.*, CPI excluding food and beverages, pan, tobacco and intoxicants, and fuel and light) is expected to successively increase from 3.5 per cent in Q2:2024-25 to 3.9 per cent in Q3 and is expected to remain between 4.2-4.3 per cent in the next three quarters. In the September 2024 round, their 5-year ahead expected inflation remained unchanged at 4.5 per cent, while their 10-year ahead expectations moderated to 4.3 per cent as compared to 4.5 per cent in the previous round (Chart I.5b).

Looking ahead, evolving food inflation dynamics will impinge upon the outlook for inflation. The above normal south-west monsoon rainfall, significantly higher reservoir levels as compared to decadal average and higher *kharif* sowing *vis-à-vis* last year bode well

for the inflation outlook. Nevertheless, rising global supply chain pressures, adverse weather events,

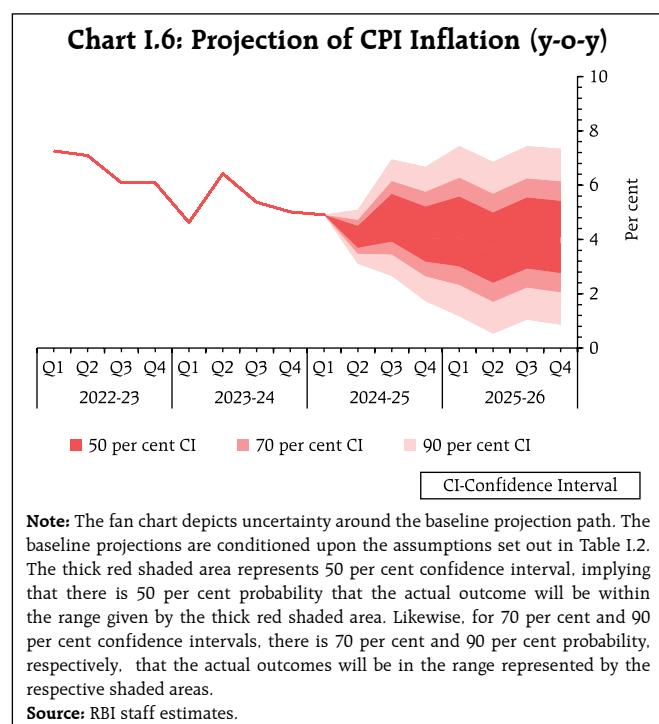
Table I.3: Projections - Reserve Bank and Professional Forecasters

	2024-25	2025-26
Reserve Bank's Baseline Projections		
Inflation, Q4 (y-o-y)	4.2	4.1
Real GDP growth	7.2	7.1
Median Projections of Professional Forecasters		
Inflation, Q4 (y-o-y)	4.4	-
Real GDP growth	6.9	6.7
Gross domestic saving (per cent of GNDI)	30.0	30.3
Gross capital formation (per cent of GDP)	33.5	33.5
Credit growth of scheduled commercial banks	13.5	13.0
Combined gross fiscal deficit (per cent of GDP)	7.9	7.4
Central government gross fiscal deficit (per cent of GDP)	4.9	4.5
Repo rate (end-period)	6.25	-
Yield on 91-days treasury bills (end-period)	6.4	6.2
Yield on 10-year central government securities (end-period)	6.6	6.5
Overall balance of payments (US\$ billion)	48.8	37.1
Merchandise exports growth	3.4	5.5
Merchandise imports growth	4.6	5.9
Current account balance (per cent of GDP)	-1.0	-1.0

Note: GNDI: Gross National Disposable Income.

Sources: RBI staff estimates; and Survey of Professional Forecasters (September 2024).

⁵ 47 panellists participated in the September 2024 round of the Reserve Bank's survey of professional forecasters.



volatile food prices and continuing geopolitical strife remain key risks. Taking into account the initial conditions, signals from forward-looking surveys and estimates from time-series and structural models⁶, CPI inflation is projected to average 4.5 per cent in 2024-25 – 4.1 per cent in Q2, 4.8 per cent in Q3 and 4.2 per cent in Q4, with risks evenly balanced (Chart I.6). The 50 per cent and the 70 per cent confidence intervals for headline inflation in Q4:2024-25 are 3.2-5.2 per cent and 2.6-5.8 per cent, respectively. For 2025-26, assuming a normal monsoon, and no further exogenous or policy shocks, structural model estimates indicate that inflation will average 4.1 per cent with 4.3 per cent in Q1, 3.7 per cent in Q2, 4.2 per cent in Q3 and 4.1 per cent in Q4. The 50 per cent and the 70 per cent confidence intervals for headline inflation in Q4:2025-26 are 2.8-5.4 per cent and 2.1-6.1 per cent, respectively.

The baseline forecasts are subject to several upside and downside risks. The upside risks emanate from

uneven distribution of rainfall; prolonged geopolitical conflicts and resultant supply disruptions; recent uptick in food and metal prices; volatility of crude oil prices; and adverse weather events. The downside risks could materialise from an early resolution of geopolitical conflicts; weakening of global demand accompanied by further easing of global food and commodity prices; improvement in supply conditions; and proactive supply side measures by the government.

I.3 The Outlook for Growth

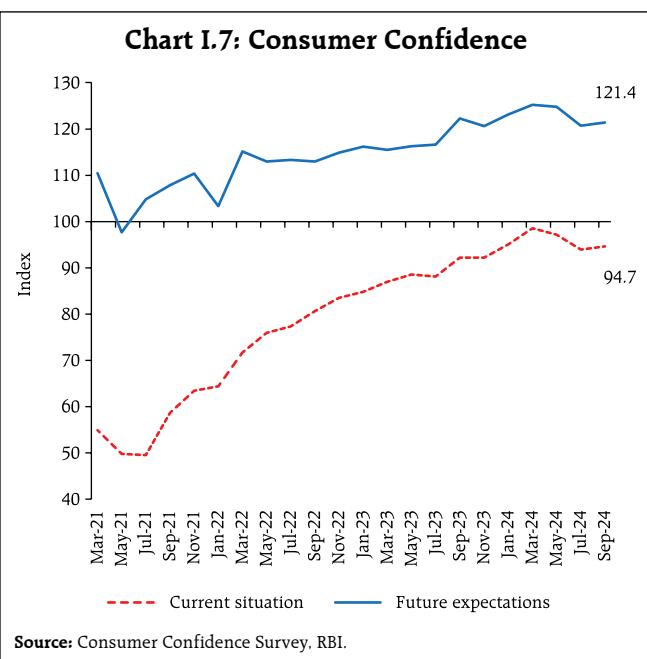
Domestic economic activity remains resilient. Improved performance of industrial sector, upturn in investment activity, above normal monsoon, pick up in rural demand, high capacity utilisation, healthy balance sheets of banks and corporates, and the government's continued thrust on infrastructure spending augur well for the growth outlook. Uncertain global economic outlook, lingering geopolitical conflicts, rising supply chain pressures, and volatile global financial conditions, however, weigh heavily on the outlook to the downside.

Turning to the key messages from forward-looking surveys, consumer confidence (the current situation index) improved in the September 2024 survey round *vis-à-vis* the previous round on account of better perceptions about the general economic, employment, and income conditions. Consumers' optimism for the year ahead, measured by the future expectations index, also improved in the latest round *vis-à-vis* the previous one (Chart I.7).⁷

Optimism in the manufacturing sector for Q3:2024-25 improved in the July- September 2024 round of the Reserve Bank's industrial outlook survey (Chart I.8a). Services and infrastructure companies continue to maintain a highly optimistic outlook for Q3:2024-25 (Charts I.8b and I.8c).

⁶ J. John, Kumar D., George A.T., Mitra P., Kapur M., & Patra, M.D. (2023). "A Recalibrated Quarterly Projection Model (QPM 2.0) for India". *RBI Bulletin*, February 2023, Vol. 77(2).

⁷ The Reserve Bank's consumer confidence survey is being conducted in 19 cities since March 2021 (13 cities in the previous rounds) and the results of the September 2024 round are based on responses from 6,087 respondents.



Recent surveys by other agencies report sequential improvement in business expectations relative to the previous round (Table I.4). Manufacturing and services firms in the PMI surveys for September 2024 remained upbeat for the year ahead though a marginal deceleration in expectations is observed *vis-à-vis* the previous month for manufacturing firms.

Professional forecasters polled in the September 2024 round of the Reserve Bank's survey expected real GDP

Table I.4: Business Expectations Surveys

Item	NCAER Business Confidence Index (July 2024)	FICCI Overall Business Confidence Index (May 2024)	Dun and Bradstreet Composite Business Optimism Index (July 2024)	CII Business Confidence Index (October 2024)
Current level of the index	149.8	73.7	78.9	68.2
Index as per previous survey	138.2	70.9	75.9	67.3
% change (q-o-q) sequential	8.4	3.9	3.9	1.3
% change (y-o-y)	17.0	18.1	12.6	1.6

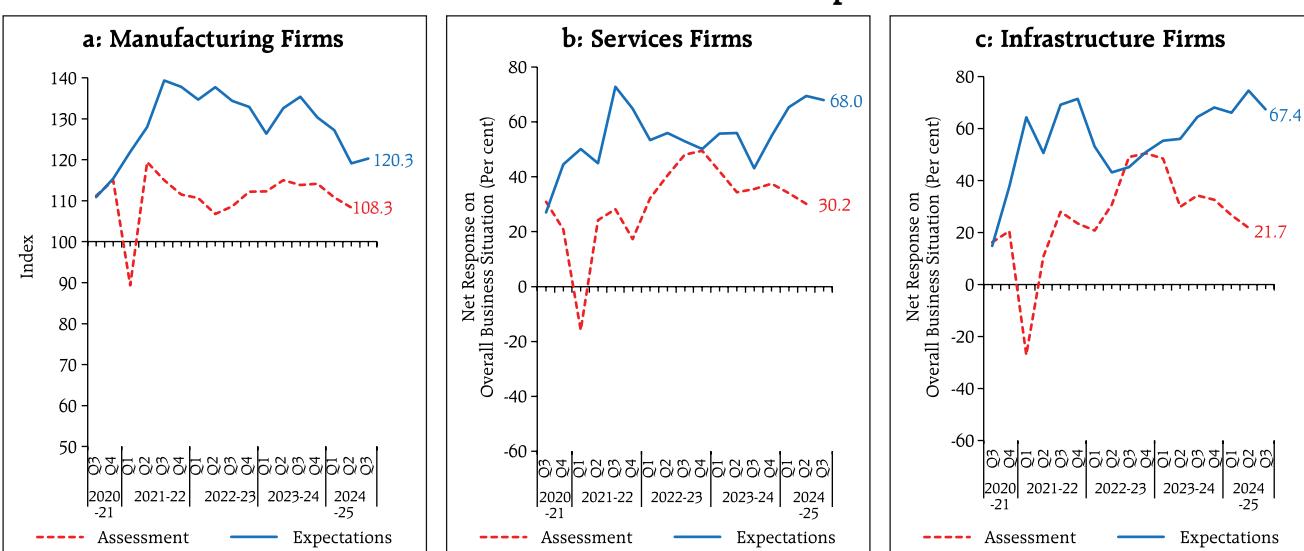
Notes: 1. NCAER: National Council of Applied Economic Research.
2. FICCI: Federation of Indian Chambers of Commerce & Industry.
3. CII: Confederation of Indian Industry.
4. Dun and Bradstreet Composite Business Optimism Index and CII Business Confidence Index are for Q2:2024-25, NCAER Business Confidence Index is for Q1:2024-25, and FICCI Overall Business Confidence Index pertain to Q4:2023-24.

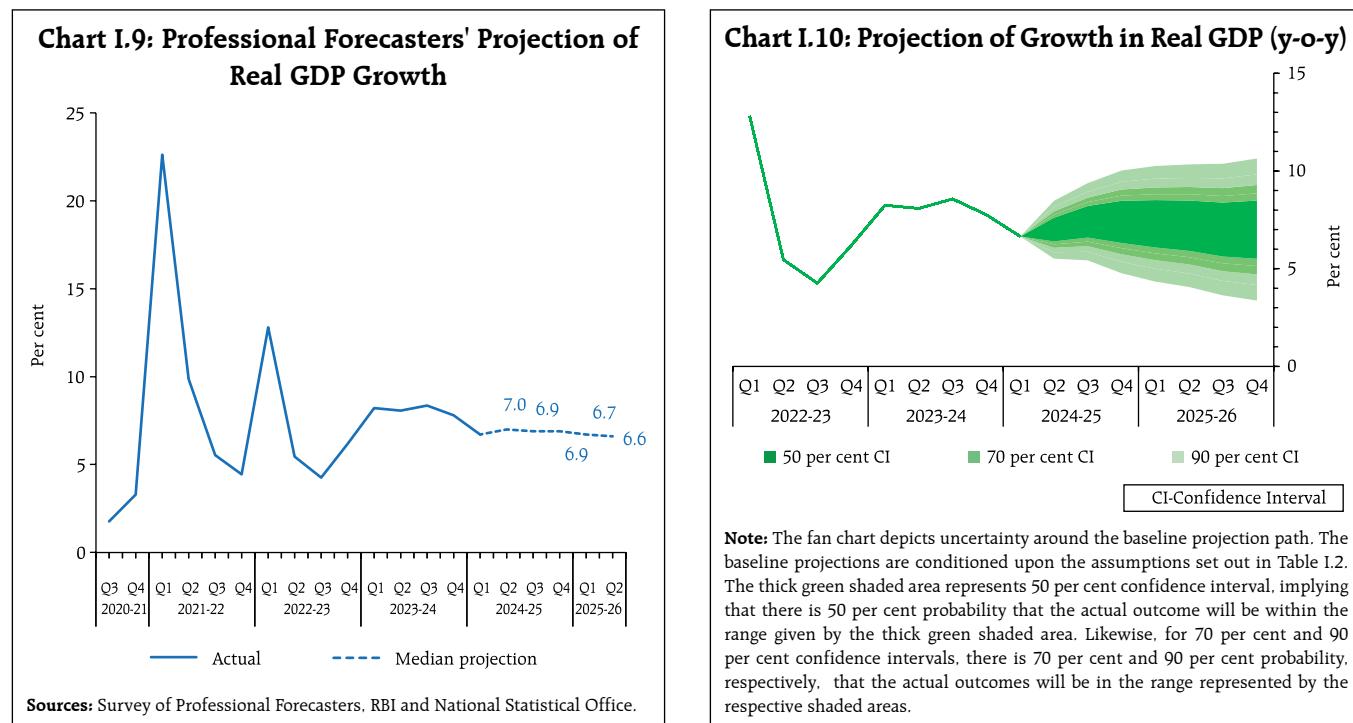
Sources: NCAER, FICCI, CII and Dun & Bradstreet Information Services India Pvt. Ltd.

growth at 6.9-7.0 per cent during 2024-25 and 6.6-6.7 per cent during H1:2025-26 (Chart I.9 and Table I.3).

Real GDP growth exceeded 8 per cent growth in the first three quarters of 2023-24 before dipping marginally to 7.8 per cent in Q4. Real GDP growth of 6.7 per cent in Q1:2024-25 is reflective of the

Chart I.8: Business Assessment and Expectations





underlying momentum in key drivers of the economy viz., private consumption and investment. Taking into account the baseline assumptions, survey indicators and model forecasts, real GDP growth is expected at 7.2 per cent in 2024-25 with 7.0 per cent in Q2; 7.4 per cent both in Q3 and Q4 - with risks evenly balanced around the baseline (Chart I.10 and Table I.3). For 2025-26, assuming a normal monsoon and no major exogenous or policy shocks, structural model estimates indicate real GDP growth at 7.1 per cent, with Q1 at 7.3 per cent, Q2 at 7.2 per cent, Q3 and Q4 both at 7.0 per cent.

There are upside and downside risks to this baseline growth path. The upside risks emanate from robust government capex and revival in private investment; improved prospects of agricultural sector due to favourable monsoon rainfall; strengthening manufacturing and services sector activity sustained by strong domestic demand; retreating global and domestic inflation; improvement in global trade;

and earlier than anticipated easing of global financial conditions. On the contrary, further escalation in geopolitical tensions; volatility in international financial markets and geoeconomic fragmentation; deceleration in global demand; frequent weather-related disturbances due to climate change; and supply chain disruptions pose downside risks to the baseline growth path.

I.4 Balance of Risks

The baseline projections of growth and inflation are conditional on assumptions of the future path of key domestic and global macroeconomic variables set out in Table 1.2. These baseline assumptions are, however, subject to uncertainties emanating from prolonged geopolitical conflicts, volatility in global financial markets and recurrent adverse climate events. In this context, this section explores the plausible alternative scenarios to assess the balance of risks around the baseline projections.

(i) Global Growth Uncertainties

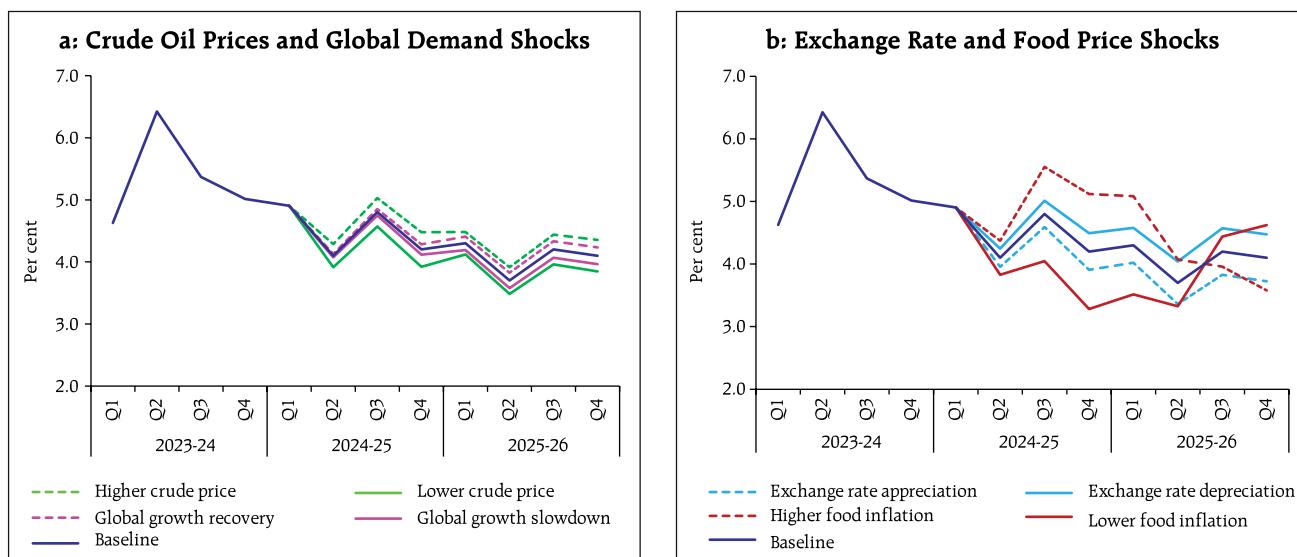
Global economic activity is subject to uncertainties going forward. Policy divergence among major central banks could trigger heightened volatility in global financial markets, with spillovers to emerging market economies. Services price and wage inflation remain areas of concern for the last mile of disinflation which might keep global interest rates higher for longer, with adverse impact on global growth prospects. The global economic outlook is also subject to headwinds from prolonged geopolitical and trade tensions, supply chain disruptions and swings in economic policies resulting from impending elections in major economies. In case these downside risks materialise, and, if global growth is 100 bps lower than the baseline, domestic growth and inflation could be lower than baseline projections by around 30 bps and 15 bps, respectively. If, however, there is faster convergence in global disinflation and alignment in monetary policy paths going forward, recovery in global trade and resolution of geopolitical tensions, there can be an upside to global growth. If global growth is higher by 50 bps, domestic

growth and inflation could turn out to be higher by around 15 bps and 7 bps, respectively (Charts I.11a and I.12a).

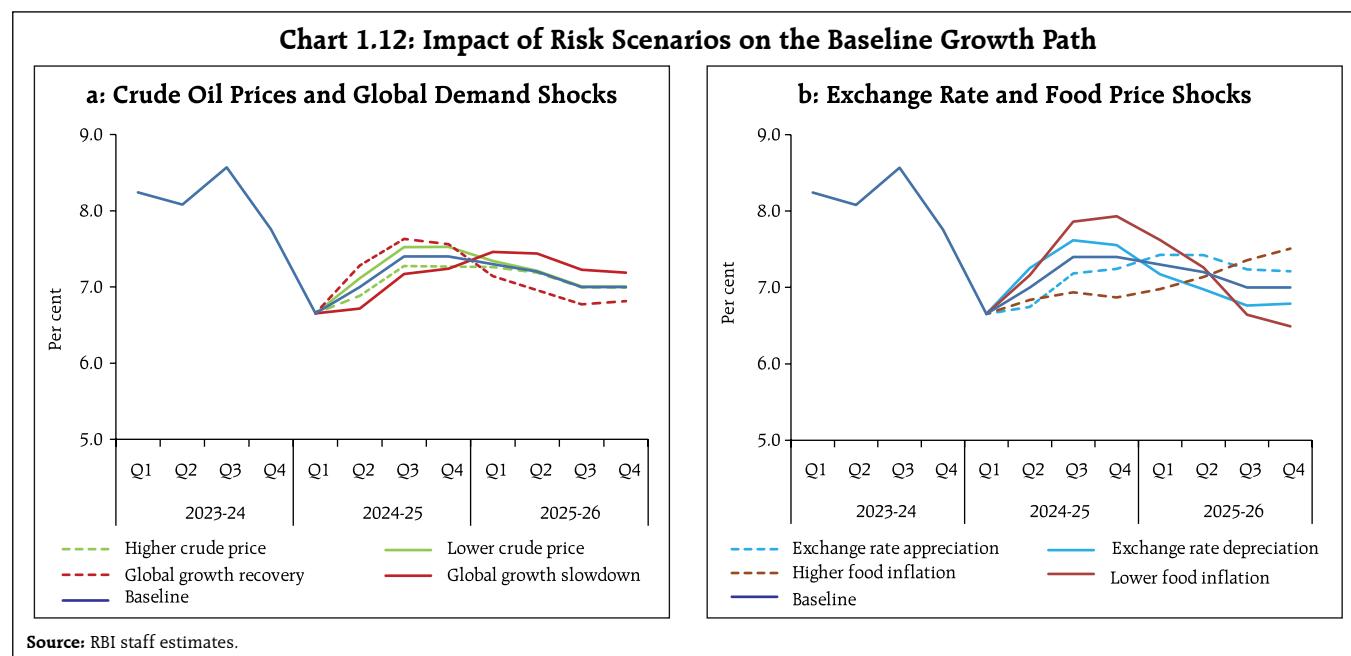
(ii) International Crude Oil Prices

Global crude oil prices have exhibited some moderation, with Brent crude falling from a high of US\$ 93 per barrel in mid-April 2024 to US\$73 per barrel by end-September. Global growth recovery, continuation of geo-political tensions and non-reversal of production cut by OPEC *plus* may put upward pressure on crude oil prices. In this scenario, assuming crude oil price to be 10 per cent above the baseline and full pass-through to domestic product prices, domestic inflation could be higher by 30 bps and growth weaker by around 15 bps, respectively. Conversely, early resolution of geopolitical tensions, weak global demand, higher production from non-OPEC economies along with unwinding of production cuts by OPEC *plus* may soften crude oil prices. If crude oil prices fall by 10 per cent relative to the baseline, inflation could ease by around 30 bps with a boost of 15 bps to India's real GDP growth (Charts I.11a and I.12a).

Chart 1.11: Impact of Risk Scenarios on the Baseline Inflation Path



Source: RBI staff estimates.



(iii) Exchange Rate

The Indian Rupee (INR) has remained steady against the US dollar, being least volatile among major EME currencies in recent months. Going ahead, restrictive monetary policy by major AEs to achieve the last mile of disinflation could limit attractiveness of EME assets and trigger reversal of capital flows. Crude oil and other global commodity prices could also harden in comparison with the baseline. In this scenario, if INR depreciates by 5 per cent over the baseline, inflation could be higher by around 35 bps while GDP growth could edge up by around 25 bps through short term stimulation of exports. On the other hand, the Indian economy remains the fastest growing major economy globally and is poised to play an important role in revival of global growth. These developments, along with robust domestic macroeconomic fundamentals, inclusion of government bonds in global indices, and faster than anticipated monetary policy easing by AEs would attract foreign investors. In this scenario, if the INR appreciates by 5 per cent relative to the baseline, inflation and GDP growth could moderate by around 35 bps and 25 bps, respectively (Charts I.11b and I.12b).

(iv) Food Inflation

Food inflation remained persistently high in H1:2024-25, driven by high prices in cereals and pulses along with large shocks to vegetable prices triggered by recurrent adverse climate events of rising intensity. Further, food prices may be subject to extreme weather events such as excess rains and floods affecting *kharif* crops, unseasonal rains typically associated with extreme *La Niña* conditions, which may result in damage of winter crops and perishables. In such a scenario, there could be upward pressures on food prices and could raise headline inflation by around 50 bps over the baseline. Persistent shocks to food inflation warrant a cautious approach by monetary policy to contain spillover effects (Box I.1). On the other hand, *kharif* sowing remained robust, with higher acreage for major crops. Reservoir levels, too, are higher than both last year's levels and the decadal average, which augurs well for the *rabi* season. These developments along with effective supply management measures may result in easing of food inflation pressures and could lower headline inflation by 50 bps compared with the baseline (Charts I.11b and I.12b).

Box I.1: Monetary Policy Response to Food Inflation Under Alternative Scenarios

The implications of food inflation for monetary policy are conditional on the size and duration of shocks to food prices and their transmission to headline inflation. The *direct* or first round impact of food inflation shocks is observed as a change in headline CPI inflation, given the dominant share of food items in the average household consumption basket. In the event of repeated and/or persistent food price shocks, price pressures may spillover to other components through shifts in inflation expectations (Das, 2024; Patra, et.al., 2024) and correction in relative prices. These are the *indirect* or second-round effects of food inflation.

While the first-round effects are largely invariant to monetary policy, the second-round effects fall within its ambit. Therefore, prudent monetary policy must assess persistence of shocks to food inflation, their direct and indirect effects, and the relative efficacy of interest rate changes in moderating these impulses. This assumes importance in the broader macroeconomic context that accounts for contemporaneous aggregate demand conditions as well as the credibility of the central bank in anchoring inflation expectations. This general equilibrium approach are modelled by using the Quarterly Projection Model 2.0 (John et. al., 2023)⁸.

Scenario 1 models the impact of a transitory shock compared to repeated shocks to food inflation. Transitory shocks may largely be seen through as they tend not to pass through to core inflation, warranting

no policy response. In the event of repeated shocks to food inflation, however, there may be spillover to core inflation through elevated second round effects, requiring substantive monetary policy action to stabilise prices.

Scenario 2 illustrates the relative effect of repeated food inflation shocks (from scenario 1) in the presence of buoyant aggregate demand conditions as against a situation with slack in demand. In the event of robust demand conditions, the spike in core inflation will be compounded, warranting more aggressive monetary policy action. In case of slack demand conditions, the pass-through of repeated shocks from food to core inflation will be moderate, meriting lesser urgency for monetary policy tightening.

Finally, *Scenario 3* illustrates the impact of a series of repeated food inflation shocks (from scenario 1) in the case of a perfectly credible central bank. Higher credibility leads to better anchoring of inflation expectations of economic agents, which may lead to restricted pass-through of higher costs to prices and therefore warranting less tightening of monetary policy. If the central bank credibility is low, economic agents may develop adaptive expectations and therefore inflationary shocks may pass-through without friction, warranting more aggressive policy rate action to stabilise the economy.

These simulations suggest that while transitory shocks to food inflation can largely be ignored by monetary policy,

(Contd.)

⁸ Core inflation (π_t^{core}) is postulated as a function of one quarter ahead expected y-o-y core inflation ($E_t(\pi_{t+1}^{core})$), its own past (π_{t-1}^{core}), non-agricultural output gap (\hat{y}_t^{nag}), real exchange rate gap (\hat{z}_t) and spillovers from fuel and food components.

$\pi_t^{core} = \beta_1 E_t(\pi_{t+1}^{core}) + (1 - \beta_1) \pi_{t-1}^{core} + \beta_2 \hat{y}_t^{nag} + \beta_3 \hat{z}_t + \beta_4 (\pi_{t-1}^{headline} - \pi_{t-1}^{core}) + \beta_5 (p_t^{energy,mkt} - p_t^{core} - \bar{p}_t^{energy,mkt}) + \beta_6 (p_{t+4}^{food} - p_{t+4}^{core} - \bar{p}_{t+4}^{food}) + \varepsilon_t^{core}$
Inflation expectation is represented as a weighted sum of one-quarter lagged core inflation and model-based one quarter ahead rational expectation. The weights depend on the stock of policy credibility (c_t). c_t can range between 0 and 1; 0 indicates no credibility, in which case expectations are completely backward looking; and 1 indicates perfect credibility, in which case inflation expectations are perfectly forward looking.

$E_t(\pi_{t+1}^{core}) = (1 - c_t) \pi_{t-1}^{core} + c_t \pi_{t+3}^{core} + \eta_t^{E(\pi_{t+1}^{core})}$

The policy repo rate equation follows an inflation-forecast based Taylor-type reaction function with an interest rate smoothing parameter.

$i_t = \lambda_1 i_{t-1} + (1 - \lambda_1) \{\bar{r}_t + \pi_4^* + \lambda_2 [E_t(\pi_{t+3}^{core}) - \pi_4^*] + \lambda_3 [E_t(\pi_{t+3}^{headline}) - \pi_4^*] + \lambda_4 \hat{y}_t^{nag}\} + \varepsilon_t^i$

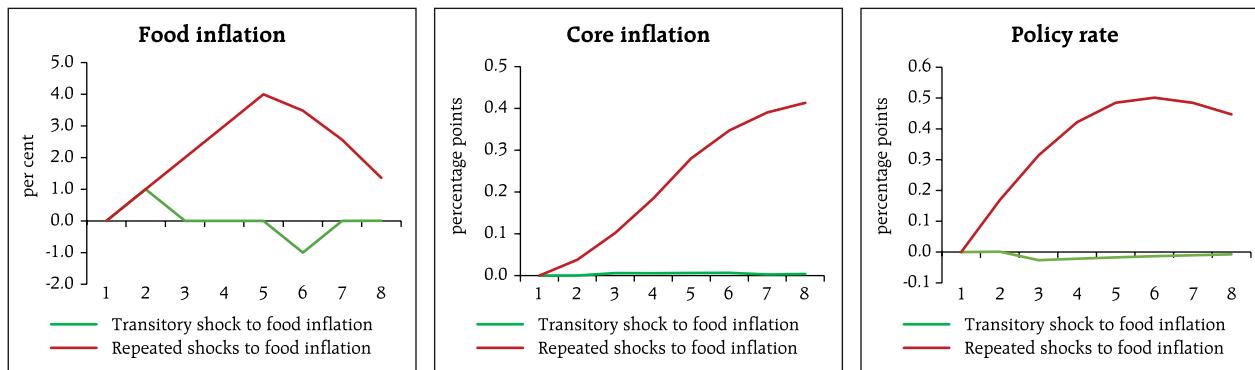
where i_t is the policy repo rate, \bar{r}_t is the natural rate of interest, π_4^* is the inflation target, $E_t(\pi_{t+3}^{core})$ and $E_t(\pi_{t+3}^{headline})$ are the three quarters ahead core and headline inflation forecasts, respectively.

The above three equations are a part of the entire system of equations described the Quarterly Projection Model (QPM 2.0).

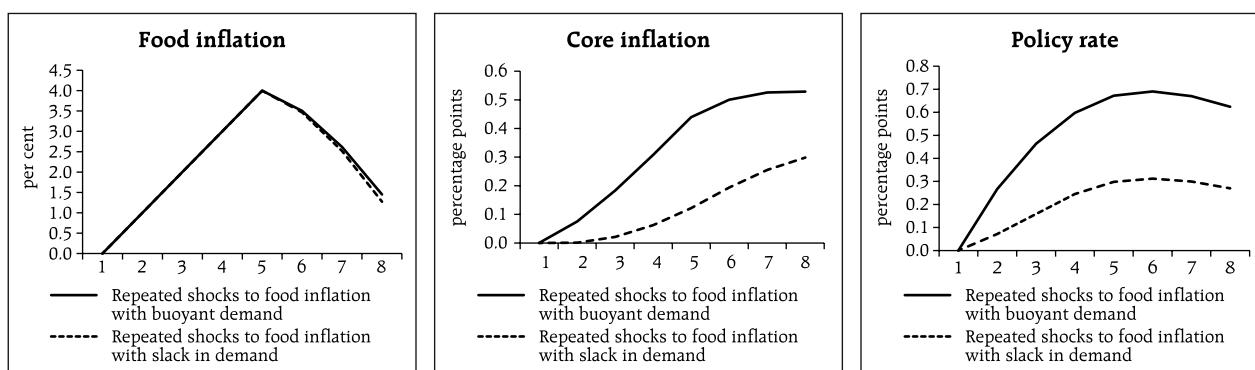
repeated shocks do pose a challenge. If monetary policy does not respond to the second-round effects of repeated shocks to food inflation, it risks unanchoring of inflation

expectations and consequently a more durable upward drift in core inflation, warranting more aggressive monetary policy to achieve disinflation in the future.

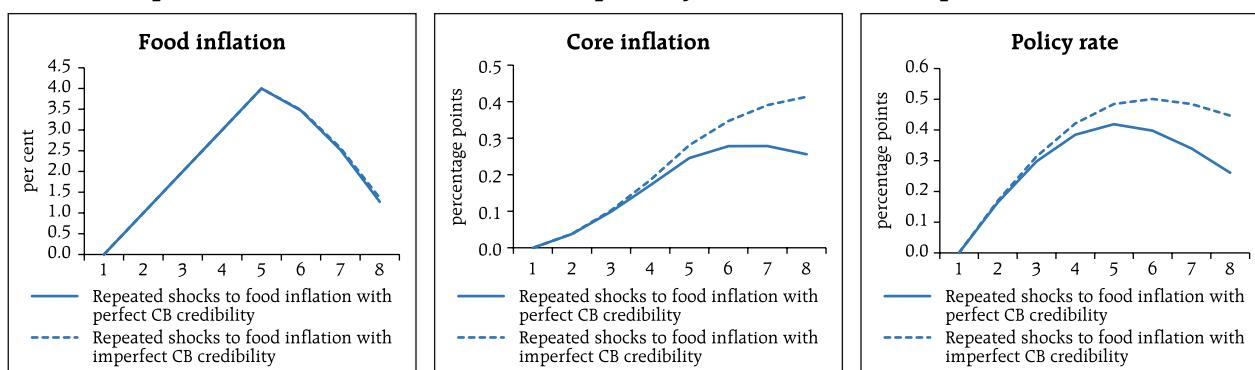
Chart I.1.1: Impact of food inflation shocks
Scenario 1: Transitory shock versus repeated shocks to food inflation



Scenario 2: Repeated shocks to food inflation in a buoyant versus slackening economy



Scenario 3: Repeated shocks to food inflation with a perfectly credible and with imperfect central bank credibility



References:

- S. Das (2024). "Governor's Statement: Monetary Policy Statement (August 6-8) 2024-25". *RBI Bulletin*, August 2024, Vol. 78(8).
- John, J., Kumar, D., George, A.T., Mitra, P., Kapur, M., and Patra, M.D. (2023). "A Recalibrated Quarterly Projection Model (QPM 2.0) for India". *RBI Bulletin*, February 2023, Vol. 77(2).
- Patra, M.D., John, J., and George, A.T. (2024). "Are Food Prices Spilling Over?". *RBI Bulletin*, August 2024, Vol. 78(8).

I.5 Conclusion

Domestic economic activity is expected to remain robust on the back of strong fundamentals. The revival of private consumption is buoyed by receding inflation and pick-up in rural demand is expected to be its mainstay. The Government's capex push on infrastructure, upturn in investment activity, improved prospects of agricultural sector, strong corporate and bank balance sheets and improved outlook of global growth and trade are further aiding the growth momentum. Headline inflation is on a

downward trajectory and is expected to moderate further in 2024-25, though the pace may be slow and uneven. Core inflation has bottomed out but remains subdued, supported by disinflationary monetary policy. The last mile of disinflation is contingent upon reining in food inflation and checking its spillover impact on inflation expectations and core inflation. Monetary policy remains steadfast on aligning inflation with the target. Geopolitical conflicts, uncertain global outlook, volatile global financial markets, and climate shocks remain key risks to the growth and inflation outlook.

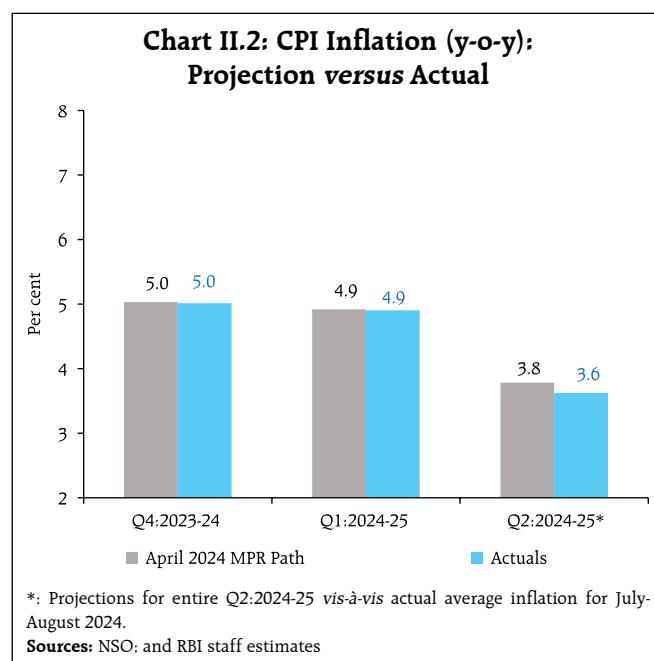
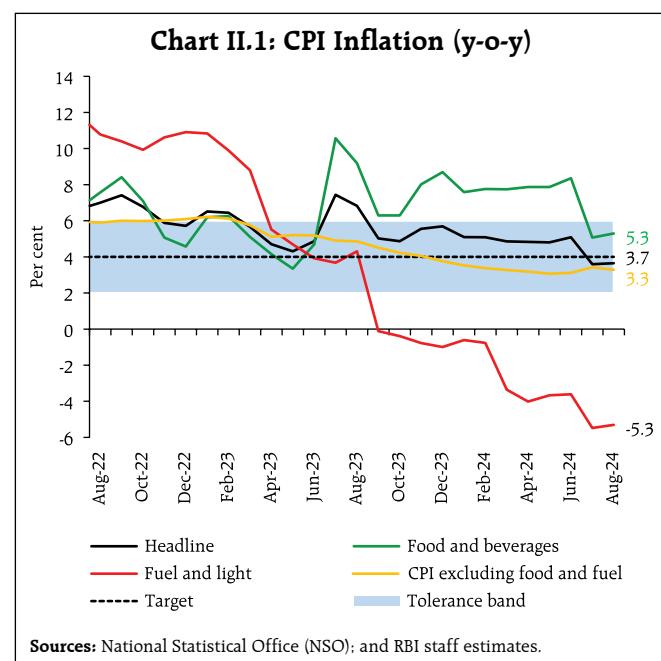
II. Prices and Costs

Headline CPI inflation after remaining sticky till June 2024, fell sharply thereafter buoyed by favourable base effects. The wedge between headline and core inflation widened further in June, before moderating in July-August. Input costs have remained subdued while rural wages and manufacturing staff cost growth decelerated.

Headline consumer price index (CPI) inflation¹ remained sticky at around 5 per cent during March to June 2024, with key groups displaying considerable divergence. Food inflation edged up from an elevated level of 7.8 per cent in February 2024 to 8.4 per cent by June under the impact of repeated supply-side shocks. Deflation in fuel prices deepened from (-)0.8 per cent in February to (-)3.6 per cent in June. Core (CPI excluding food and fuel) inflation² softened from 3.4 per cent to 3.1 per cent over the same period, the lowest reading recorded in the current CPI (2012=100)

series so far. The wedge between headline and core inflation widened, from 1.7 percentage points in February 2024 to 2.0 percentage points in June. In July-August 2024, headline CPI inflation fell sharply to 3.6-3.7 per cent, buoyed by large favourable base effects in July, which also pulled food inflation down to 5.1-5.3 per cent. Core inflation edged up to around 3.4 per cent in July-August, primarily on account of a pick-up in core services inflation, while deflation in fuel prices intensified (Chart II.1).

The Reserve Bank of India (RBI) Act enjoins the RBI to set out deviations of actual inflation outcomes from projections, if any, and explain the underlying reasons thereof. The April 2024 MPR had projected inflation at 4.9 per cent in Q1:2024-25 and 3.8 per cent in Q2:2024-25 (Chart II.2). Actual inflation outcomes have largely mirrored these projections. The projections of a significant softening of inflation in Q2 (July to September), induced by large favourable base effects in July, was also confirmed by actual



¹ Headline inflation is measured by year-on-year (y-o-y) changes in the all-India consumer price index (CPI) produced by the National Statistical Office (NSO).

² Core CPI, i.e., CPI excluding food and fuel is worked out by eliminating the groups 'food and beverages' and 'fuel and light' from the headline CPI.

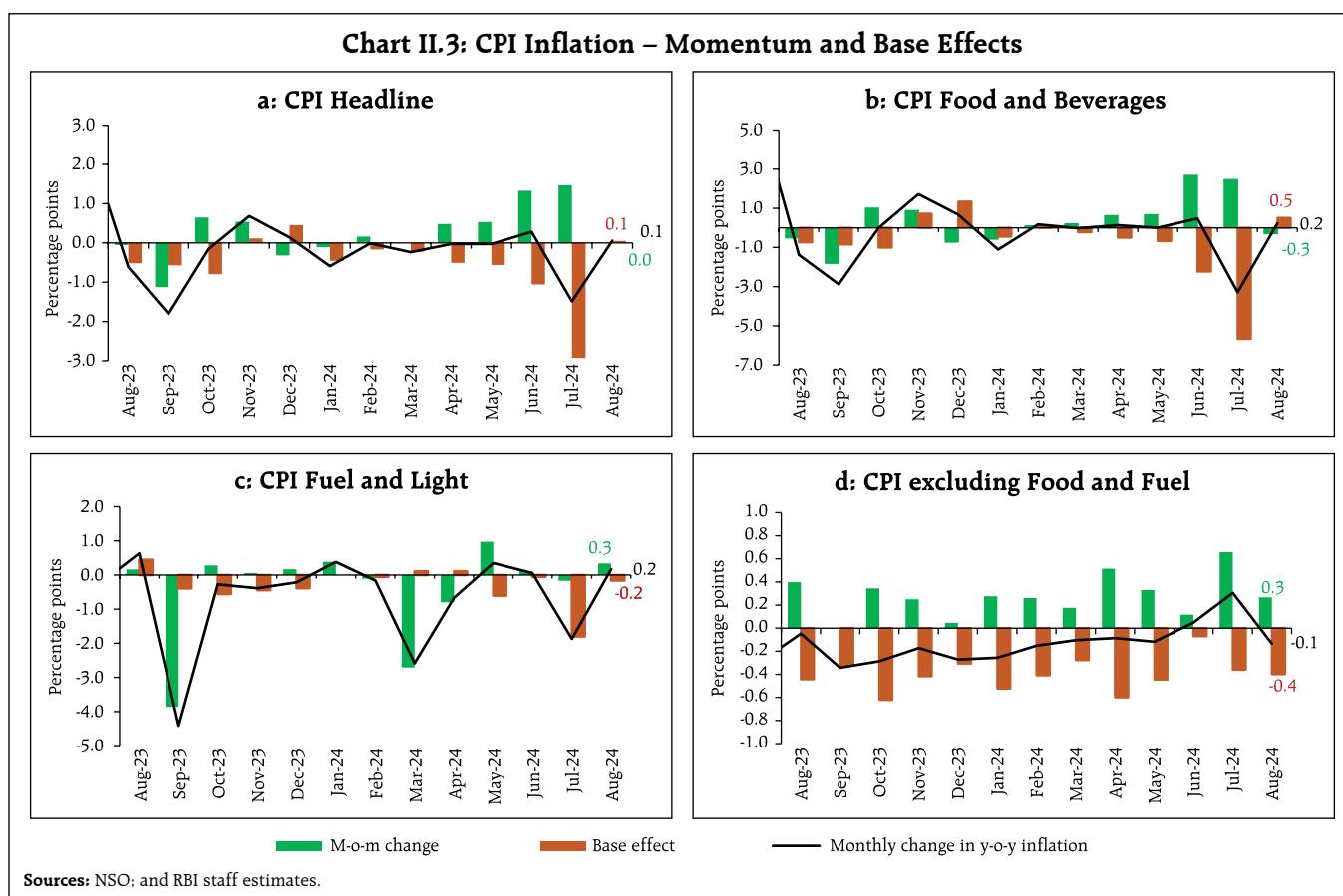
inflation outcomes. The projections for Q2 (July-September) had also factored in a likely pick-up in inflation in September due to adverse base effects.

II.1 Consumer Prices

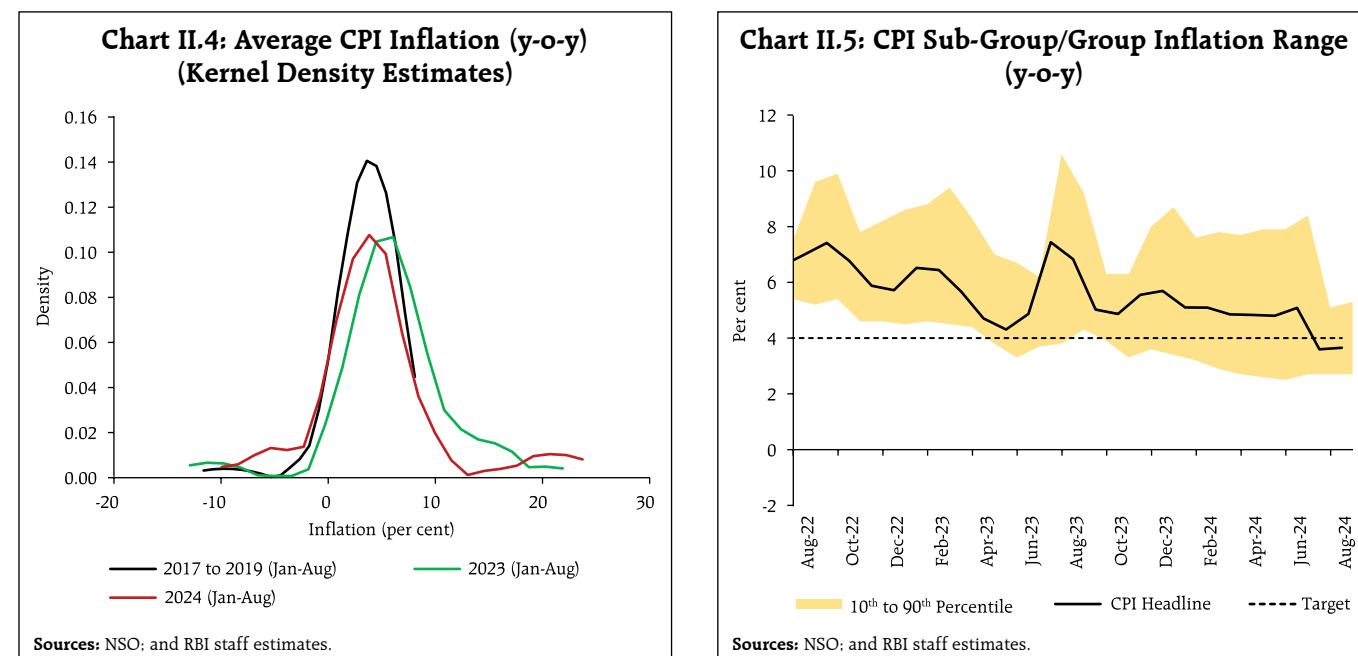
Inflation dynamics in 2024-25 so far (April to August) have undergone two distinct phases. First, after moderating to 4.9 per cent in March from 5.1 per cent in February, on favourable base effects and a sharp fall in fuel price momentum³, headline inflation remained steady at 4.8 per cent in April-May and edged up thereafter to 5.1 per cent in June due to a sharp pick up in price momentum triggered by an increase in food prices, notwithstanding significant favourable base effects. In the second phase from July, CPI price momentum remained firm across

food and core groups, while statistical gains from favourable base effects pulled down headline CPI inflation by 1.5 percentage points to 3.6 per cent. In August, the modest increase in headline inflation by 5 basis points (bps) to around 3.7 per cent reflected base effects only as the overall prices remained unchanged (Chart II.3).

The distribution of CPI inflation in 2024 so far (January-August) reflects a lower median and mean along with lower standard deviation than a year ago when large and multiple food price shocks had played an outsized role (Chart II.4). Stickiness in headline inflation between January-June 2024 was accompanied by a considerable divergence in food, fuel and core inflation trajectories. In July-August,



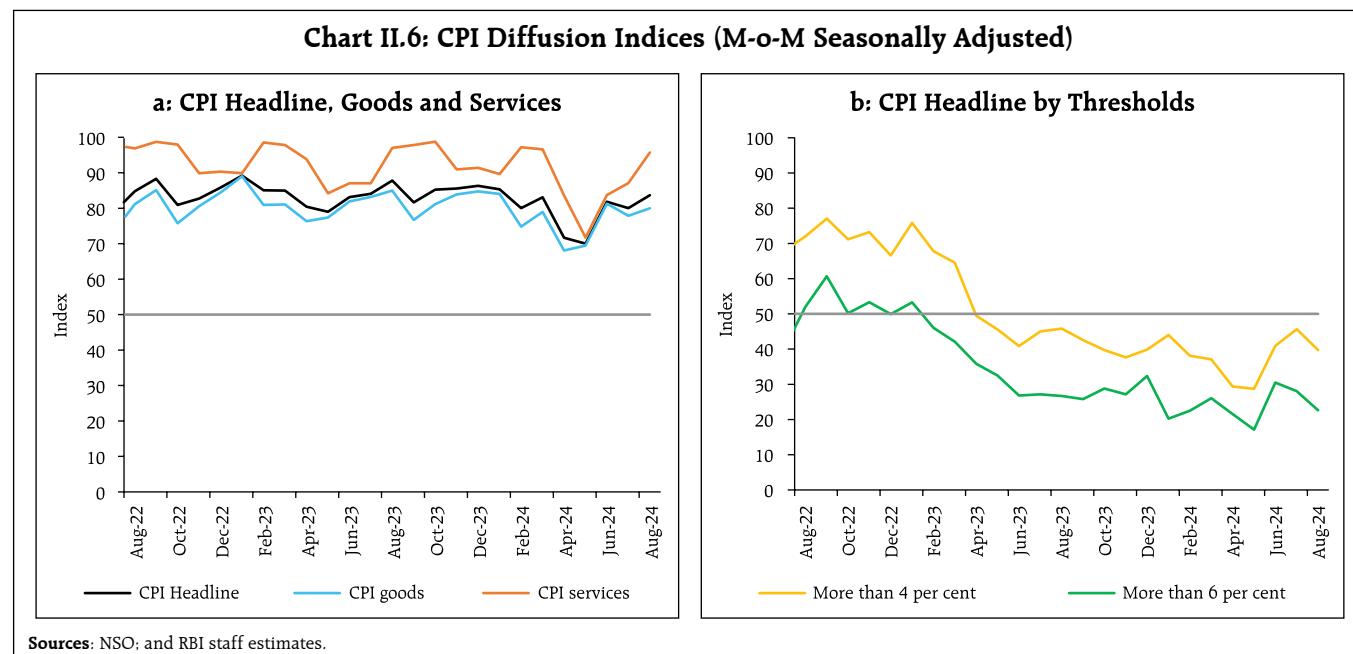
³ A change in CPI year-on-year (y-o-y) inflation between any two months is the difference between the current month-on-month (m-o-m) change in the price index (momentum) and the m-o-m change in the price index 12 months earlier (base effect). For more details, see Box I.1 of the MPR, September 2014.



a fall in food inflation led to narrowing of these divergences (Chart II.5).

Diffusion indices (DIs)⁴ remained in high expansionary zone between March and August 2024, indicative of positive price increases across a broad spectrum of the CPI basket. After recording a transient uptick in

March 2024, headline CPI DI dipped in April-May across both goods and services components. During June-August 2024, headline CPI DI edged up due to wider dispersion of price increases, first in goods and thereafter in services (Chart II.6a). Threshold DI⁵ – for price increases in excess of 4 per cent as well as



⁴ The CPI diffusion index, a measure of dispersion of price changes, categorises items in the CPI basket according to whether their m-o-m seasonally adjusted prices have risen, remained stagnant or fallen over the previous month. The higher the reading above 50, the broader is the expansion or generalisation of price increases; the further is the reading below 50, the broader is the price decline across items.

⁵ Threshold diffusion indices capture the dispersion of price increases in CPI basket beyond the specified saar thresholds of 4 per cent and 6 per cent.

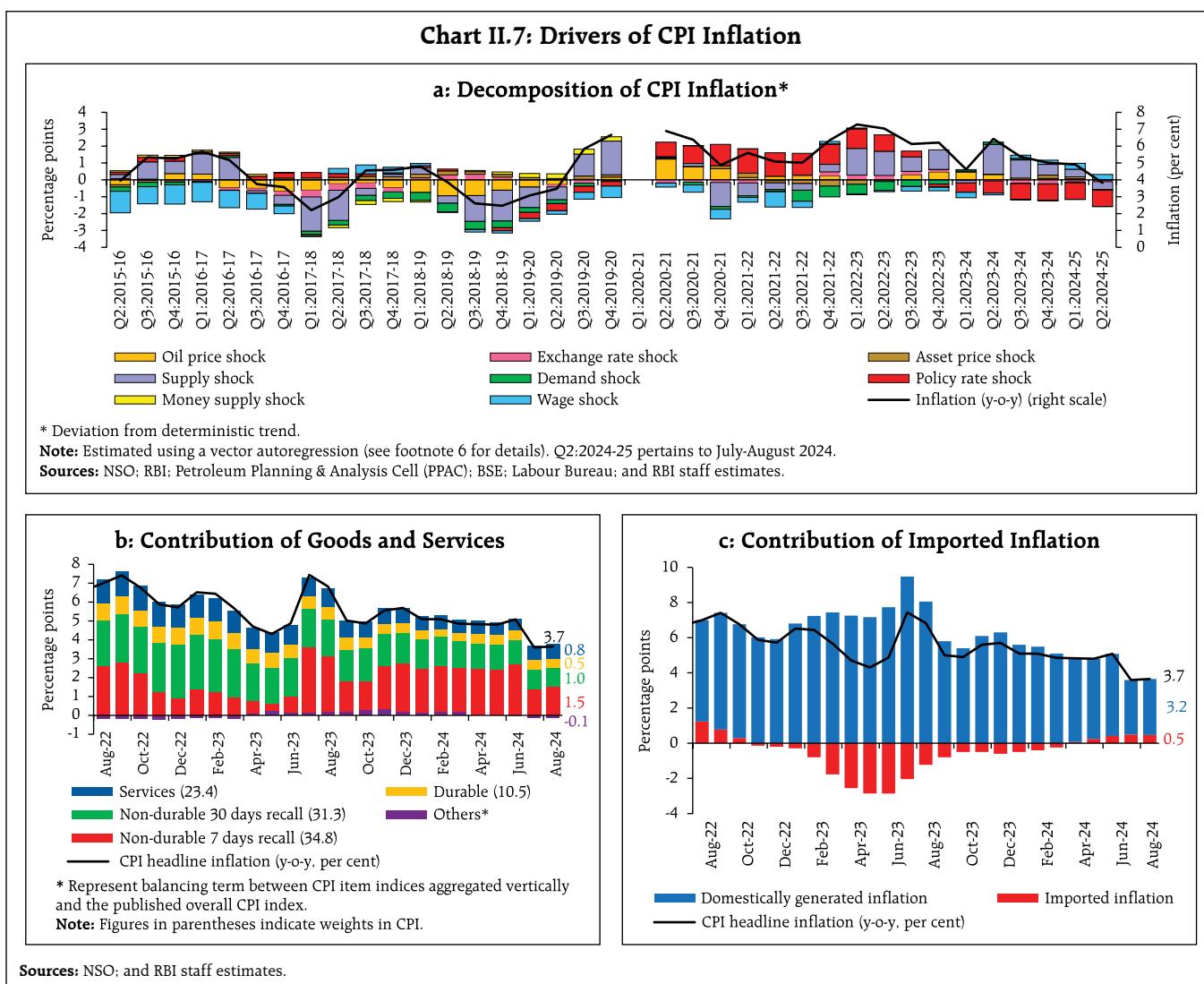
6 per cent on a seasonally adjusted annualised rate (saar) basis – continued to remain well below the 50 level mark, indicating little incidence of any broad-basing of such price momentum (Chart II.6b).

II.2 Drivers of Inflation

A historical decomposition of inflation using a vector autoregression (VAR)⁶ model indicates that the moderation in inflation in Q2:2024-25 stemmed from the negative contribution of supply side shocks

to overall inflation - after being the major driver of inflation in the last four successive quarters - and from the disinflationary impact of past monetary policy actions (Chart II.7a).

Goods inflation (with a weight of 76.6 per cent in the overall CPI) contributed around 88 per cent of headline inflation between March and June 2024 and around 82 per cent in July and August 2024 (Chart II.7b). The contribution of services (with a weight of 23.4 per cent) edged up over this period due to the pick-up



⁶ Historical decomposition estimates the contribution of each shock to the movements in inflation over the sample period (Q4:2010-11 to Q4:2024-25) based on a vector autoregression (VAR) with the following variables (represented as the vector Y_t) – crude oil prices (US\$ per barrel); exchange rate (INR per US\$), asset price (BSE Sensex), CPI; the output gap; rural wages; the policy repo rate; and money supply (M_3). All variables other than policy repo rate are y-o-y growth rates. The VAR can be written in reduced form as: $Y_t = c + A Y_{t-1} + e_t$, where e_t represents a vector of shocks. Using Wold decomposition, Y_t can be represented as a function of its deterministic trend and sum of all the shocks e_t . This formulation facilitates decomposition of the deviation of inflation from its deterministic trend into the sum of contributions from various shocks.

in mobile tariffs. The increase in the contribution of perishable items (non-durable with a 7-day recall⁷), which include vegetables, spices, fruits and other food items such as milk, meat and fish and prepared meals, contributed to the stickiness in inflation in Q1. The contribution of semi-perishables (non-durable goods with a 30-day recall) to overall inflation remained broadly unchanged with cereals, pulses, and personal care items being the main inflation drivers. The contribution of durable items (goods with a 365-day recall) to overall inflation edged up during April-August 2024, primarily reflecting the uptick in gold prices.

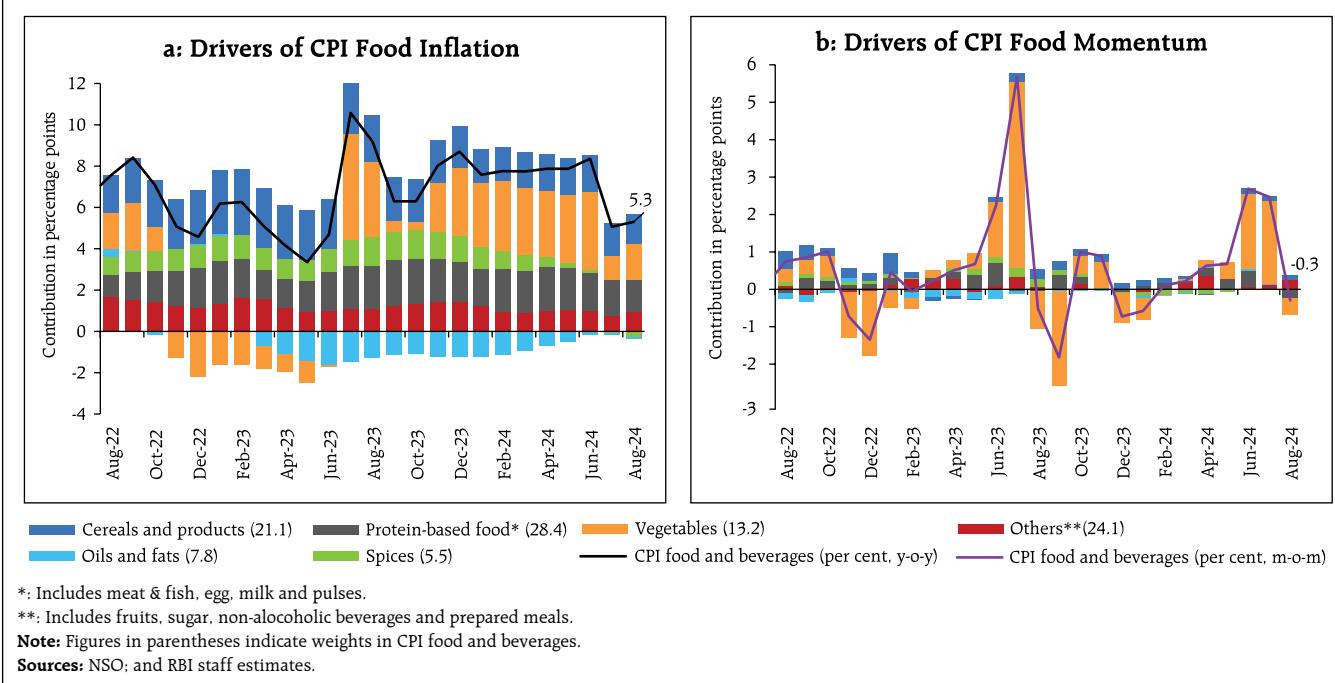
The contribution of imported components⁸ to headline inflation turned positive from April 2024 and increased gradually to 0.5 percentage points by August 2024, driven by higher gold and silver prices (Chart II.7c).

CPI Food Group

Food and beverages (weight of 45.9 per cent in the CPI basket) inflation exhibited distinct phases during the year so far. It averaged 8.0 per cent during April-June 2024, as weather disturbances such as heatwave conditions and uneven rainfall distribution, as well as tight supply conditions led to inflationary pressures in vegetables, cereals, and pulses. There was, however, a sharp moderation in food inflation to 5.1 per cent in July 2024, as favourable base effects more than offset a significant pickup in momentum. In August, despite a decline in food price momentum, food inflation increased to 5.3 per cent due to unfavourable base effects (Chart II.8).

The food price build-up during 2024-25 so far (up to August) has been substantial, although lower than last year and the long-term historical average. High

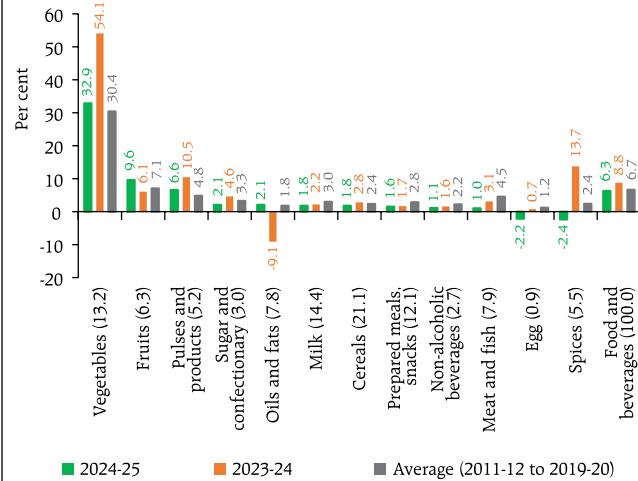
Chart II.8 CPI Food Inflation



⁷ The CPI weighting diagrams use the modified mixed reference period (MMRP) data based on the 2011-12 Consumer Expenditure Survey conducted by the National Sample Survey Office (NSSO). Under MMRP, data are collected on expenditure incurred during the last seven days for frequently purchased items like edible oil, eggs, fish, meat, vegetables, fruits, spices, beverages, processed foods, pan, tobacco and intoxicants; expenditure incurred during the last 365 days for items like clothing, bedding, footwear, education, medical (institutional), durable goods; and expenditure incurred in the last 30 days for all other food, fuel and light, miscellaneous goods and services including non-institutional medical services, rents and taxes.

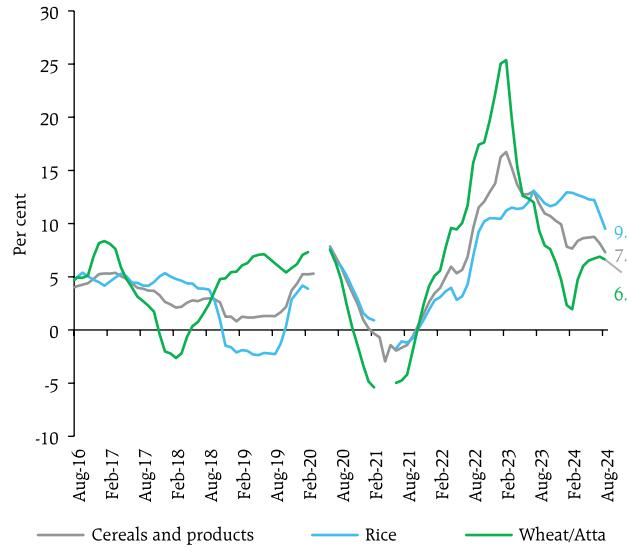
⁸ Global commodities that drive domestic prices include petroleum products; coal; electronic goods; gold; silver; chemical products; metal products; textiles; cereals; milk products, and vegetables oils – these together have a weight of 36.4 per cent in the CPI basket.

**Chart II.9: Financial Year Price Build-up
(August 2024 over March 2024)**



Note: Figures in parentheses indicate weights in CPI - food and beverages.
Sources: NSO; and RBI staff estimates.

Chart II.10: Cereals Inflation (y-o-y)

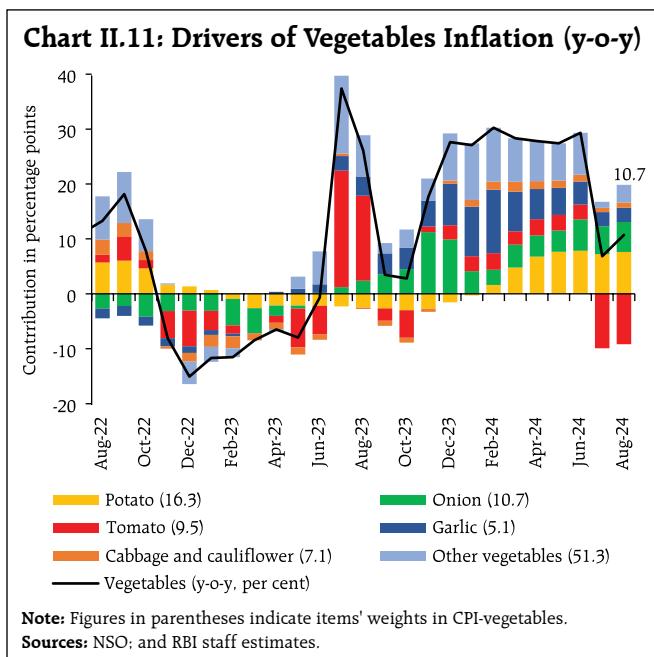


vegetable prices contributed a disproportionately large share to this build-up for the second successive year in a row (Chart II.9).

Cereals (weight of 9.7 per cent in the CPI and 21.1 per cent in the food and beverages group) inflation remained elevated at an average of 8.3 per cent during April-August 2024 (Chart II.10). Within cereals, rice inflation remained in double digits, despite export restrictions, reflecting tight supply conditions due to lower *rabi* and summer production [(-)2.4 per cent year-on-year (y-o-y) in 2023-24]. For effective supply management and price stabilisation, government has announced several measures including the retail sale of 'Bharat Rice' and allowing rice-deficient states to directly purchase rice from the Food Corporation of India at a fixed price of ₹2800/quintal under the Open Market Sale Scheme (OMSS) from August 2024. The buffer stocks of rice (3.0 times the norm as of September 16, 2024) are comfortable and *kharif* sowing has been higher by 2.5 per cent in 2024-25 as on September 27, 2024 compared to the corresponding period of last year, which are likely to improve supply conditions and contain price pressures. With signs of easing of supply conditions, government has lifted the

ban on exports of non-basmati white rice subject to a minimum export price (MEP) of \$490/tonne, while removing the MEP on Basmati rice in September 2024 to support farmers' price realisation. Wheat inflation, on the other hand, was moderating till February 2024, but it hardened thereafter to reach 6.6 per cent in August, reflecting lower buffer stocks (0.9 times the norm as of September 16, 2024) and lower mandi arrivals than in 2023-24. Wheat inflation was elevated despite higher production and price stabilisation measures, including the imposition of stock limits for traders/wholesalers and retailers till March 2025, the likely offloading of stocks under the OMSS and continued restrictions on wheat exports.

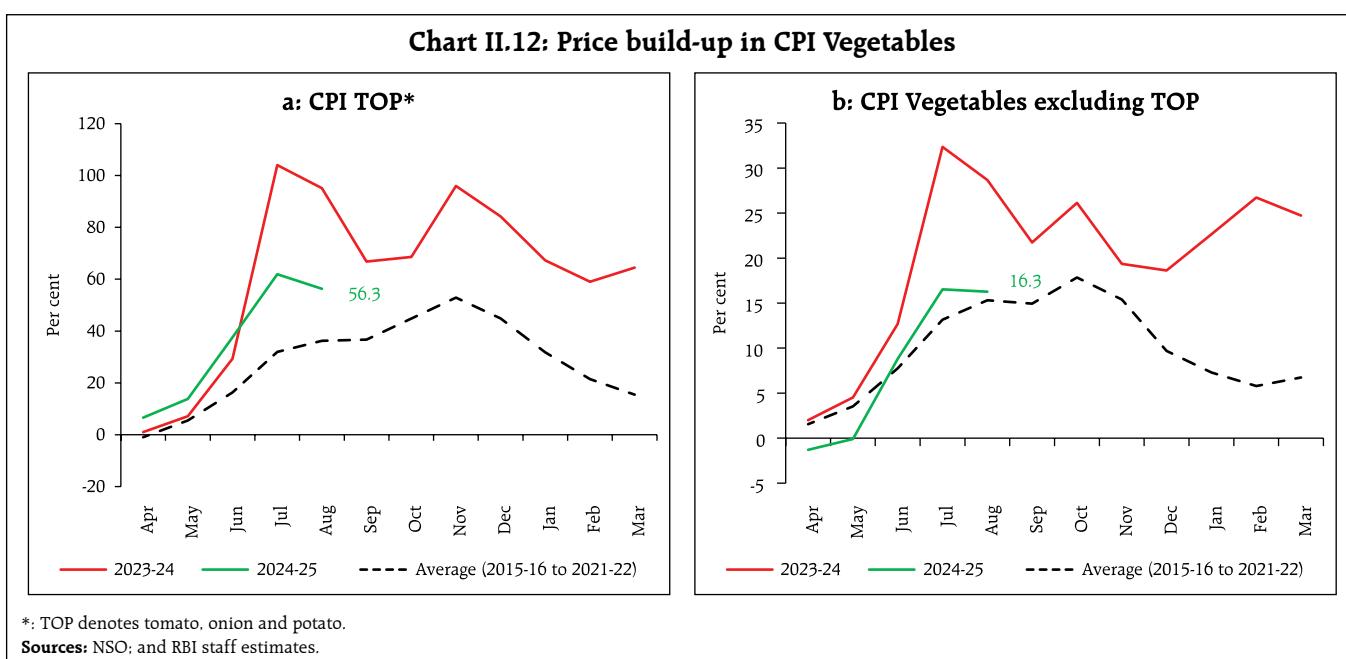
Vegetables (weight of 6.0 per cent in the CPI and 13.2 per cent in the food and beverages group) inflation remained elevated till June 2024, but witnessed a sharp correction in July primarily because of favourable base effect (Chart II.11). The price momentum, however, remained firm in July, reflecting lower production [(-)3.2 percent in 2023-24 over 2022-23 as per 3rd advance estimates (AE) 2023-24] and supply disruptions due to heatwave conditions in parts of northern India, excess rains in parts of central and southern India and the resultant lower market arrivals. As supplies resumed,



vegetable prices declined in August, particularly from a sharp correction in tomato prices.

Among key vegetables, potato prices, on a y-o-y basis, increased sequentially in 2024, reaching 65 per cent in July-August, driven by production shortfalls [(-)5.1 per cent in 2023-24 over 2022-23 as per 3rd AE 2023-24] due to unseasonal rains and prolonged spells of fog and cold conditions during winter in the major

producing states of Uttar Pradesh, West Bengal, and Bihar. Onion prices moderated during January-February 2024, but started rising again, recording a y-o-y inflation of 60.6 per cent in July 2024 and 54.1 per cent in August due to deficient production [(-)19.7 per cent in 2023-24 over 2022-23 as per 3rd AE 2023-24]. For effective supply management, onion exports were allowed and 40 per cent export duty with a MEP of \$550 per metric tonne was imposed in May 2024. Subsequently, in September 2024, the export duty was reduced to 20 per cent, and MEP was removed, allowing free shipments of onion. Tomato price increase, which averaged around 37 per cent during December 2023-June 2024 on a y-o-y basis, was on account of tight supply conditions induced by heatwaves and unseasonal rainfall. Prices declined by (-)43.0 per cent, on a y-o-y basis, in July 2024 as a strong favourable base effect outweighed the substantial increase in price momentum. Softening in prices in August further pulled down tomato inflation to (-)47.9 per cent. Vegetables excluding TOP (tomato; onion; and potato), particularly garlic, also witnessed considerable price build-up in Q1:2024-25, emerging as another major driver of vegetables inflation (Chart II.12).



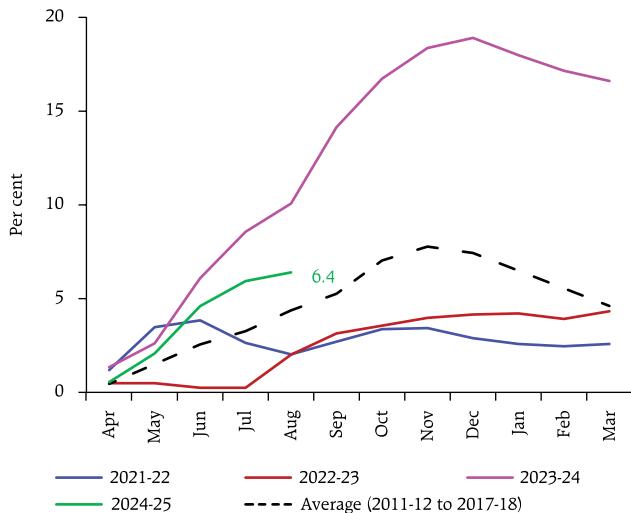
Inflation in fruits (weight of 2.9 per cent in the CPI and 6.3 per cent within the food and beverages group) eased in July on a strong favourable base effect, after rising during April-June 2024 to 6.3 per cent on average. In August, it rose to 6.5 per cent despite higher production (2.3 per cent in 2023-24 over 2022-23 as per the 3rd AE), with price increases primarily driven by bananas, apples and mangoes. Inflation in groundnut prices, however, moderated from around 10.4 per cent in December 2023 to 1.7 per cent in July 2024 before falling into the deflationary zone at (-)1.5 per cent in August 2024, on account of higher *kharif* production (1.1 per cent in 2023-24).

Pulses, the primary source of plant-based protein (weight of 2.4 per cent in the CPI and 5.2 per cent in the food and beverages group), continued to record double-digit inflation due to deficient *kharif* and *rabi* production [(-)7.0 per cent in 2023-24 over 2022-23] on top of a decline in production in 2022-23. Within pulses, lower production of gram [(-)10 per cent in 2023-24], *urad* [(-)11.9 per cent] and *moong* [(-)15.6 per cent] as well as subdued production in *tur* (3.2 per cent increase in 2023-24 over 2022-23 against 21.5 per cent decline in 2022-23) were the primary drivers of price pressures (Chart II.13). Inflation in pulses prices moderated to 13.6 per cent in August 2024 on interventions to ease

supply conditions through imposition of stock limits on *tur* and gram (till September 30, 2024), extension of free import policy for yellow peas (till December 31, 2024), and *tur* and *urad* (till March 31, 2025), weekly stock disclosure requirements for five major pulses, and sale of *chana dal* under the brand 'Bharat Dal'. As a result, the stock-to-use ratio improved to 6.8 per cent during April-August 2024 from 6.5 per cent during the corresponding period of 2023 (Chart II.14).

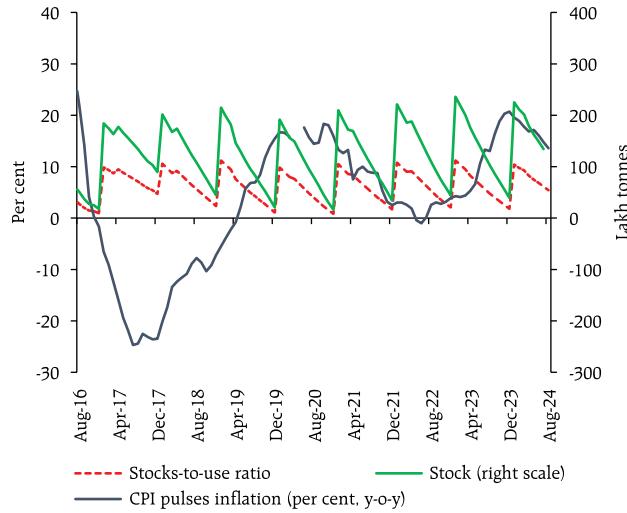
Animal-based protein items exhibited high and volatile inflation movements during April-August 2024. Inflation in prices of meat and fish (weight of 3.6 per cent in the CPI and 7.9 per cent in the food and beverages group) averaged 6.2 per cent during April-August 2024. Inflation in the price of eggs (weight of 0.43 per cent in the CPI and 0.9 per cent in the food and beverages group) exhibited considerable volatility, falling from 10.3 per cent in March to 4.1 per cent in June before increasing to 7.1 per cent in August. Inflation in milk and products (weight of 6.6 per cent in the CPI and 14.4 per cent within the food and beverages group) has remained range bound at around 3 per cent during April-August. Although milk price hikes by several cooperatives, including Amul and Mother Dairy, in June 2024 led to higher price momentum in June, it was offset by favourable base effects (Chart II.15).

**Chart II.13: CPI Pulses and Products
(Cumulative Financial Year Price Build-up)**

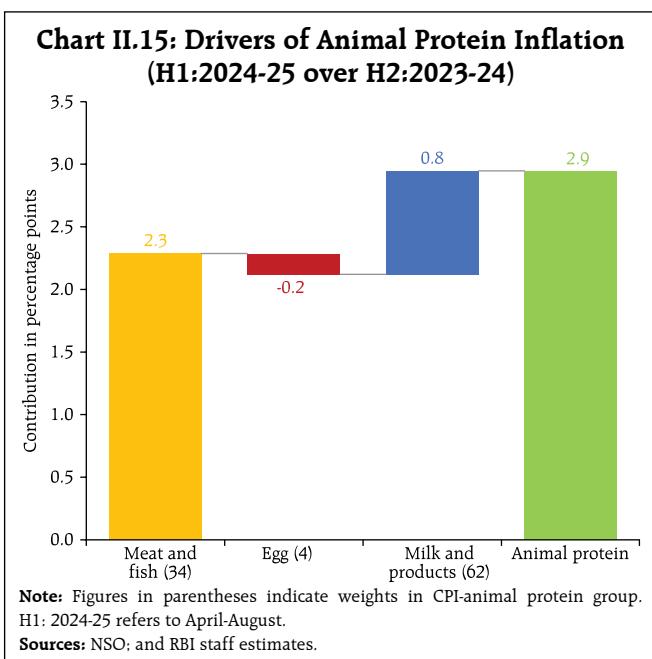


Sources: NSO; and RBI staff estimates.

Chart II.14: Pulses Inflation and Stock-Use Ratio

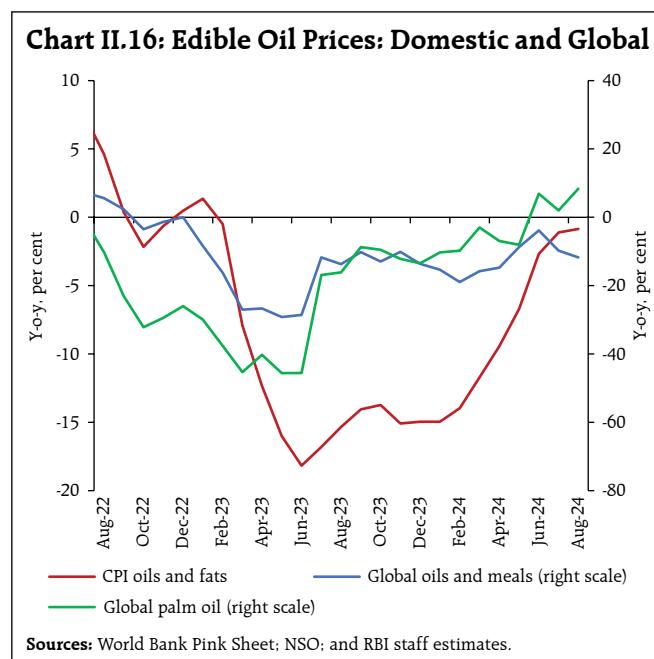


Sources: MOSPI; DGCI&S; CACP; Ministry of Agriculture; and RBI staff estimates.



Prices of oils and fats (weight of 3.6 per cent in the CPI and 7.8 per cent within the food and beverages group) remained in deflation during April-August 2024 on higher imports and lower international prices of major edible oils (Chart II.16). The pace of deflation, however, moderated, with continued positive momentum reflecting pick-up in international edible oil prices as well as lower domestic production of oilseeds in the 2023-24 season [(-)4.1 per cent in 2023-24 over 2022-23]. The current *kharif* season sowing of oilseeds has been encouraging, particularly for groundnut. In January 2024, the regime of lower import duties on crude palm, sunflower and soyabean oil were extended till March 2025. To improve domestic price realisation, however, the import duty on crude and refined edible oils has been hiked by 20 percentage points in September 2024. Among other items in the oils and fats sub-group, inflation in ghee and butter prices continued to moderate.

Inflation in prices of sugar and confectionery (weight of 1.4 per cent in the CPI and 3.0 per cent in the food and beverages group) has moderated in 2024-



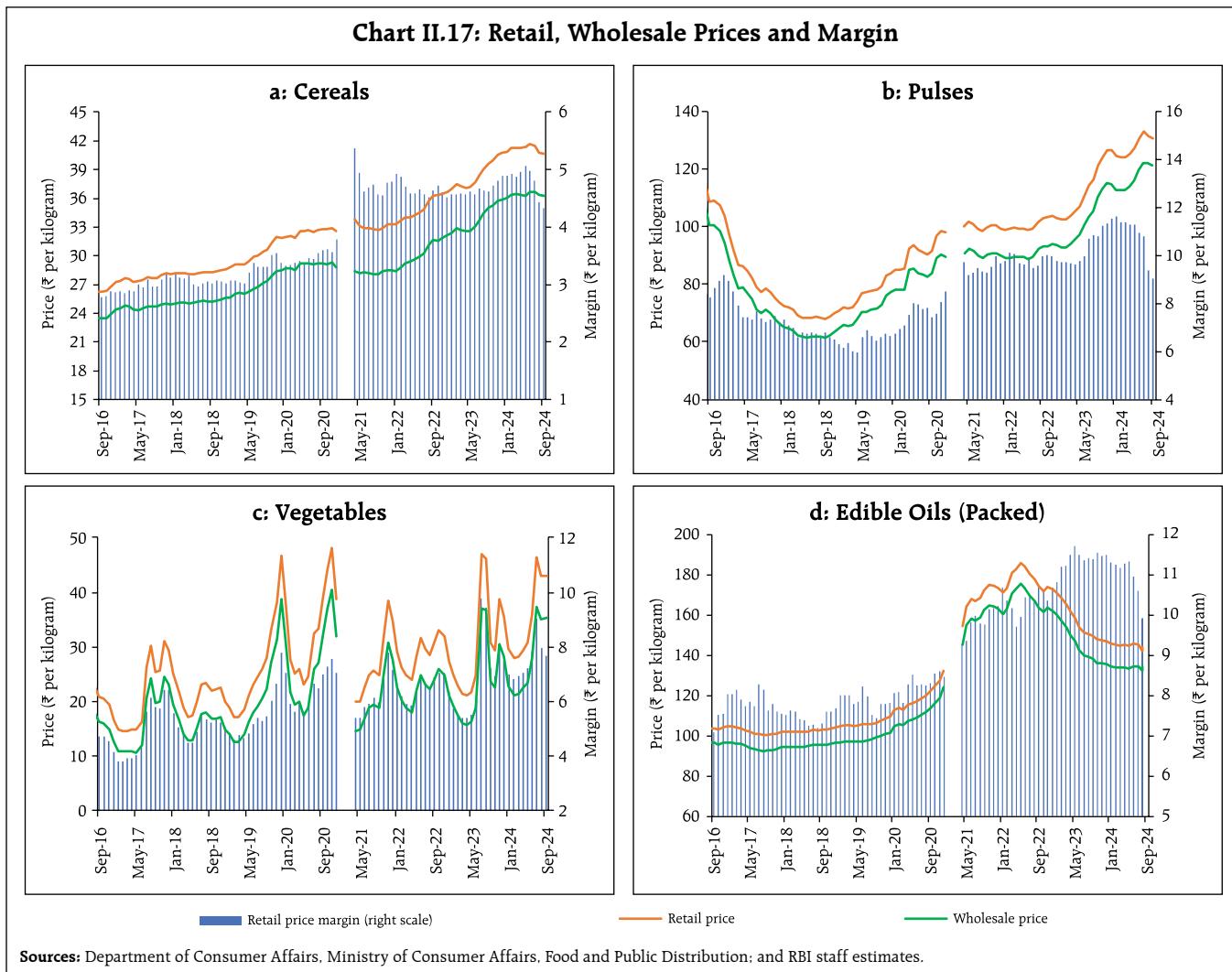
25 compared to H2:2023-24 despite lower sugarcane production [(-)7.6 per cent in 2023-24 over 2022-23]. Measures to augment domestic availability of sugar include extension of export restrictions, and imposition of 50 per cent export duty on molasses used for ethanol production as well as restriction on the use of sugarcane juice and syrup for ethanol production since December 2023. The restrictions on sugar diversion for ethanol production were, however, eased in August 2024.

Among other food items, inflation in spices moderated on a sustained basis since April 2024 and slipped into deflation since July after recording double-digit inflation for a 22-month period till March 2024. The recent decline was led by *jeera* and dry chillies, on account of higher spices production (5.5 per cent as per 3rd AE in 2023-24 over 2022-23). Inflation in prices of prepared meals has moderated gradually, reflecting the pass-through of lower input costs.

Retail Margins

Retail price margins – the difference between retail and wholesale prices⁹ – in the case of cereals edged

⁹ Item level retail and wholesale prices are aggregated at respective subgroups using item level CPI weights. Data for January-March 2021 have been excluded due to changes in price collection mechanism and item varieties by DCA.



up during March-May 2024 and thereafter started to decline from June 2024 onwards to ₹4.3 per kg, the lowest since December 2020. After recording a sustained increase between September 2023 and January 2024, pulses price margins witnessed a sustained decrease during February-September 2024. Retail price margins in edible oils continued to soften since June 2024, primarily due to the moderation in the margin of refined oils. Retail price margins of TOP vegetables started firming up from March 2024 onwards (Chart II.17).

Sectoral and Spatial Distribution of Food Inflation

Heightened CPI food inflation pressures were seen across both rural and urban areas, with average rural food inflation during April to August 2024 outpacing its urban counterpart (Chart II.18).

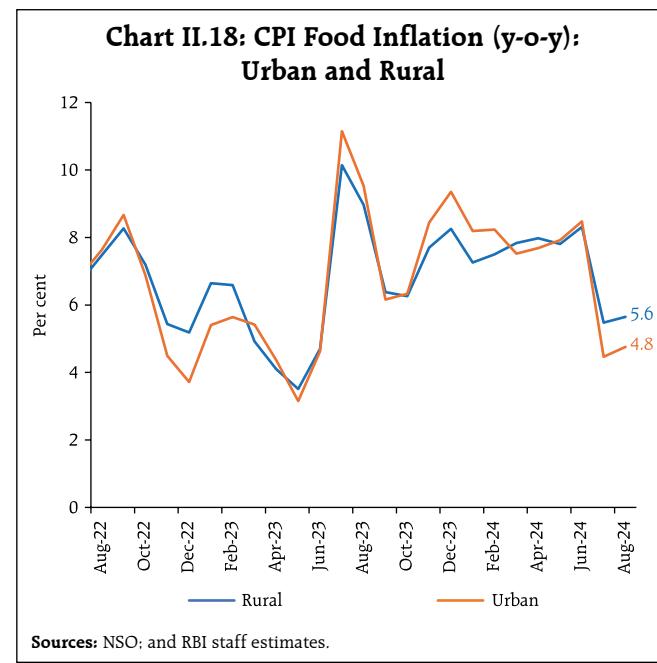


Table II.1: Distribution of food inflation across States/UTs: Number of states[#]

Food Inflation Range	2023-24 (Apr-Aug)	2024-25 (Apr-Aug)
Less than 2 per cent	1	1
Between 2 to 4 per cent	8	2
Between 4 to 6 per cent	11	13
Greater than 6 per cent	16	20

[#] Accounted for the unification of Daman and Diu with Dadra & Nagar Haveli and the formation of Ladakh as a Union Territory (UT).

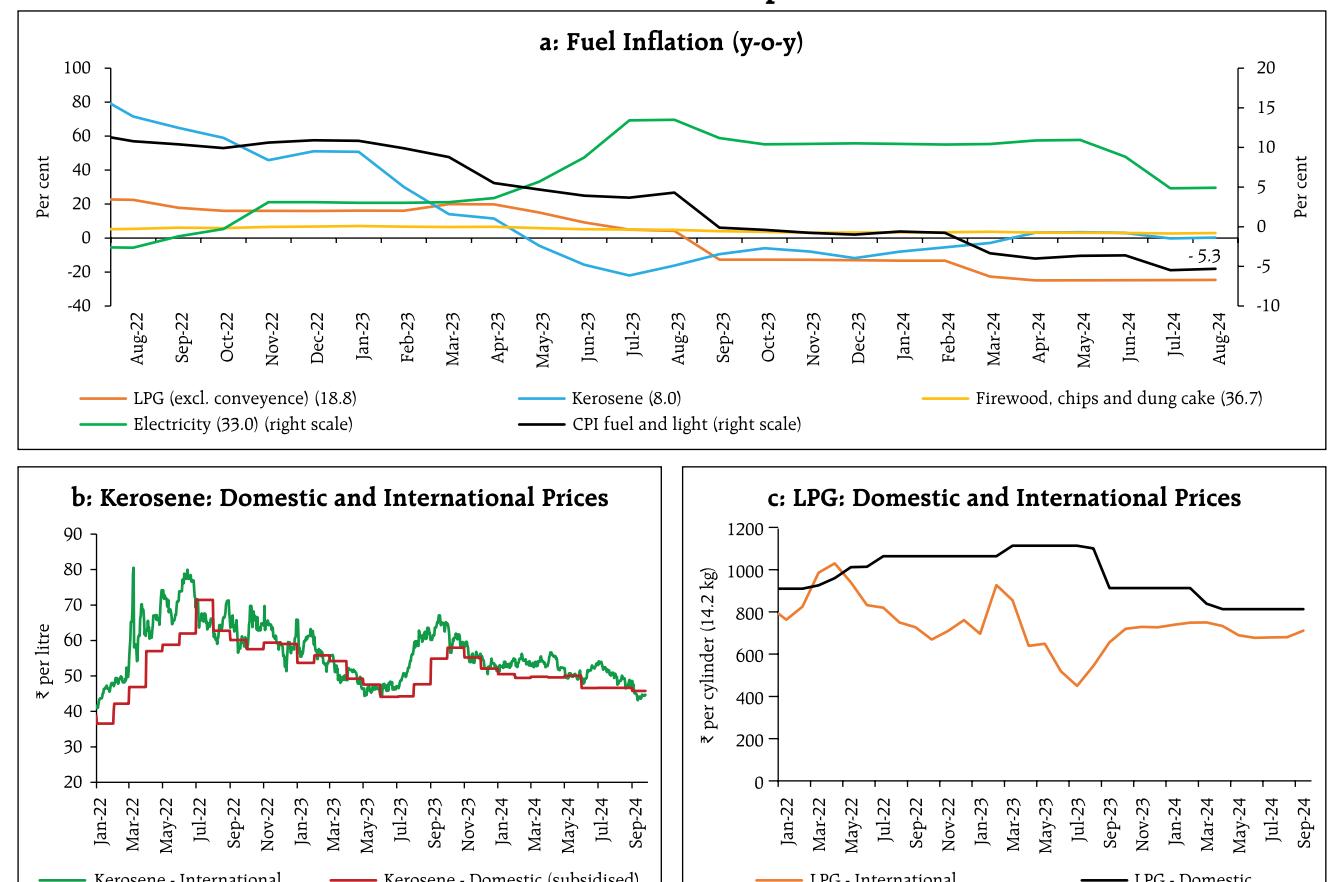
Sources: NSO; and RBI staff estimates.

Spatially, food inflation pressures have heightened – the number of states/UTs with food inflation higher than 6.0 per cent in the period April-August 2024 has increased to 20 vis-à-vis 16 in the corresponding period a year ago (Table II.1).

CPI Fuel Group

The deflation in fuel prices deepened from (-)0.8 per cent in February 2024 to (-)5.3 per cent in August 2024, reflecting the cumulative impact of the LPG price reduction in August 2023 and March 2024. Fuel deflation was also aided by softening of price pressures, on a y-o-y basis, in kerosene, reflecting the pass-through of lower international prices, as well as in firewood and chips, and dung cake. Electricity prices also moderated sharply from a record high of 13.5 per cent in August 2023, on a y-o-y basis, to 4.8-4.9 per cent in July-August 2024 (Chart II.19).

Chart II.19: CPI Fuel Group Inflation



- Notes:** (1) The international price for LPG is based on spot prices for Saudi Butane and Propane, combined in the ratio of 60:40, respectively. These international product prices are indicative import prices. Further details are available at www.ppac.org.in.
(2) The indicative international price for kerosene is the Singapore Jet Kero spot price.
(3) The domestic prices of LPG and kerosene represent the average prices of four and three metros, respectively, as reported by Indian Oil Corporation Limited (IOCL).
(4) Figures in parentheses indicate items' weights in CPI-fuel group.

Sources: NSO; Bloomberg; IOCL; and RBI staff estimates.

Core CPI (CPI excluding Food and Fuel Groups)

Core (CPI excluding food and fuel) disinflation continued during H1 of 2024-25 (April-August) as it softened to 3.1 per cent by May-June 2024. This sustained sequential softening observed for more than a year (since June 2023) was disrupted in July-August 2024 with core inflation averaging 3.4 per cent, primarily reflecting the impact of mobile tariff revisions. Exclusion-based measures of underlying inflation, which remove volatile items such as petrol, diesel, gold, and silver in addition to food and fuel, also witnessed similar movements during this period (Chart II.20 and Table II.2).

While diffusion index for CPI excluding food, fuel, petrol, diesel, gold and silver indicated positive price increases across much of its constituents, a vast majority of these price increases were less than 6 per cent (m-o-m saar) and 4 per cent (m-o-m saar), as indicated by the steep fall in threshold DIs to well below the 50 level mark. Threshold DIs for CPI core, however, exhibited a sustained pick-up during June-August 2024, indicating a likely bottoming out of muted price momentum (Chart II.21).

Both core goods and services experienced significant easing of inflationary pressures in 2024-25 so far

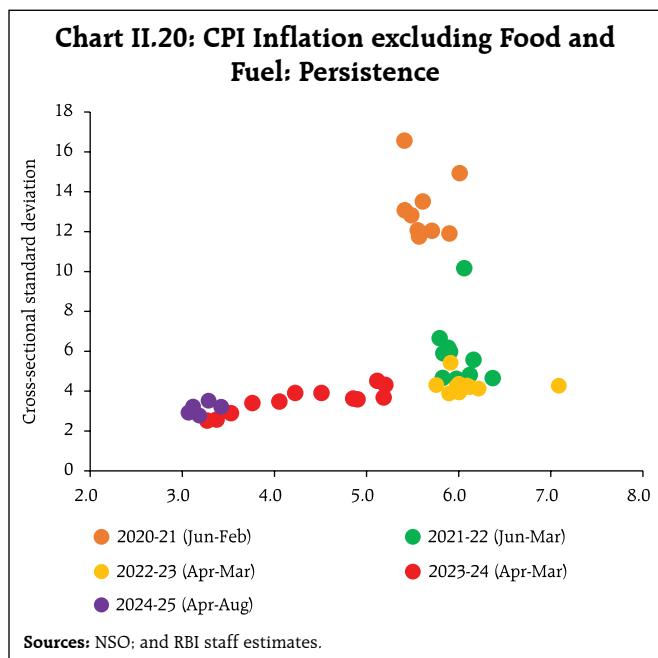


Table II.2: Exclusion-based Measures of Inflation (y-o-y)

Period	CPI excluding food and fuel (47.3)	CPI excluding food fuel petrol diesel (45.0)	CPI excluding food fuel petrol diesel gold silver (43.8)
Aug-23	4.9	5.1	4.8
Sep-23	4.5	4.7	4.4
Oct-23	4.2	4.4	4.1
Nov-23	4.1	4.2	3.9
Dec-23	3.8	3.9	3.6
Jan-24	3.5	3.7	3.4
Feb-24	3.4	3.5	3.3
Mar-24	3.3	3.4	3.2
Apr-24	3.2	3.4	3.0
May-24	3.1	3.3	2.8
Jun-24	3.1	3.3	2.8
Jul-24	3.4	3.6	3.1
Aug-24	3.3	3.5	3.0

Notes: (1) Figures in parentheses indicate weights in CPI.

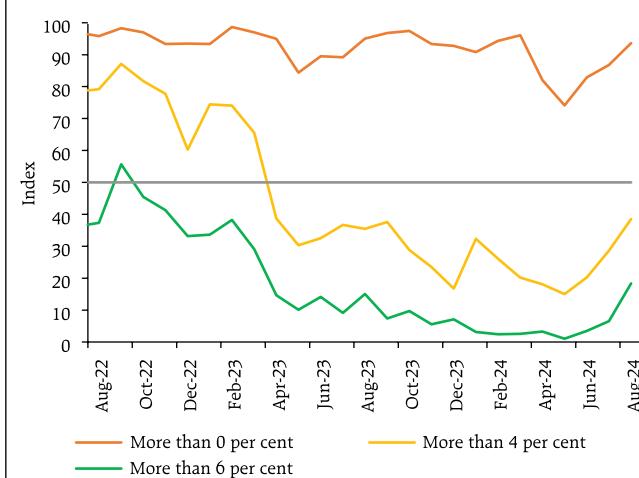
(2) Derived as residual from headline CPI.

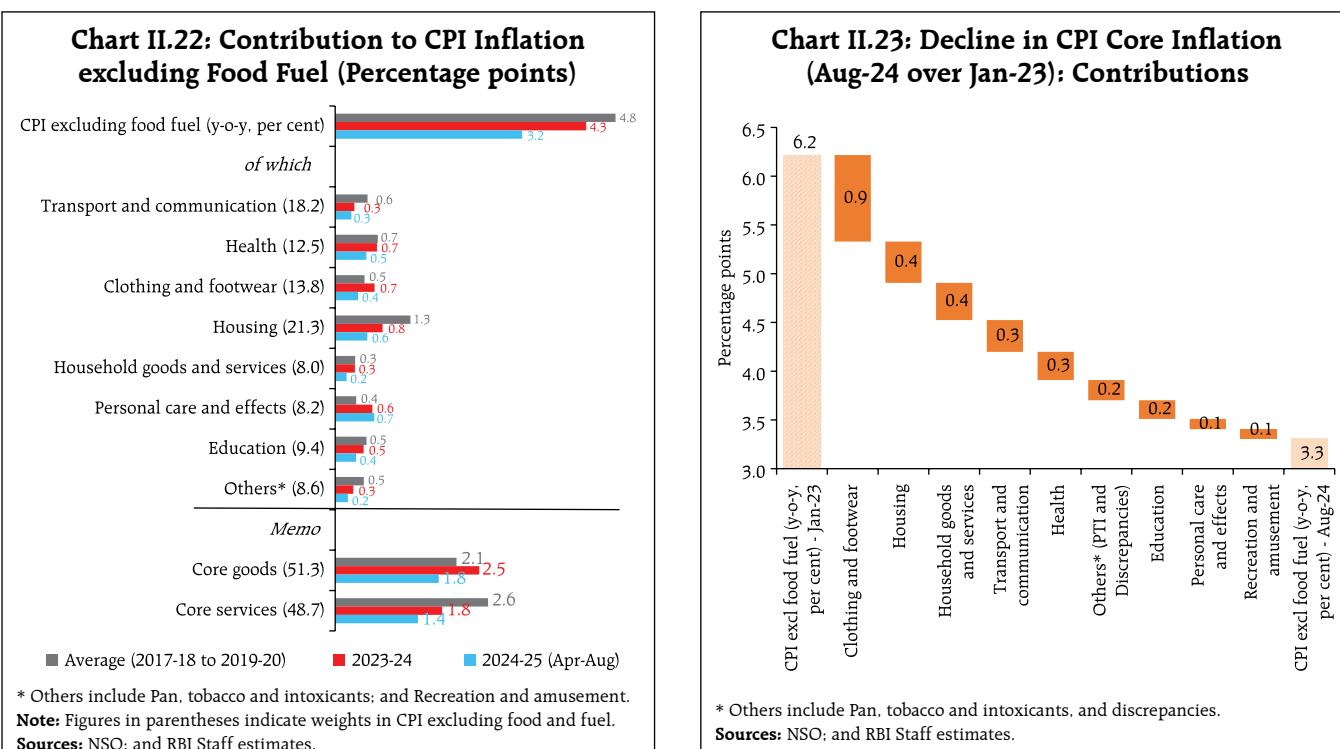
Sources: NSO; and RBI staff estimates.

(April-August) with contribution from all sub-groups/groups (Chart II.22).

Out of the 2.9 percentage points moderation in core inflation from its peak in January 2023 till August 2024, around 90 bps was contributed by the clothing and footwear sub-group. In addition, housing accounted for 42 bps, while household goods and services, and

Chart II.21: CPI excluding Food, Fuel, Petrol, Diesel, Gold and Silver: Diffusion Indices by Thresholds (M-o-M Seasonally Adjusted)

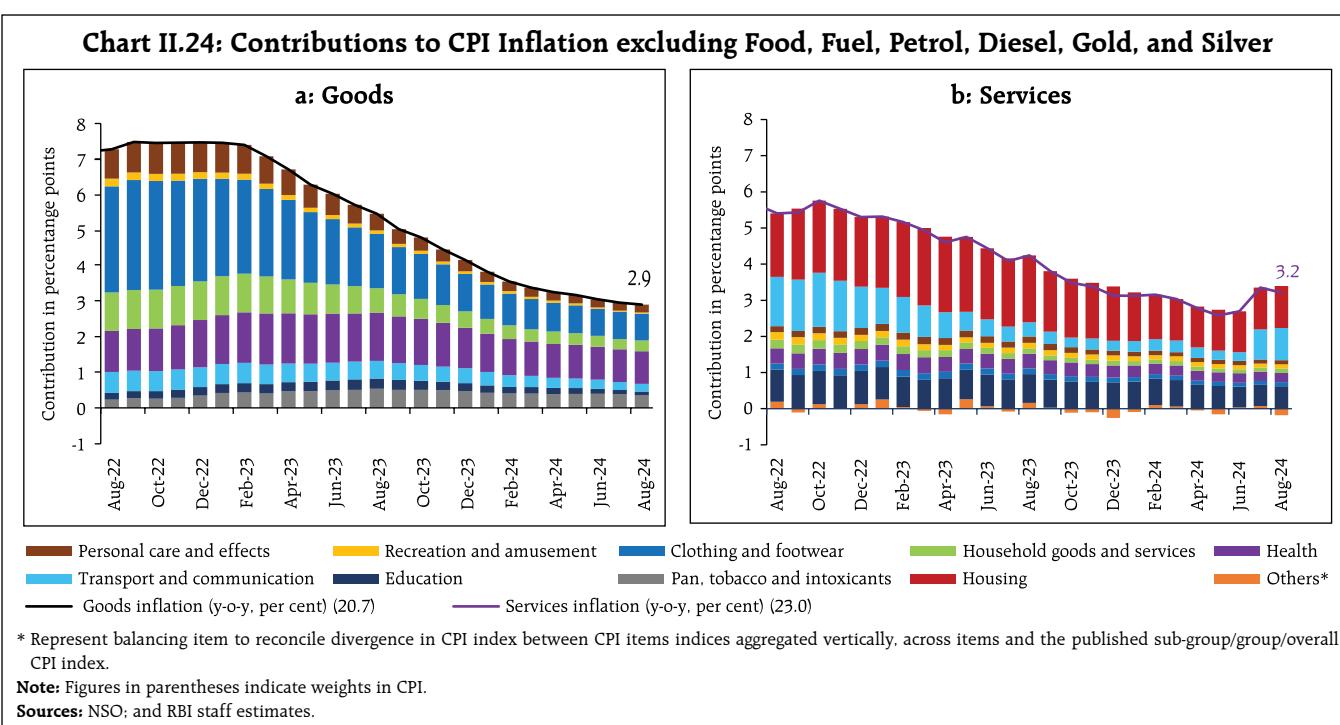




transport and communication contributed 38 bps and 33 bps, respectively (Chart II.23).

Decomposing core inflation – CPI excluding food, fuel, petrol, diesel, gold, and silver inflation – into its goods (with a weight of 20.7 per cent in the headline

CPI) and services (weight of 23.0 per cent) components shows a sequential softening of around 65 bps in core goods from 3.5 per cent in February 2024 to 2.9 per cent in August. The key drivers of this softening were clothing and footwear, transport and communication, household goods, and health items (Chart II.24a).



Core services inflation, on the other hand, fell from 3.2 per cent in February 2024 to 2.6 per cent in May, primarily driven by housing (house rent), transport (such as railway charges and porter fares), and education (tuition fee and other educational expenses) services. It rose to 3.3 per cent during July-August due to tariff hikes across major private

mobile operators resulting in a rise in prices of communication services (Chart II.24b). An analysis of the determinants of house rent inflation indicate that demand and supply conditions and inflation expectations have a significant role in shaping house rent inflation (Box II.I).

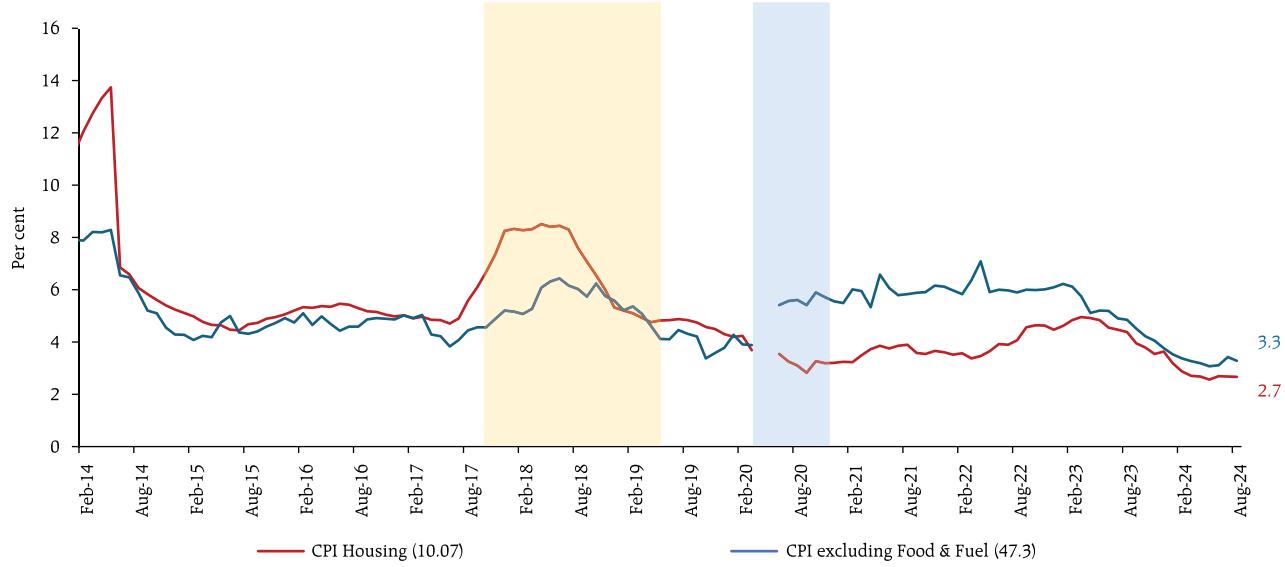
Box II.1: What Drives Housing (Rent) Inflation in India?

CPI housing (rent¹⁰) inflation (y-o-y) has moderated sequentially during March-August 2024 (Chart II.1.1).

An analysis of the determinants of housing (rent) inflation (seasonally adjusted annualised quarter-on-quarter rate, ΔHR) in an autoregressive distributed lag (ARDL) model reveals that inflation expectations – i.e., one-year ahead inflation expectations of Indian (urban) households

from the Reserve Bank's Inflation Expectations Survey of Households – has a positive and statistically significant impact on CPI housing (rent) inflation. Demand conditions represented by the unemployment rate (UMP) from the Periodic Labour Force Surveys¹¹ (proxying aggregate demand) and the night light index¹² gap variable (NLG)¹³ (proxying housing demand) – were also seen to have a

Chart II.1.1: Evolution of CPI Housing (Rent) Inflation (y-o-y)



Note: Sub-groups weights are displayed in brackets. The yellow shaded area represents the period of the 7th Central Pay Commission (CPC), and the blue shaded area represents the onset of the COVID-19 pandemic.

Sources: NSO; and RBI staff estimates.

(Contd.)

¹⁰ Housing is a major component in the CPI basket with a weight of 10.07 per cent, with house rent contributing 9.51 per cent and other housing services 0.56 per cent. Housing has a weight of 21.3 per cent in the CPI excluding food and fuel (core). The National Statistics Office (NSO) compiles the housing index for urban areas, considering both rented and self-owned dwellings. The NSO uses a rental equivalent approach for self-owned properties, applying market rent rates for similar rented homes. Actual rents are collected for private rentals, while government accommodation rents include the license fee and HRA foregone, adjusted by the occupant rank.

¹¹ Sourced from Ministry of Statistics and Programme Implementation, Government of India.

¹² Sourced from Indian Space Research Organisation (ISRO) Annual Night Light dataset. This has been interpolated to quarterly frequency using Denton-Cholette method with output gap as the proxy variable.

¹³ Night light gap (NLG) has been estimated as the gap between the night light index and its trend, using the Hodrick-Prescott filter.

Table II.1.1: Determinants of Housing (Rent) Inflation

<i>Dep: Δ HR</i>	(1)	(2)	(3)	(4)
<i>Δ HR (-1)</i>	0.10** (0.00)	0.10** (0.00)	0.09** (0.00)	0.09** (0.00)
<i>IE (-1)</i>	0.13* (0.08)	0.14* (0.07)	0.12* (0.06)	0.13* (0.06)
<i>UMP (-1)</i>	-0.12** (0.00)		-0.11** (0.01)	
<i>NLG (-1)</i>		0.06** (0.04)		0.06* (0.08)
<i>Δ NLT (-1)</i>	-0.24** (0.00)	-0.23** (0.00)	-0.24** (0.00)	-0.24** (0.00)
<i>ΔHP (-1)[#]</i>			0.06 (0.13)	0.05 (0.23)
<i>7CPC</i>	0.16** (0.00)	0.15** (0.00)	0.16** (0.00)	0.16** (0.01)
<i>Constant</i>	4.85** (0.00)	3.63** (0.00)	4.68** (0.00)	3.56** (0.00)
R-squared	0.682	0.680	0.685	0.680
LM test for autocorrelation (p-value)	0.131	0.159	0.075	0.054
ARCH LM test (p-value)	0.991	0.876	0.812	0.645

[#]Similar results were obtained on using the quarterly House Price Index published by RBI, instead of NHB-RESIDEX.

Notes: 1. Figures in parentheses indicate p-values. ** and * indicate significance at 5 and 10 per cent levels, respectively.

2. Inflation (y-o-y) is calculated after obtaining quarterly averages of monthly CPI Housing indices.

3. The variable 7CPC represents an interactive dummy to capture the HRA adjustments linked to the 7th Central Pay Commission.

Source: RBI Staff Estimates.

positive and significant influence, suggesting that the shock to demand conditions induced by the onset of the pandemic has had an impact on house rentals. An increase in housing supply, measured by changes in the trend of the night light index (NLT), is seen to have a negative effect on housing rent inflation (Table II.1.1).

The changes in housing price (Δ HP) as measured using RESIDEX¹⁴ from National Housing Bank (NHB) do not seem to have a significant impact on rent inflation. Housing

prices, on the other hand, are also found to be affected by aggregate and housing demand, inflation expectations as well as housing supply, i.e., the same covariates explain housing prices and rent.

Reference:

Mohan, R., Hasan, S., Roy, S., and Sarkar, S. (2024). *Deciphering the Drivers of CPI Housing Inflation in India*. mimeo.

Trimmed mean measures¹⁵ also indicate an easing of underlying inflation pressures since March 2024, with weighted median inflation moderating from 3.3 per cent in March 2024 to 2.9 per cent in June (Table II.3).

Other Measures of Inflation

CPI inflation for agricultural labourers (CPI-AL) and rural labourers (CPI-RL) were substantially higher than the CPI headline inflation during March-August

2024 reflecting the impact of higher food inflation, which has a relatively higher weight in CPI-AL and CPI-RL. CPI inflation for industrial workers (CPI-IW), on the other hand, was below the headline CPI during the same period, primarily on account of double-digit fuel deflation, despite higher food inflation in CPI-IW vis-à-vis headline CPI. After remaining subdued till end of 2023-24, wholesale price index (WPI)

¹⁴ HPI@Assesment Prices accessible through <https://residex.nhbbonline.org.in/>.

¹⁵ While exclusion-based measures drop a fixed set of volatile items (for example, food and fuel) in each period, trimmed measures exclude items located in the tails of the inflation distribution - items displaying changes more than the specified threshold in prices each month are excluded, and the items dropped differ from month to month.

Table II.3: Trimmed Mean Measures of Inflation (y-o-y)

Month	5% trimmed	10% trimmed	25% trimmed	Weighted Median
Aug-23	5.7	5.6	5.3	5.2
Sep-23	4.7	5.0	4.9	4.7
Oct-23	4.5	4.9	4.7	4.4
Nov-23	4.6	4.8	4.5	4.1
Dec-23	4.8	4.7	4.2	4.1
Jan-24	4.7	4.5	3.9	3.7
Feb-24	4.6	4.4	3.7	3.6
Mar-24	4.7	4.4	3.6	3.3
Apr-24	4.6	4.2	3.5	3.0
May-24	4.5	4.2	3.4	2.9
Jun-24	4.3	3.9	3.4	2.9
Jul-24	3.8	3.7	3.3	3.0
Aug-24	3.9	3.7	3.3	3.0

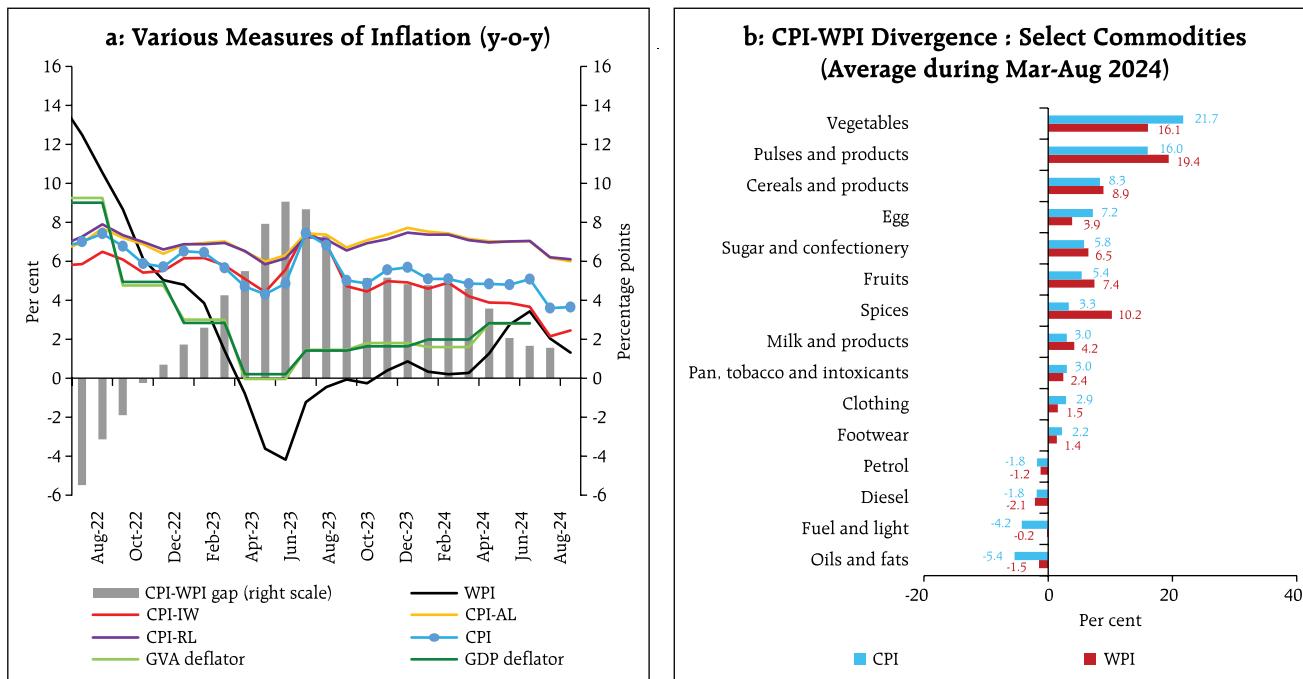
Sources: NSO; and RBI staff estimates.

Inflation picked up during April-June 2024 with food inflation registering a sharp uptick along with fuel and non-food manufactured products moving out

of deflation. Thereafter, WPI inflation softened in July, primarily due to favourable base effects. The softening continued in August on account of negative price momentum mainly coming from the food group. With overall WPI recording sequential increase since April 2024, inflation measured by deflators for gross value added (GVA) and gross domestic product (GDP) hardened in Q1:2024-25 (Chart II.25a).

Similar sub-groups/items across CPI and WPI exhibited varying inflation movements. While WPI inflation in major food sub-groups (particularly cereals, pulses, milk, sugar, fruits and spices) ruled above corresponding CPI groups/subgroups, inflation in vegetables and egg prices, and clothing and footwear was higher in the CPI than in the WPI. Similarly, deflation in petrol was lower in the WPI vis-à-vis CPI, while the same was higher for diesel in the former (Chart II.25b).

Chart II.25: Alternative Measures of Inflation



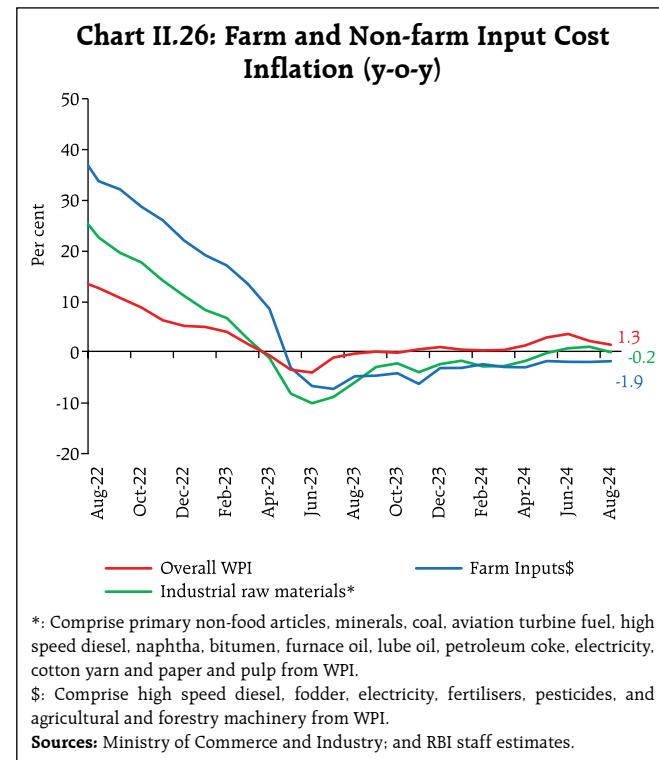
Note: For Q1:2024-25, implicit GDP and GVA deflators are used.

Sources: NSO; Labour Bureau; Ministry of Commerce and Industry; and RBI staff estimates.

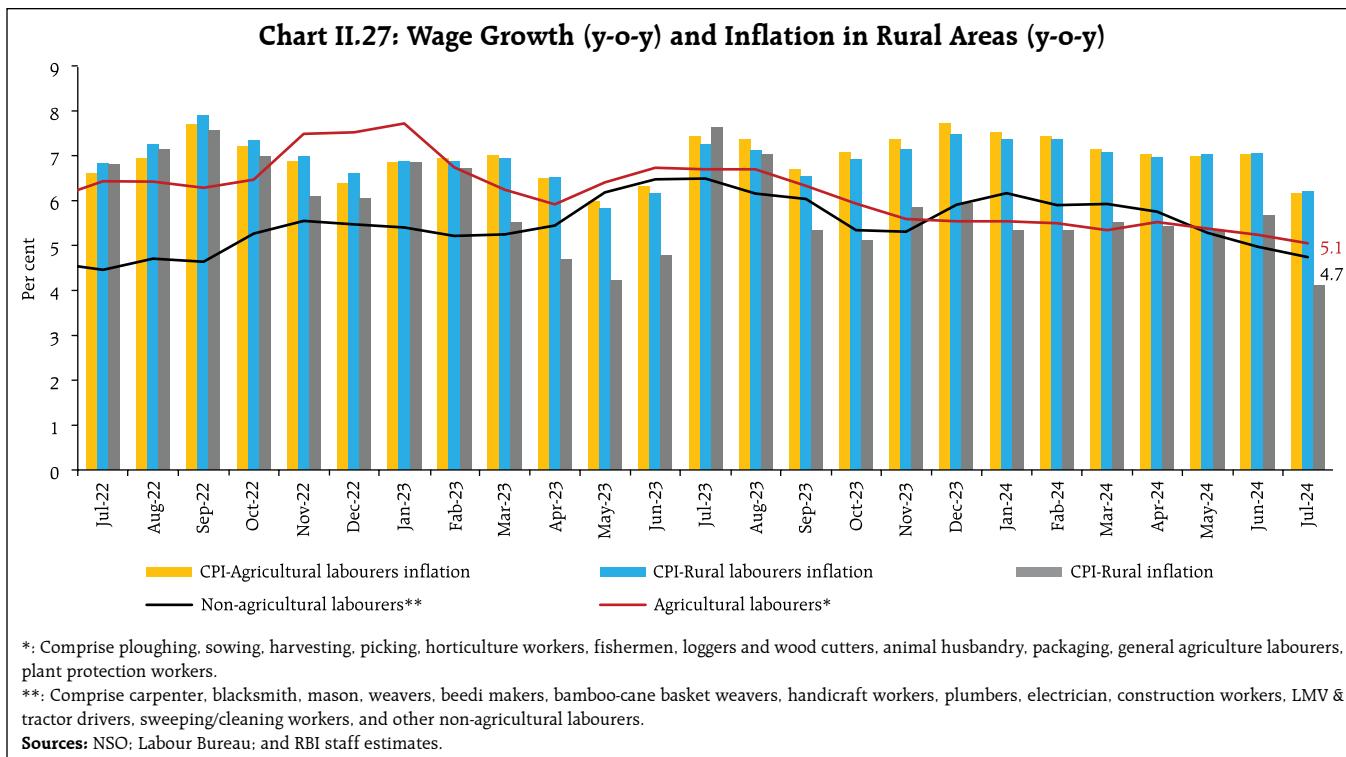
II.3 Costs

Costs, as measured by WPI inflation in industrial raw materials and farm inputs, remained subdued during April-August 2024. While the prices of farm inputs remained in deflation, those of industrial inputs entered positive territory in June 2024, but turned negative again in August, mirroring movements in international commodity prices (Chart II.26). Prices of industrial inputs such as high-speed diesel (HSD), bitumen and petroleum coke were mostly in deflation during April-August 2024. The other contributory factors were non-food articles, particularly raw cotton and oilseeds, whose prices also recorded deflation during this period. Minerals price inflation, however, remained positive during April-August 2024, primarily driven by iron ore, due to increased global demand. Farm input prices remained in deflation, driven by those of high-speed diesel (HSD), electricity, and fodder and pesticides.

Moving from input costs to wage costs, nominal rural wage growth (y-o-y) decelerated to 4.9 per cent in July 2024 from 5.7 per cent in March 2024 driven by both non-agricultural and agricultural occupations



(Chart II.27). On a month-on-month basis, however, both agricultural and non-agricultural wages sustained a steady growth of around 0.45 per cent and 0.4 per cent during the same period, respectively. The



month-on-month increase in agricultural wage was mainly driven by ploughing/tilling workers, followed by loggers and woodcutters, plant protection workers, and general agricultural labourers, while the increase in non-agricultural wages was on account of masons, electricians, and light motor vehicle and tractor drivers in the rural sector. Despite the deceleration in nominal rural wages, real rural wages (deflated using CPI rural inflation) recorded a marginal growth of 0.8 per cent in July from 0.2 per cent in March 2024, primarily reflecting the sharp fall in CPI rural inflation in July.

In the organised sector, staff cost growth (y-o-y) decelerated for manufacturing firms among listed companies in Q1:2024-25, while it remained steady for services firms. The share of staff cost in the value of production increased for manufacturing but stayed stable for services in Q1 (Chart II.28).

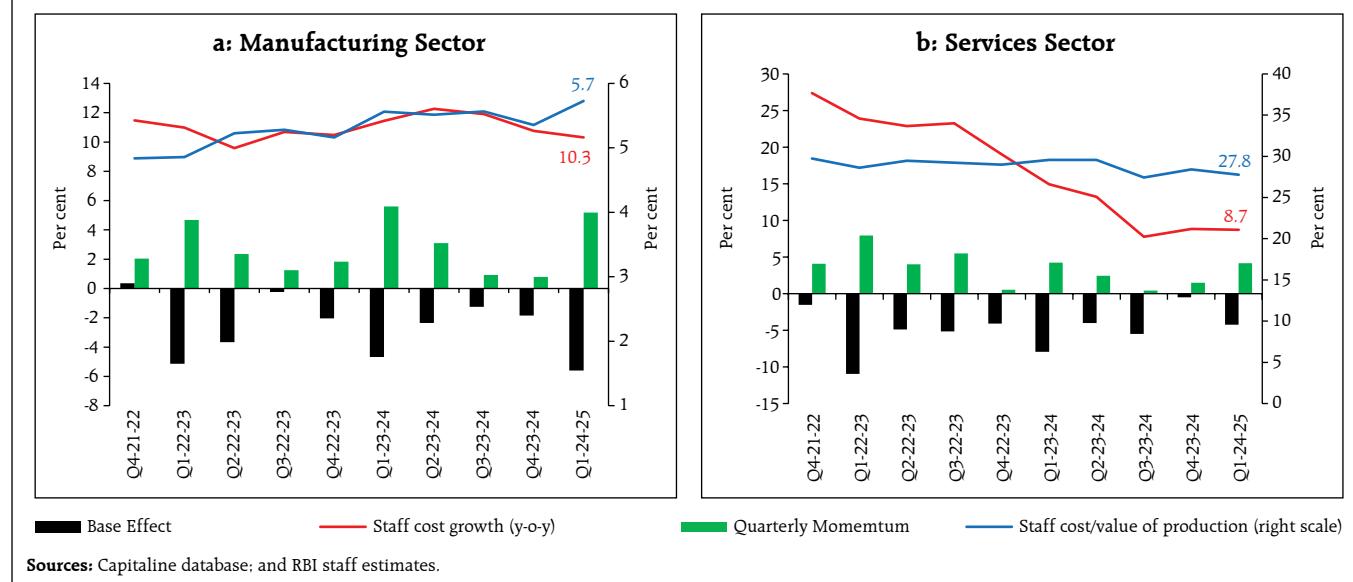
Firms polled in the Reserve Bank's enterprise surveys¹⁶ indicate that in Q3:2024-25, the cost of inputs are expected to soften for manufacturing while remaining elevated for services and infrastructure sectors. On the other hand, selling

prices are expected to soften across manufacturing, services and infrastructure sectors in Q3:2024-25. The pace of salary outgo is expected to moderate for services and infrastructure in Q3:2024-25 while it is anticipated to rise for manufacturing (Chart II.29).

One year ahead business inflation expectations¹⁷ declined to 4.05 per cent in August 2024 from 4.21 per cent in the previous month on account of moderation in cost pressures with 'somewhat less than normal' or lower sales and subdued profit margin expectations.

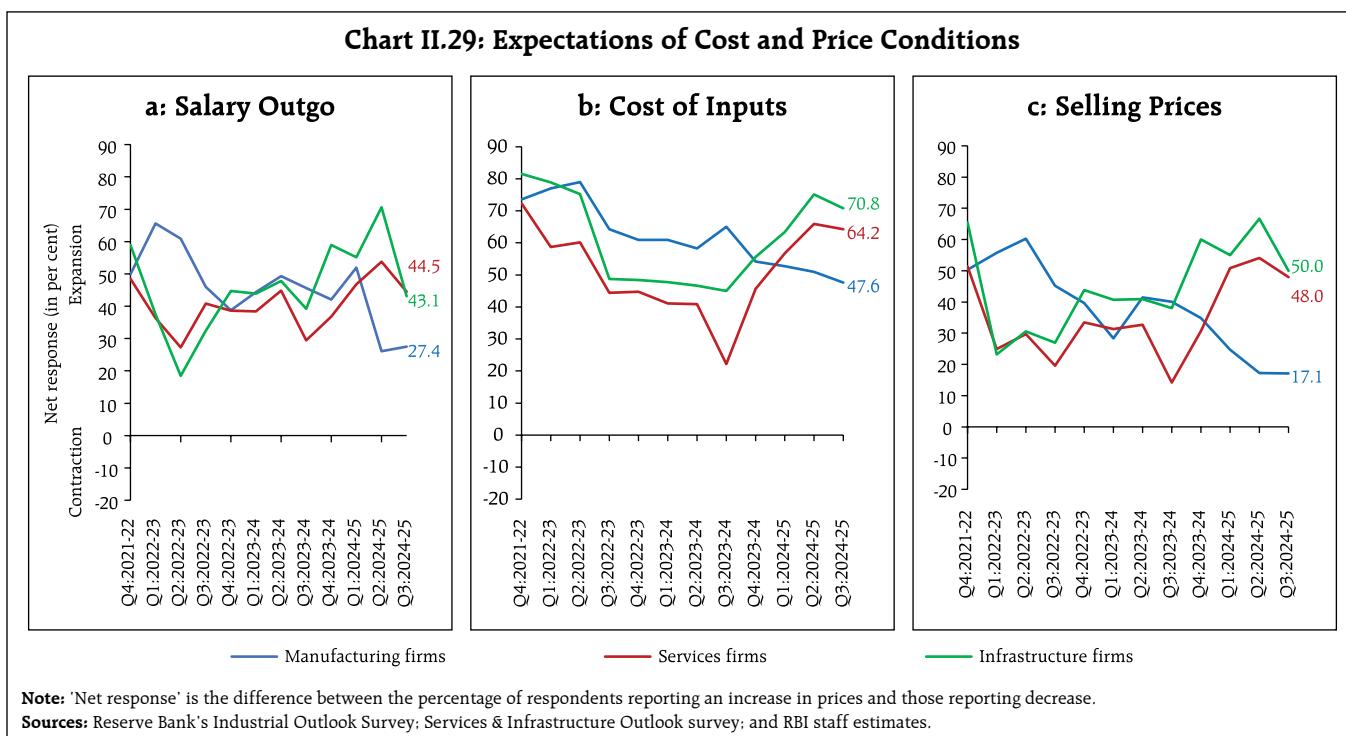
As per the purchasing managers' index (PMI), manufacturing firms, which had been reporting increasing input price pressures since March 2024, pointed to a moderation in the rate of input cost expansion during August-September 2024. In tandem with input prices, pace of output price increases across manufacturing also rose before decelerating in September 2024. This turned the input-output price gap for manufacturers marginally positive in September 2024. In case of services sector, the rate of expansion in input costs remained elevated during March-May 2024, before it saw a softening

Chart II.28: Staff Cost in Manufacturing and Services



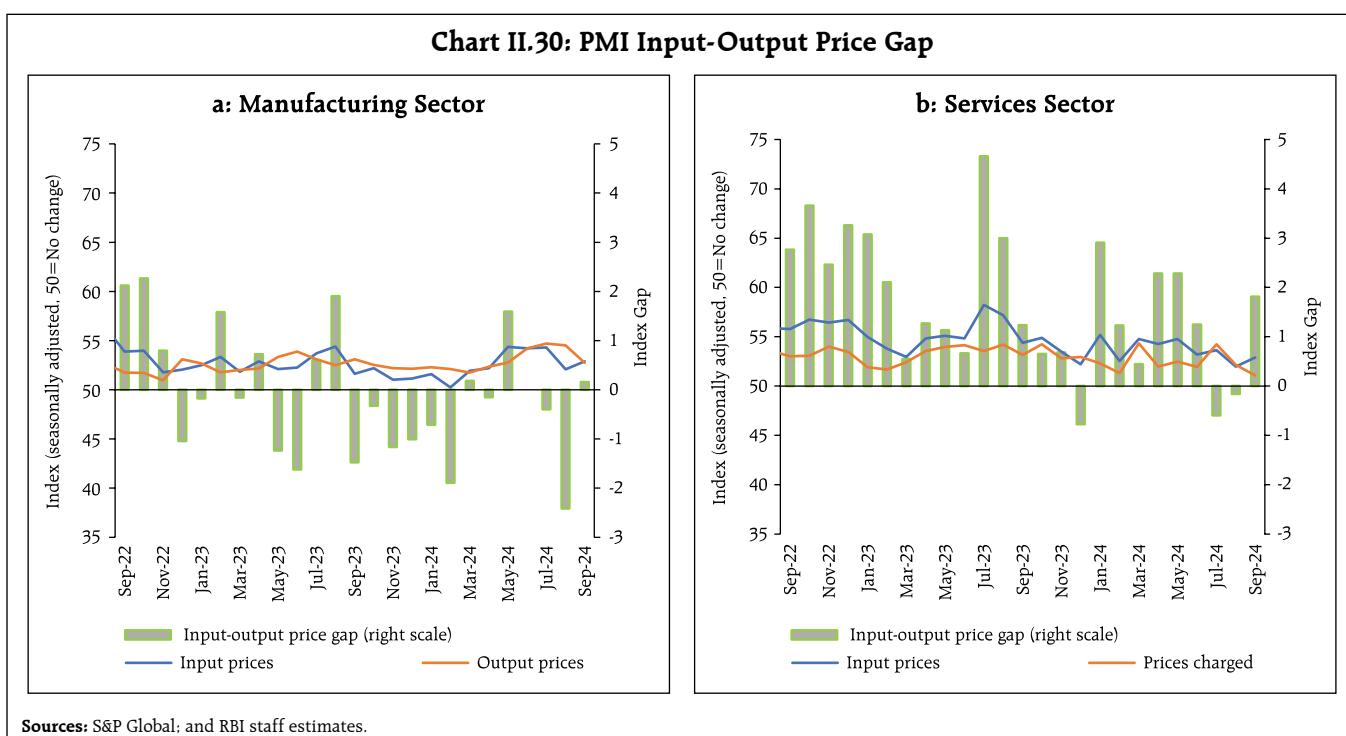
¹⁶ Industrial Outlook Survey; and Services and Infrastructure Outlook Survey.

¹⁷ Based on the monthly Business Inflation Expectations Survey (BIES) of the Indian Institute of Management, Ahmedabad. The survey polls a panel of business leaders primarily from the manufacturing sector about their inflation expectations in the short and medium term.



during June-September. The prices charged across services firms, which had been lagging behind input price increases during March-June 2024, quickened in July 2024 on the back of pent up pass-through of

rising labour and material costs. Subsequently, with cost pressures moderating, the rate of expansion in prices charged receded in August-September 2024 (Chart II.30).



II.4 Conclusion

The disinflation process in H1 of 2024-25 so far (April-August) has been characterised by interruptions on account of persistent food inflation pressures from adverse weather events, despite steady softening of core inflation. Food inflation could see an easing in H2 of 2024-25, benefiting from normal monsoons and improvements in agricultural output on the back of a likely good *kharif* production and healthy *rabi* sowing, although occurrences of adverse weather events and recent uptick in global food prices, if sustained, could impinge upon the food inflation outlook. Core inflation pressures have remained

muted with the continuing impact of disinflationary monetary policy stance and softening bias in international commodity prices. Recent pickup in global metals and crude oil prices and uncertainties on account of geopolitical developments need to be monitored. In the context of the apparent rigidities to the last mile of disinflation in the recent period, a steadfast commitment to alignment of inflation with the target is imperative to preserve and build upon the credibility gains in monetary policy achieved during the pre- and post-COVID flexible inflating targeting (FIT) period. A durable low inflation environment will strengthen the foundations of a sustained high growth trajectory.

III. Demand and Output

Domestic economic activity in H1:2024-25 was supported by a strong performance from the two main drivers of aggregate demand – private consumption and investment activity. Improved agriculture prospects, sustained buoyancy in services, consumer and business optimism, government's continued thrust on capex, and healthy balance sheets of banks and corporates brighten the outlook. Geopolitical tensions, geo-economic fragmentation, unseasonal rains and weather disturbances, and volatility in financial markets pose downside risks.

Domestic economic activity remained resilient in H1:2024-25. Private consumption rebounded, driven by the turnaround in rural demand and sustained urban demand. Investment activity held firm despite lower government capex. Government consumption contracted (year-on-year, y-o-y) during Q1:2024-25. On the supply side, industry and services remained

buoyant with construction, education, health and other services supporting growth.

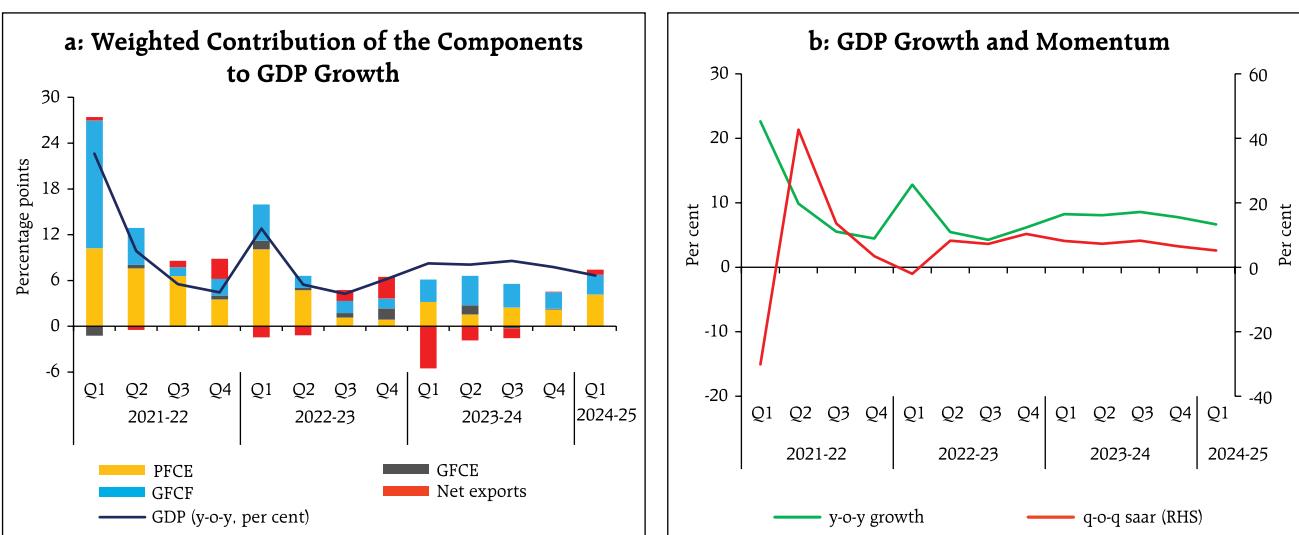
III.1 Aggregate Demand

Aggregate demand conditions witnessed some moderation as real gross domestic product (GDP) growth decelerated to 6.7 per cent (y-o-y) in Q1:2024-25 from 7.8 per cent in the previous quarter (Table III.1 and Chart III.1). The momentum of GDP – quarter-on-quarter (q-o-q) seasonally adjusted annualised growth rate (saar) – slowed down in relation to the previous quarter (Chart III.1b).

GDP Projections versus Actual Outcomes

The Monetary Policy Report (MPR) of April 2024 had projected real GDP growth at 7.1 per cent for Q1:2024-25. Actual growth turned out to be lower, mainly on account of lower government consumption expenditure as election-related restrictions were in place (Chart III.2).

Chart III.1: GDP Growth and its Constituents



Note: saar – Seasonally adjusted annualised rate.

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

Table III.1: Real GDP Growth

(y-o-y, per cent)

Item	2022-23	2023-24	Weighted Contribution*		2022-23				2023-24				2024-25
	(FRE)	(PE)	2022-23	2023-24	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Private final consumption expenditure	6.8	4.0	3.9	2.3	18.5	8.2	1.8	1.5	5.5	2.6	4.0	4.0	7.4
Government final consumption expenditure	9.0	2.5	0.9	0.2	9.8	3.4	7.1	13.9	-0.1	14.0	-3.2	0.9	-0.2
Gross fixed capital formation	6.6	9.0	2.2	3.0	13.9	4.7	5.0	3.8	8.5	11.6	9.7	6.5	7.5
Exports	13.4	2.6	3.0	0.6	19.1	11.7	10.9	12.4	-6.6	5.0	3.4	8.1	8.7
Imports	10.6	10.9	2.5	2.7	26.1	16.1	4.1	-0.4	15.2	11.6	8.7	8.3	4.4
GDP at market prices	7.0	8.2	7.0	8.2	12.8	5.5	4.3	6.2	8.2	8.1	8.6	7.8	6.7

Notes: *: Component-wise contributions to growth do not add up to GDP growth because change in stocks, valuables and discrepancies are not included.

FRE: First revised estimates; PE: Provisional estimates.

Sources: NSO; and RBI staff estimates.

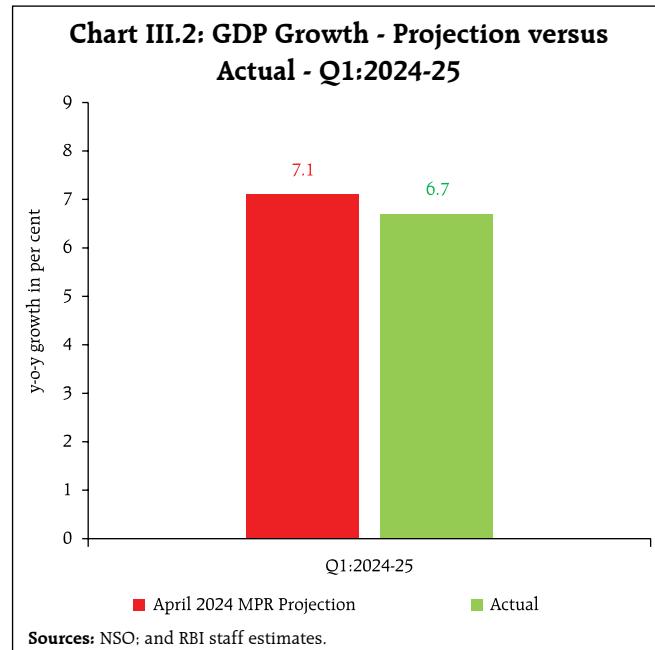
III.1.1 Private Final Consumption Expenditure

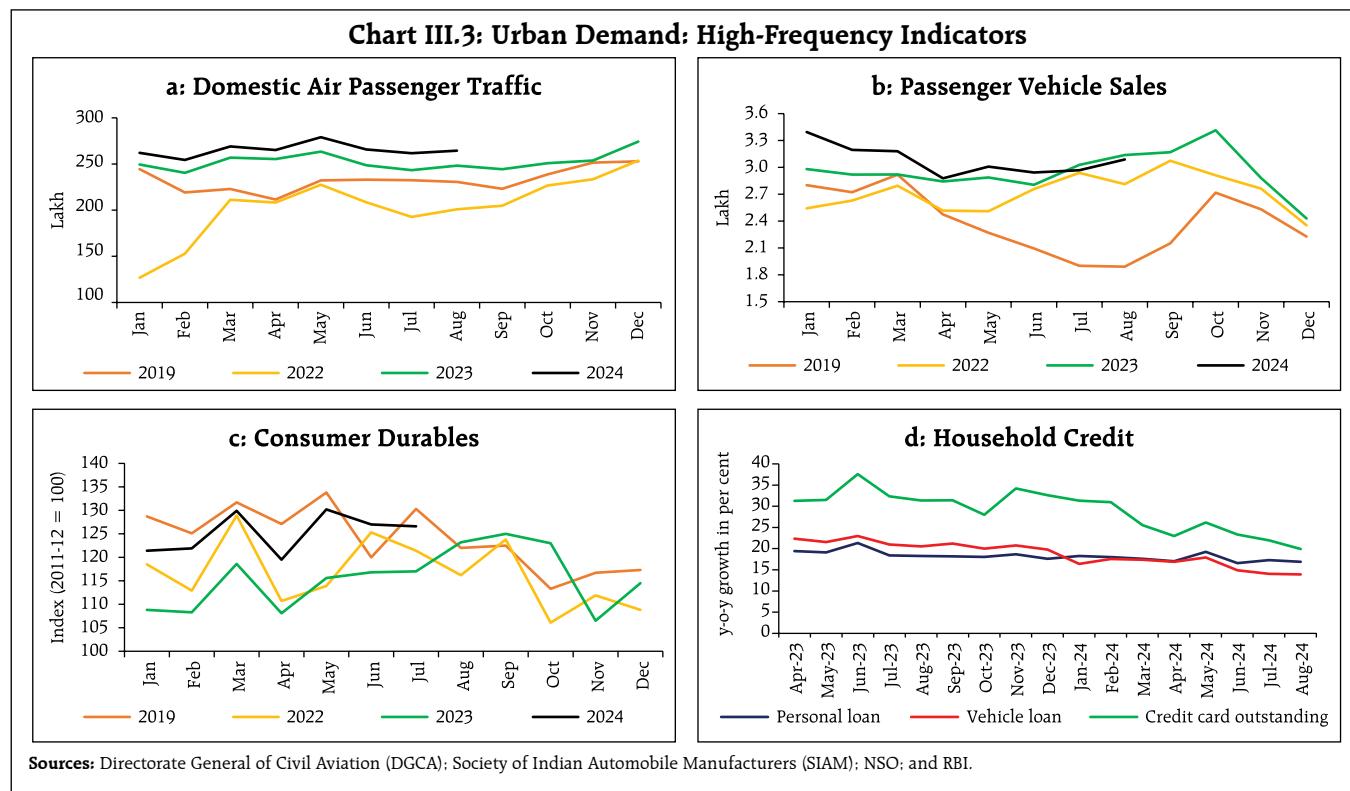
Private final consumption expenditure (PFCE) – the mainstay of aggregate demand – rebounded strongly, growing at 7.4 per cent in Q1:2024-25 and contributing 4.2 percentage points to overall GDP growth. Amongst the high frequency indicators (HFIs) of urban consumption, domestic air passenger traffic rose by 5.6 per cent in Q1:2024-25 and sustained its momentum in July-August 2024. Passenger vehicle sales posted positive y-o-y growth in Q1:2024-25 but contracted in July-August 2024. The index of

industrial production (IIP) for consumer durables was robust at 10.6 per cent in Q1:2024-25 and 8.2 per cent in July 2024, indicating steady expansion in discretionary spending in urban areas (Chart III.3). As per the latest round of the Reserve Bank's consumer confidence survey, consumer confidence (current situation index) improved in September 2024, along with an improvement in households' optimism on one year ahead economic conditions. Bank credit to households grew in double digits, despite the slowdown in unsecured personal loans and credit cards outstanding that set in after the November 16, 2023 measures (Chart III.3d).

Rural demand is showing a gradual pickup. While motorcycle sales continued to record upbeat growth in April-August 2024, tractor sales expanded in June-July 2024 (Chart III.4). The demand for work under the *Mahatma Gandhi National Rural Employment Guarantee Act* (MGNREGA) contracted by 16.6 per cent in Q2:2024-25, reflecting an improvement in farm sector employment. Spending on fast moving consumer goods (FMCG) in the rural areas bodes well for rural demand. The positive outlook for agriculture, supported by above normal south-west monsoon (SWM) rainfall, higher cumulative *kharif* sowing and improved reservoir levels augurs well for sustaining the revival in rural demand.

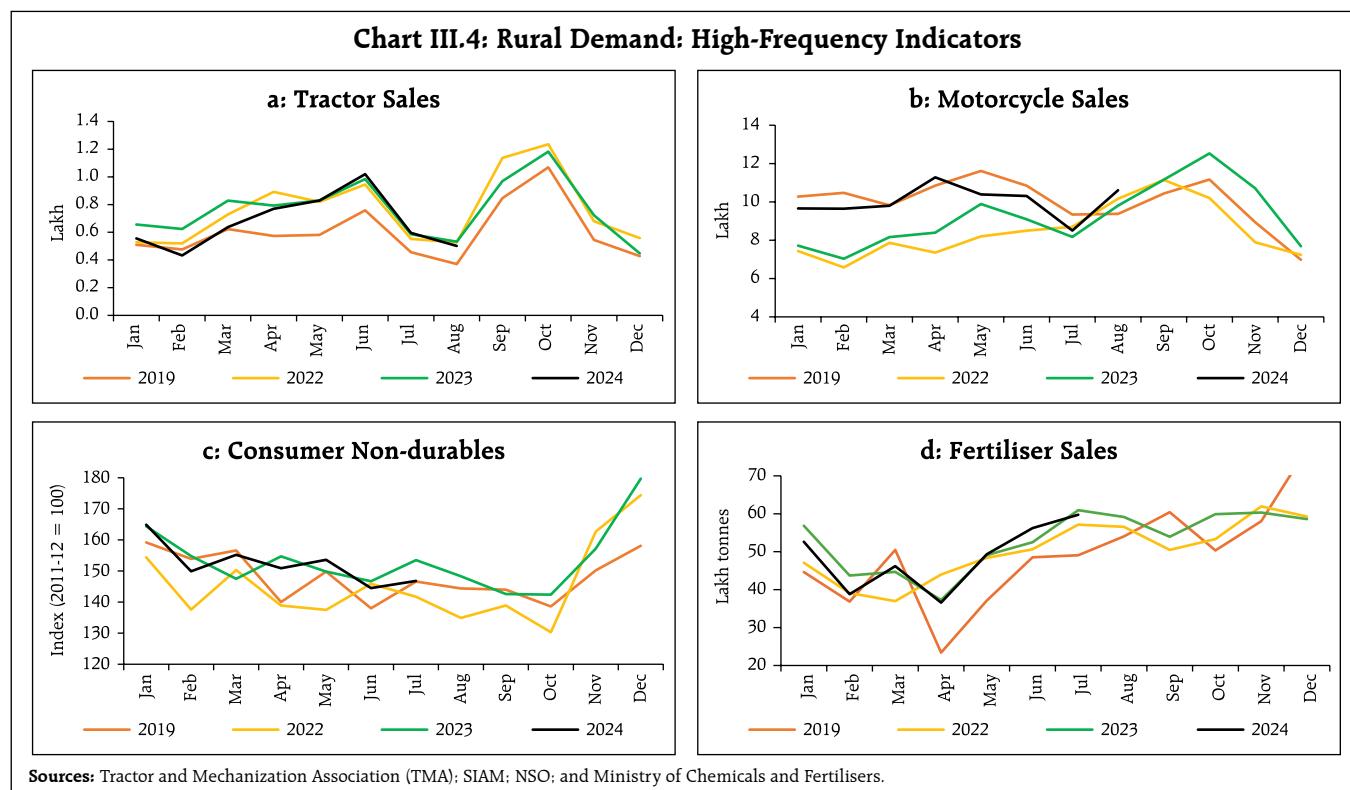
An examination of macroeconomic drivers of item group-wise consumption reveals that income effect





boosts consumption demand while economic uncertainty dampens it. As consumption of necessary items have lower elasticity of substitution than

discretionary items, they are more insulated from economic uncertainty (Box III.1).



Box III.1: Consumption Switching? Unravelling the Drivers behind Changing Consumption Patterns in India

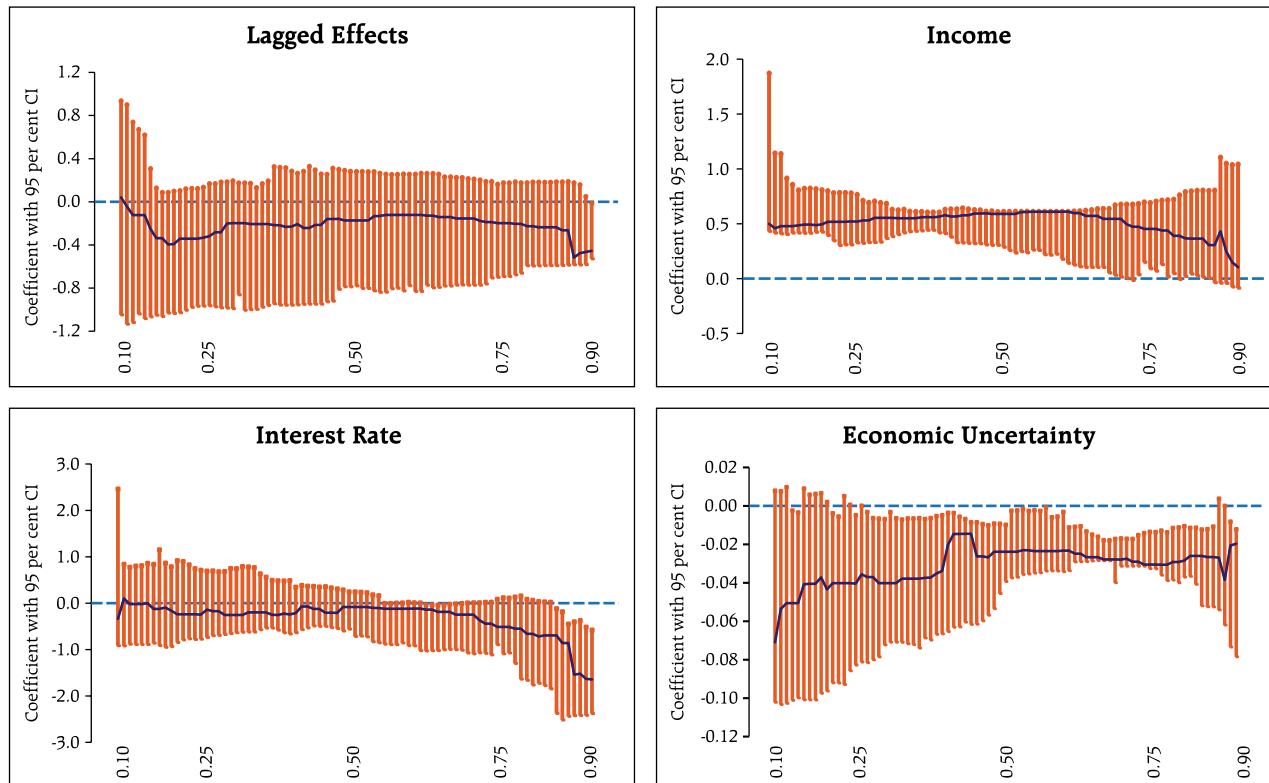
There has been a slowdown in private final consumption expenditure (PFCE) in the post-pandemic period (average growth rate of 5.4 per cent) when compared with the pre-COVID period¹ (average growth of 6.7 per cent). PFCE grew by a meagre 4.0 per cent in 2023-24 as adverse rainfall conditions weakened rural demand. Consumption, however, rebounded with a 7.4 per cent growth in Q1:2024-25. Drawing on the real business cycle literature (Kydland and Prescott, 1982), consumption switching is analysed at the aggregate level using a quantile regression framework, based on the following specification

$$Q_\tau(g_t^C) = \alpha_0^\tau + \alpha_1^\tau g_{t-1}^C + \alpha_2^\tau I_t + \alpha_3^\tau U_t + \alpha_4^\tau g_{t-1}^Y + \eta_t$$

Where for different quantiles (τ), g_t^C is the q-o-q growth of

private consumption, I_t is the short-term interest proxied by weighted average call money rate, U_t is macroeconomic uncertainty [proxied by the economic policy uncertainty (EPU) index by Bloom, Blake and Scott (2016)²] and g_{t-1}^Y is the q-o-q income growth (real GDP growth lagged by 1 quarter). The estimation period is Q1:2012-13 to Q1:2024-25. The findings suggest that higher interest rates hurt consumption growth, and the effect increases in the upper quantiles, i.e., when consumption growth is high. The income effect improves consumption growth, but the impact gradually moderates when consumption growth is high. Economic uncertainty acts as a dampener of consumption growth across all quantiles (Chart III.1.1).

Chart III.1.1: Quantile Regression Coefficient Plot



Notes: Bands around the point estimates are 95 per cent bootstrapped confidence intervals.
X-axis denotes quantiles.

(Contd.)

¹ Pre-COVID period includes Q1:2012-13 to Q4:2019-20.

² Robustness checks are carried out using the economic uncertainty index derived from SPF data by Patra et. al. (2023). Results are in similar lines.

Next, the precautionary motive is linked to consumption switching by looking at consumption growth at a broad commodity level. Following a nested Constant Elasticity of Substitution (CES) approach (Fernandez-Villaverde and Guerron-Quintana, 2020), intra-temporal choices of households are governed by elasticity of substitution among the necessary and discretionary group of commodities *i.e.*

$$C_t^N(j) = \left(\frac{P_t^N(j)}{P_t^N}\right)^{-\sigma} \times \alpha C_t \text{ (for essentials) and}$$

$$C_t^D(j) = \left(\frac{P_t^D(j)}{P_t^D}\right)^{-\delta} \times \beta C_t \text{ (for discretionary)}$$

Following this, the panel regression specification can be generalised as

$$C_t(j) = \theta_0 C_{t-1}(j) + \theta_1 (\pi_t(j) - \pi_t) \times 1_{ND} + \theta_2 X_t \times 1_{ND} + \gamma_j + \epsilon_t(j)$$

where $C_t(j)$ the consumption of j -th item in consumption basket, 1_{ND} is the indicator variable for necessary/discretionary items³ within consumption basket. $(\pi_t(j) - \pi_t)$ is the inflation differentials between item group j and headline inflation. X_t are the controls for macroeconomic conditions, which include GDP [or Gross National Disposable Income (GNDI)] growth (lagged by one year), interest rate, and macroeconomic uncertainty. γ_j is the commodity group fixed effects to absorb heterogeneity.

Using annual data for the period 2004-23⁴ and group-level inflation, the effects of the drivers are derived using dynamic panel estimates. The estimates show that the elasticity of substitution among the necessary items is lower than for discretionary items. The interest rate adversely impacts the consumption of discretionary items. Income effects strengthen the consumption of all items, and the effect is marginally higher on discretionary consumption items. Policy uncertainty dampens discretionary consumption demand (Table III.1.1).

Accommodative monetary policy helped offset the adverse effects of higher economic uncertainty, which led to lower consumption of discretionary items in the post-pandemic period, while essential spending remained largely unaffected. With the ongoing economic recovery,

discretionary spending is expected to recover steadily as income strengthens. A watchful monetary policy restricts the spillover of price pressure to discretionary spending, facilitating a rebound of aggregate demand.

Table III.1.1: Dynamic Panel Estimates of Drivers of Consumption Growth

	PFCE (1)	PFCE (2)	PFCE (3)	PFCE (4)
PFCE(-1)	-0.020* (0.011)	-0.020* (0.012)	-0.079* (0.039)	-0.079* (0.041)
$(\pi_i - \pi) \times 1_D$	-0.634** (0.257)	-0.634*** (0.195)	-0.674*** (0.256)	-0.674** (0.267)
$(\pi_i - \pi) \times 1_N$	-0.251 (0.161)	-0.251 (0.290)	-0.124 (0.163)	-0.124 (0.319)
Interest Rate (-1) $\times 1_D$	-1.286*** (0.467)	-1.286* (762)	-0.272 (0.508)	-0.272 (580)
Interest Rate (-1) $\times 1_N$	-0.076 (0.608)	-0.076 (0.282)	0.335 (0.645)	0.335 (0.270)
GDP (-1) $\times 1_D$	1.823*** (0.238)	1.823*** (0.519)		
GDP (-1) $\times 1_N$	1.059*** (0.292)	1.059*** (0.407)		
GNDI (-1) $\times 1_D$			1.257*** (0.166)	1.257*** (0.299)
GNDI (-1) $\times 1_N$			0.712*** (0.217)	0.712* (0.364)
Uncertainty $\times 1_D$	-0.025 (0.019)	-0.025** (0.013)	-0.037** (0.018)	-0.037*** (0.011)
Uncertainty $\times 1_N$	-0.001 (0.026)	-0.001 (0.005)	-0.017 (0.026)	-0.017 (0.014)
	-	Robust	-	Robust

Standard errors in parentheses

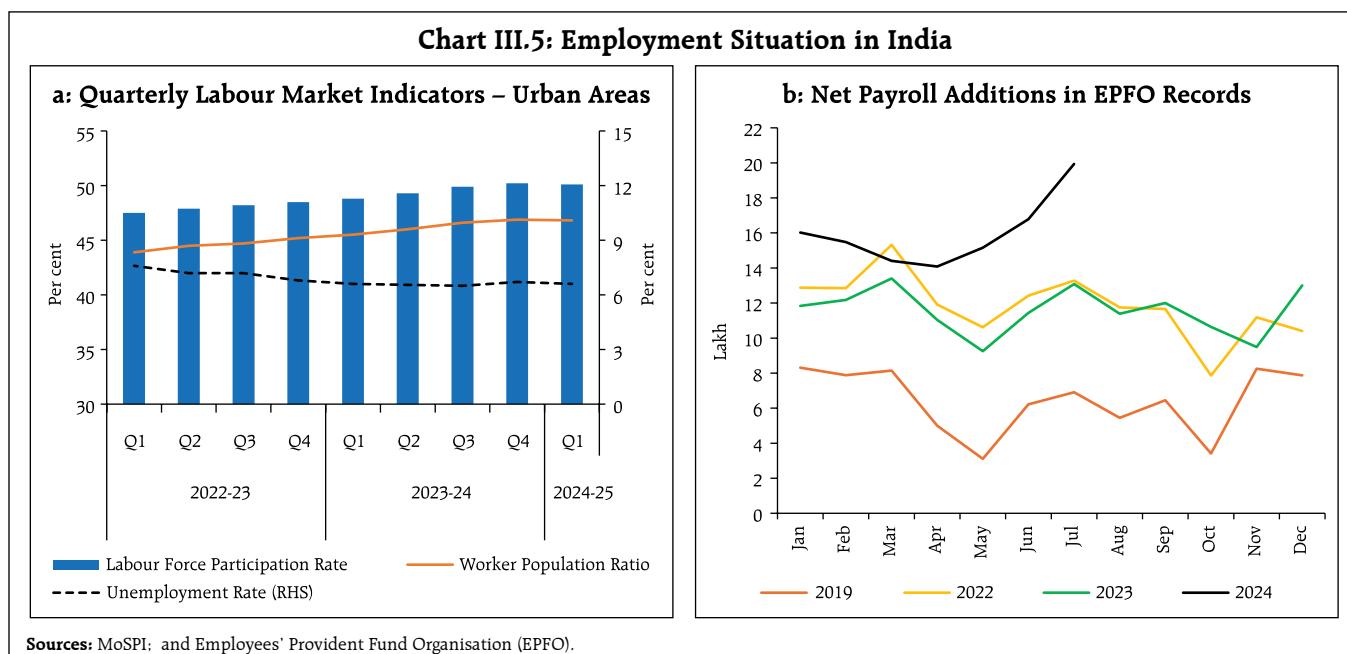
* p < 0.10, ** p < 0.05, *** p < 0.01

References:

- Baker, S. R., N. Bloom, and S. J. Davis (2016). Measuring Economic Policy Uncertainty, *Quarterly Journal of Economics*, 131(4), 1593-1636.
- Fernandez-Villaverde, Jesus and Pablo A. Guerron-Quintana (2020). Uncertainty Shocks and Business Cycle Research. *Review of Economic Dynamics*. 37, 118-146.
- Kydland, F. E., and Prescott, E. C. (1982). Time to Build and Aggregate Fluctuations. *Econometrica*, 50(6), 1345–1370.
- Patra, M. D., Mohan R., John J., and Bhattacharya I. (2023). Measuring Uncertainty: An Indian Perspective. *RBI Bulletin*, October, 169-178.

³ Within broad commodity groups, the necessary items are food, clothing, medical and education. The rest, *i.e.*, hotel, housing, furniture, transport, communication, recreation and miscellaneous items, are discretionary in spending type.

⁴ National accounts data of household consumption is available up to 2022-23.



Employment conditions remained robust in Q1:2024-25, though labour force participation rate (LFPR) and employment rate (ER) under the Urban Periodic Labour Force Survey (PLFS) moderated marginally relative to the previous quarter. However, both indicators recorded the second highest reading since the survey's inception. The unemployment rate in urban areas declined during Q1 to 6.6 per cent, one of the lowest in the PLFS series (Chart III.5a). The Employees' Provident Fund Organisation (EPFO) payrolls data also point to strengthening of formal employment as net payroll additions rose by 47.2 per cent y-o-y in April-July 2024. The net payroll additions were higher than in previous years (Chart III.5b).

III.1.2 Gross Fixed Capital Formation

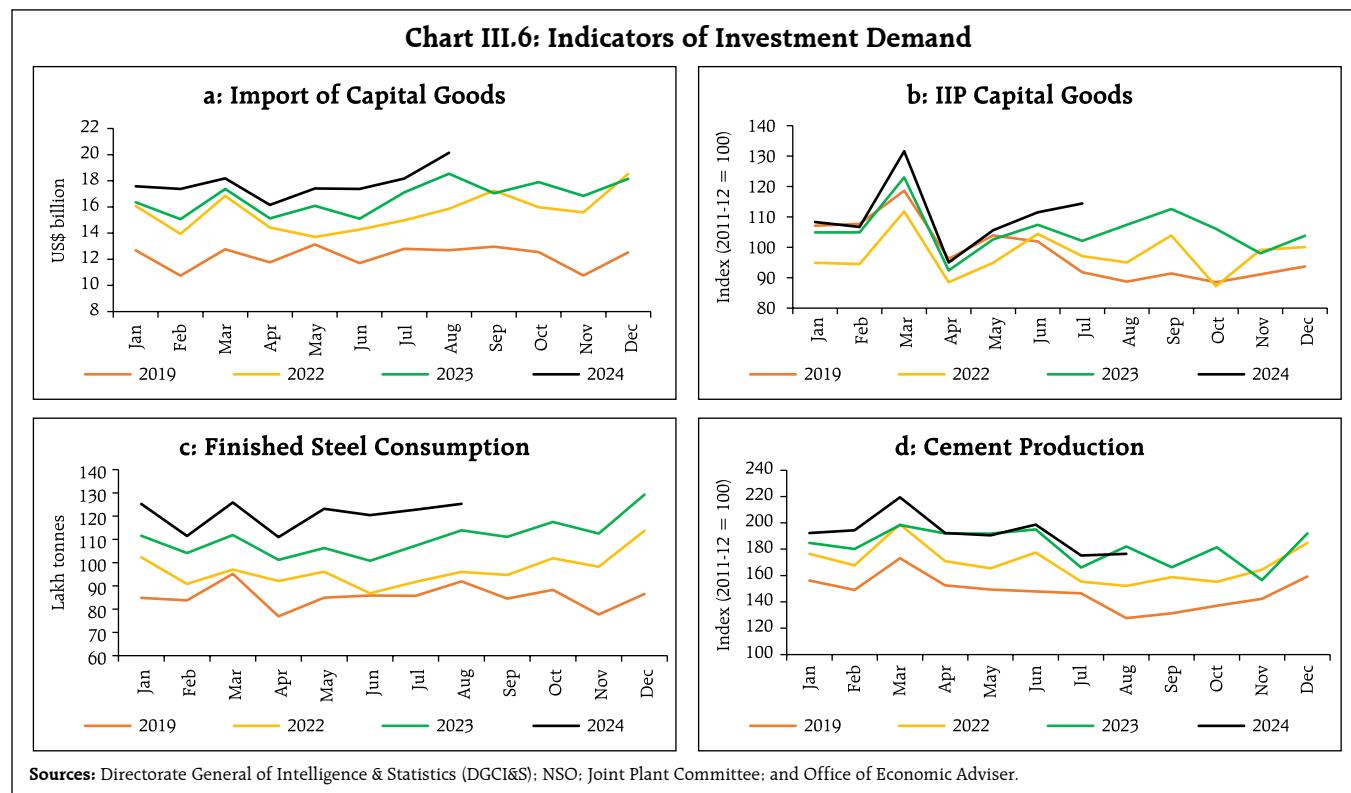
Gross fixed capital formation (GFCF) expanded by 7.5 per cent in Q1:2024-25 despite contraction in government capex, reflecting robust private sector investment. The share of GFCF in GDP at 34.8 per cent in Q1, is the highest since Q2:2012-13. Amongst the key underlying indicators, import of

capital goods expanded strongly during April-August, led by electronic goods, transport equipment and electrical and non-electrical machinery (Chart III.6a). Construction activity gathered momentum on the back of an ebullient housing sector. Among the coincident indicators of construction activity, steel consumption recorded double digit growth in April-August 2024, but cement production posted a modest expansion during April-August mainly due to the heat wave in April and monsoon rains since June 2024 (Chart III.6c and d).

Capacity utilisation (CU) in the manufacturing sector⁵ recorded a seasonal dip to 74.0 per cent in Q1:2024-25 from 76.8 per cent in Q4:2023-24. Seasonally adjusted capacity utilisation improved from 74.6 to 75.8 and is well above the long-term average of 73.8 per cent⁶ (Chart III.7). Stretched capacity utilisation necessitates new capacity additions to keep pace with underlying domestic demand. Funds raised for capex by private corporates during Q1:2024-25 through the different channels (banks/FIs, ECBs, IPOs) remained strong, indicating upbeat investment sentiment.

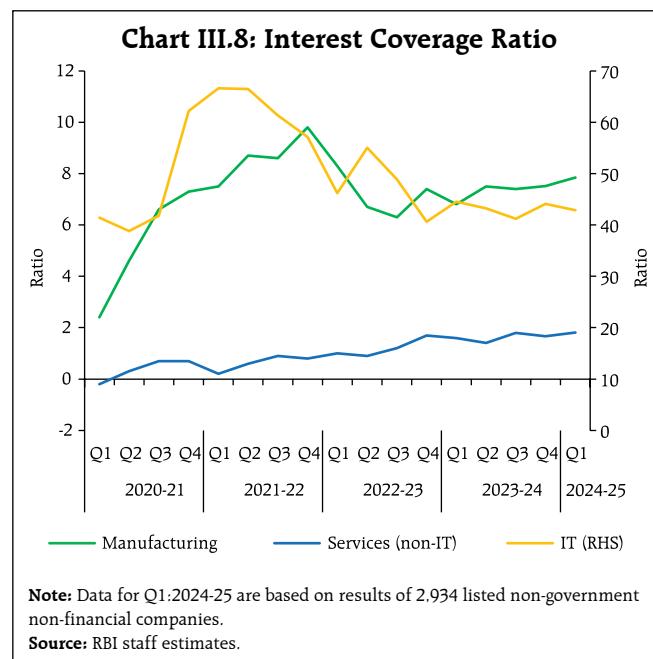
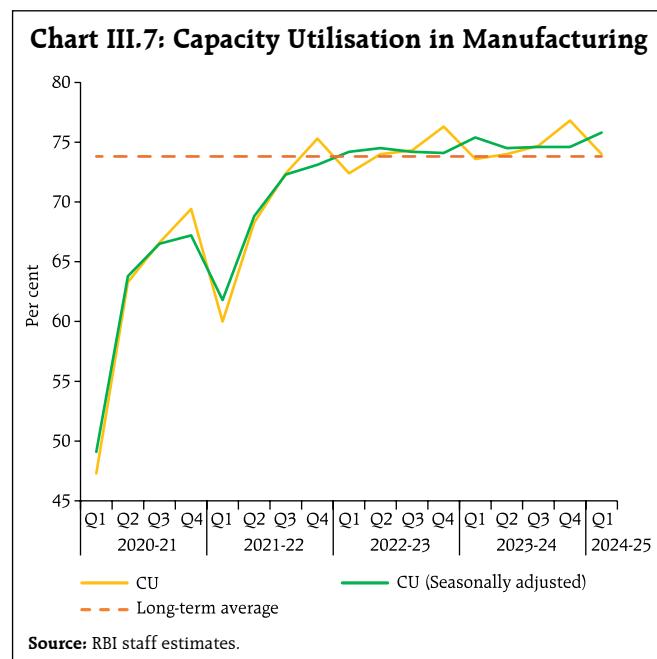
⁵ Based on RBI's survey of order books, inventories and capacity utilisation.

⁶ Long term average is for the period Q1:2008-09 to Q1:2024-25 excluding Q1:2020-21.

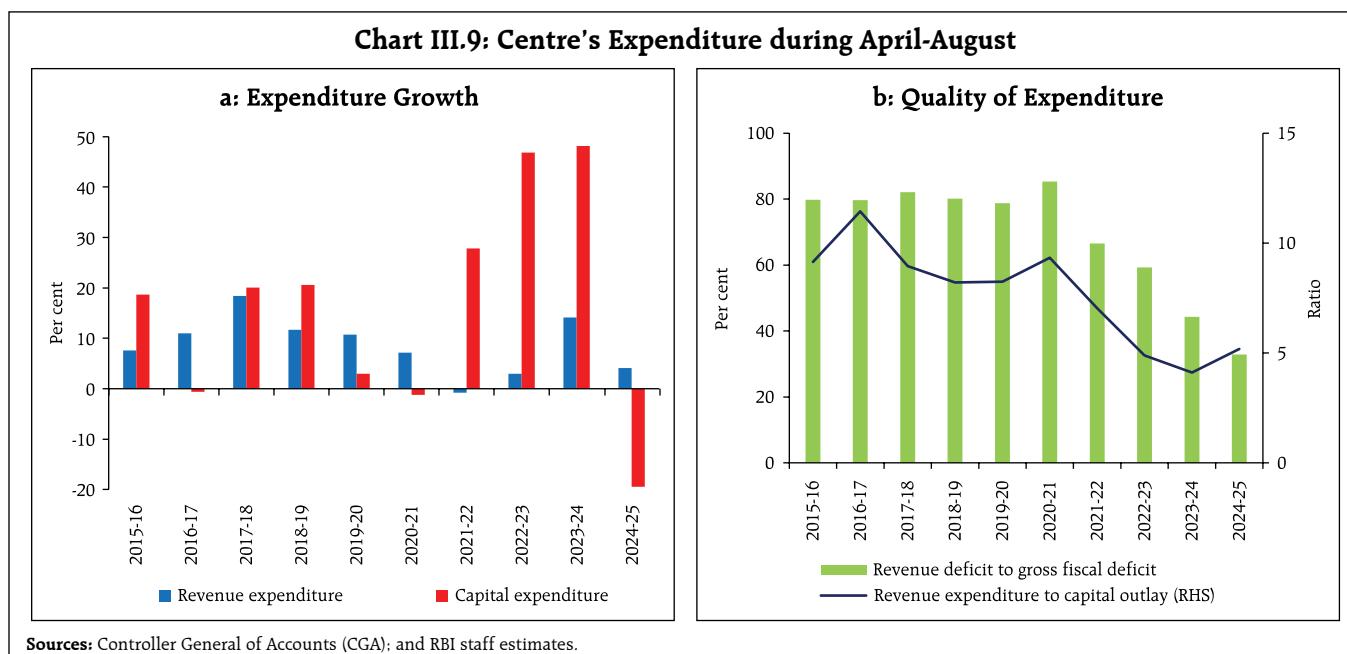


The interest coverage ratio (ICR)⁷ of listed private manufacturing companies improved in Q1:2024-25, indicating comfortable debt servicing capacity and conducive conditions for expansion

in capacity. Within the services sector, the ICR of IT companies remained stable while that of non-IT companies stayed above the threshold level of unity (Chart III.8).



⁷ Interest coverage ratio is the ratio of earnings before interest and taxes (EBIT) to interest expenses and measures a company's capacity to make interest payments on its debt. The minimum value for a viable ICR is 1.



III.1.3 Government Consumption

Government final consumption expenditure (GFCE) contracted by 0.2 per cent (y-o-y) in Q1:2024-25, pulling down overall GDP growth (Table III.1). The Government of India's (GoI) revenue expenditure excluding interest payments and major subsidies registered a modest increase of 3.1 per cent (y-o-y) during April-August 2024, whereas the capital expenditure contracted by 19.5 per cent during the same period⁸ (Chart III.9a). The revenue expenditure to capital outlay (RECO) ratio at 5.2 in April-August (4.1 a year ago) suggests some moderation in expenditure quality during the period. However, revenue deficit as per cent of gross fiscal deficit improved to 32.9 during the period (44.2 per cent a year ago) [Chart III.9b].

The Union Budget for 2024-25 reiterated the commitment towards fiscal prudence by budgeting a gross fiscal deficit (GFD) of 4.9 per cent of GDP, a drop of 66 basis points from the provisional actuals of 2023-24. This is in line with the medium-term target of achieving a GFD of less than 4.5 per cent of GDP by 2025-26. The quality of expenditure is budgeted to

improve, with revenue expenditure to capital outlay ratio declining to an all-time low of 4.0. Moreover, capital expenditure is budgeted to increase to a two-decade high of 3.4 per cent of GDP in 2024-25 from 3.2 per cent in provisional actuals of 2023-24, which is expected to support growth during the year.

On the receipts side, the central government's gross tax revenues increased by a 12.1 per cent (y-o-y) during April-August 2024, driven by a rise in income tax revenue. Indirect tax revenue expanded by 10.0 per cent (y-o-y), aided by goods and services tax (GST) collections (centre *plus* states) and customs duty collections. Overall, the robust tax collection is reflective of buoyant economy and effective enforcement by the tax authorities (Chart III.10). Custom duty receipts recorded a robust y-o-y increase of 12.9 per cent, whereas union excise duties grew by 4.2 per cent (y-o-y). Overall, net tax revenue of the central government increased by 8.7 per cent during April-August 2024 (Table III.2).

Non-tax revenue receipts recorded a growth of 59.6 per cent primarily on the back of a surplus transfer of ₹2.1 lakh crore from the Reserve Bank, which was

⁸ There has been a turnaround in Q2:2024-25 (July-August), with GoI's revenue expenditure excluding interest payments and major subsidies, and capital expenditure expanding by 9.6 per cent and 25.8 per cent, respectively.

Table III.2: Central Government's Tax Collections

Item	₹ thousand crore				Per cent			
	BE		Actuals		Per cent to BE		Growth Rate	
	2023-24	2024-25	Apr-Aug 2023	Apr-Aug 2024	Apr-Aug 2023	Apr-Aug 2024	Apr-Aug 2023	Apr-Aug 2024
A. Direct taxes	1,823.3	2,207.0	609.8	695.6	33.4	31.5	26.2	14.1
<i>Of which</i>								
1. Corporation tax	922.7	1,020.0	238.9	224.6	25.9	22.0	15.1	-6.0
2. Income tax	873.0	1,150.0	360.4	452.3	41.3	39.3	35.7	25.5
B. Indirect taxes	1,537.6	1,633.2	579.4	637.1	37.7	39.0	7.8	10.0
<i>Of which</i>								
1. Total GST	960.5	1,066.8	392.7	432.5	40.9	40.5	10.6	10.2
2. Custom duties	233.1	237.7	83.5	94.3	35.8	39.7	27.8	12.9
3. Union excise duties	339.0	324.0	99.8	104.0	29.4	32.1	-12.4	4.2
C. Gross tax revenue	3,360.9	3,840.2	1189.2	1332.7	35.4	34.7	16.5	12.1
D. Assignment to States/UTs	1,021.4	1,247.2	382.5	455.7	37.4	36.5	20.4	19.1
E. Net tax revenue	2,330.6	2,583.5	803.9	873.8	34.5	33.8	14.8	8.7

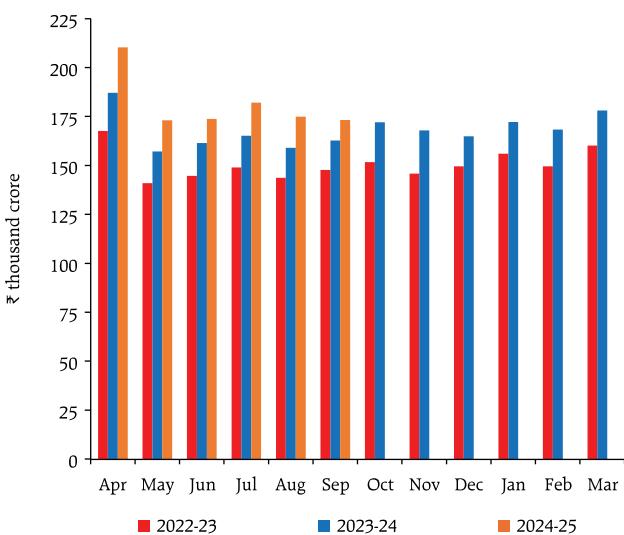
Note: BE: Budget Estimates.

Sources: Union Budget Documents; and CGA.

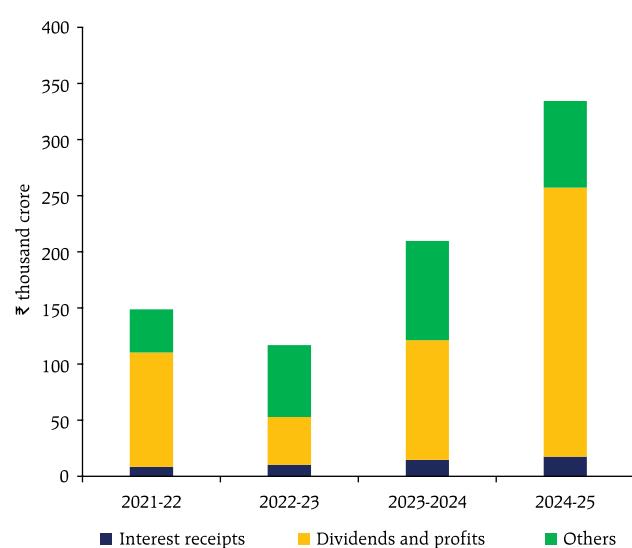
significantly higher than ₹87,416 crore transferred last year (Chart III.11). Accordingly, the central government's gross fiscal deficit (GFD) during April-August 2024 stood at 27.0 per cent of the budget estimates, substantially lower than a year ago.

The consolidated GFD of state governments is budgeted at 3.1 per cent of GDP in 2024-25, marginally

higher than 2.9 per cent in 2023-24 provisional accounts (PA). Growth in revenue receipts is budgeted to accelerate to 19.1 per cent. States' capital spending is expected to rise by 21.0 per cent in 2024-25 on top of 23.4 per cent growth a year ago. The revenue deficit (RD) is expected to remain stable at 0.2 per cent of GDP (Table III.3 and Chart III.12).

Chart III.10: GST Collections (Centre plus States)

Source: Ministry of Finance (MoF).

Chart III.11: Non-tax Revenue - April-August

Source: CGA.

Table III.3: State Government Finances - Key Deficit Indicators

(Per cent to GDP)

	2022-23 (A)	2023-24 (PA)	2024-25 (BE)
Revenue Deficit	0.2	0.2	0.2
Gross Fiscal Deficit	2.7	2.9	3.1
Primary Deficit	1.0	1.4	1.4

Notes: A: Actuals; PA: Provisional Accounts; BE: Budget Estimates.

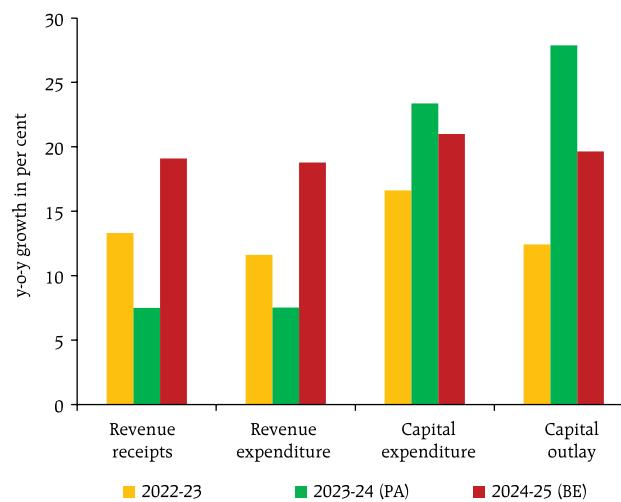
Data pertain to 31 States/UTs.

Sources: Budget Documents of State Governments; and Comptroller and Auditor General (CAG) of India.

As per the data available for April-July 2024-25, states' GFD increased due to higher revenue expenditure and a contraction in grants from the GoI (Chart III.13a). Both tax and non-tax revenues, however, recorded robust growth (Chart III.13b). Meanwhile, on a y-o-y basis, capital expenditure declined. The Union Budget 2024-25 has made a provision of ₹1.5 lakh crore for long-term interest-free loans, which could assist States in boosting their capital spending.

The Union Budget for 2024-25 allocated gross and net market borrowings via dated securities amounting to ₹14.01 lakh crore and ₹11.63 lakh crore, respectively. In the first half of the fiscal year, the central government's gross market borrowings amounted to ₹7.40 lakh crore, accounting for 52.8 per cent of the annual budget estimates (Table III.4). The weighted

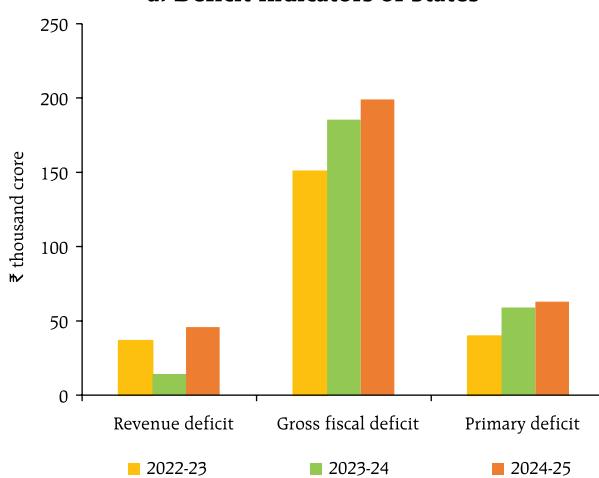
Chart III.12: Receipts and Expenditure of the States/UTs

**Note:** Data pertain to 31 states/UTs.**Sources:** Budget Documents of State Governments; and CAG.

average yield of these issuances during this period was 7.0 per cent, marginally lower than 7.2 per cent recorded in the previous year, while the weighted average maturity elongated to 20.7 years, up from 17.6 years. During H2, the Centre has planned gross market borrowings through dated securities of ₹6.61 lakh crore. Concurrently, States raised ₹3.86 lakh crore in gross market borrowings during H1:2024-25, against an indicative calendar amount of ₹5.18 lakh crore.

Chart III.13: Key Fiscal Performance Indicators (April - July)

a: Deficit Indicators of States

**Note:** Data pertain to 25 States/UTs.**Source:** CAG.

b: Revenue Receipts

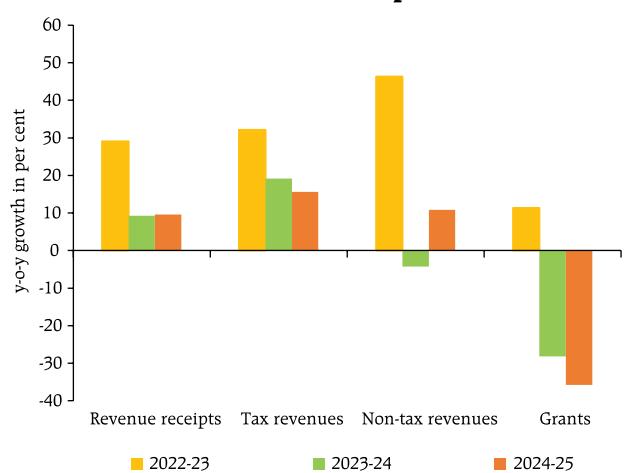


Table III.4: Government Market Borrowings

(₹ crore)

	2022-23			2023-24			2024-25 (April to September 30)		
	Centre	States	Total	Centre	States	Total	Centre	States	Total
Net borrowings	11,08,261	5,18,830	16,27,091	11,80,456	7,17,140	18,97,596	5,74,399	2,63,271	8,37,670
Gross borrowings	14,21,000	7,58,392	21,79,392	15,43,000	10,07,058	25,50,058	7,39,697	3,85,637	11,25,334

Sources: Government of India; and RBI staff estimates.

For Q3:2024-25, the indicative calendar has placed states' gross market borrowings at ₹3.20 lakh crore. To meet the transitory mismatches between receipts and expenditures, the Ways and Means Advances (WMA) limit for the GoI was set at ₹1.5 lakh crore for H1:2024-25; it has been fixed at ₹50,000 crore for H2. Taking into account the recent expenditure trends, the WMA limits for States and Union Territories have been increased to ₹60,118 crore from the previous limit of ₹47,010 crore, effective from July 1, 2024.⁹

III.1.4 External Demand

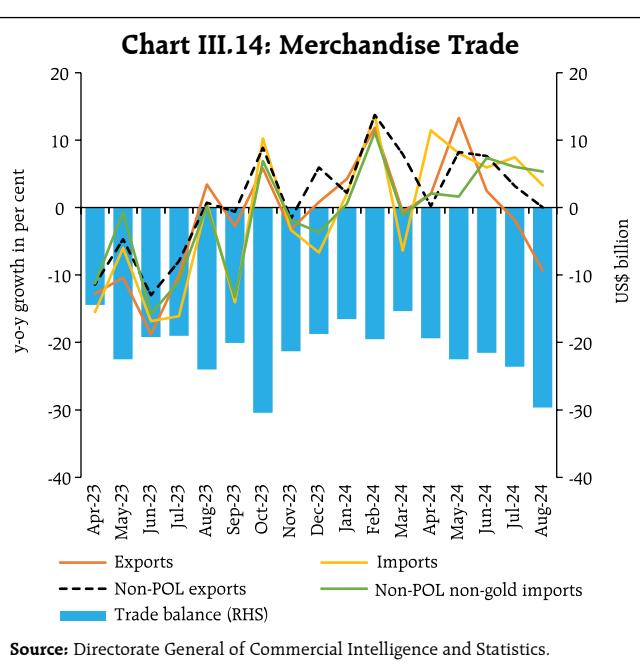
India's external demand revived in H1:2024-25 (April-August), buoyed by a recovery in global trade. Merchandise exports (US\$) expanded by 1.1 per cent (y-o-y) during April-August 2024, while merchandise

imports rose by 7.1 per cent (y-o-y) during this period. Consequently, the merchandise trade deficit widened to US\$ 116.7 billion from US\$ 99.2 billion during the corresponding period a year ago (Chart III.14). As per the estimates released by the NSO, exports of goods and services increased by 8.7 per cent y-o-y in real terms in Q1:2024-25, and imports of goods and services grew by 4.4 per cent.

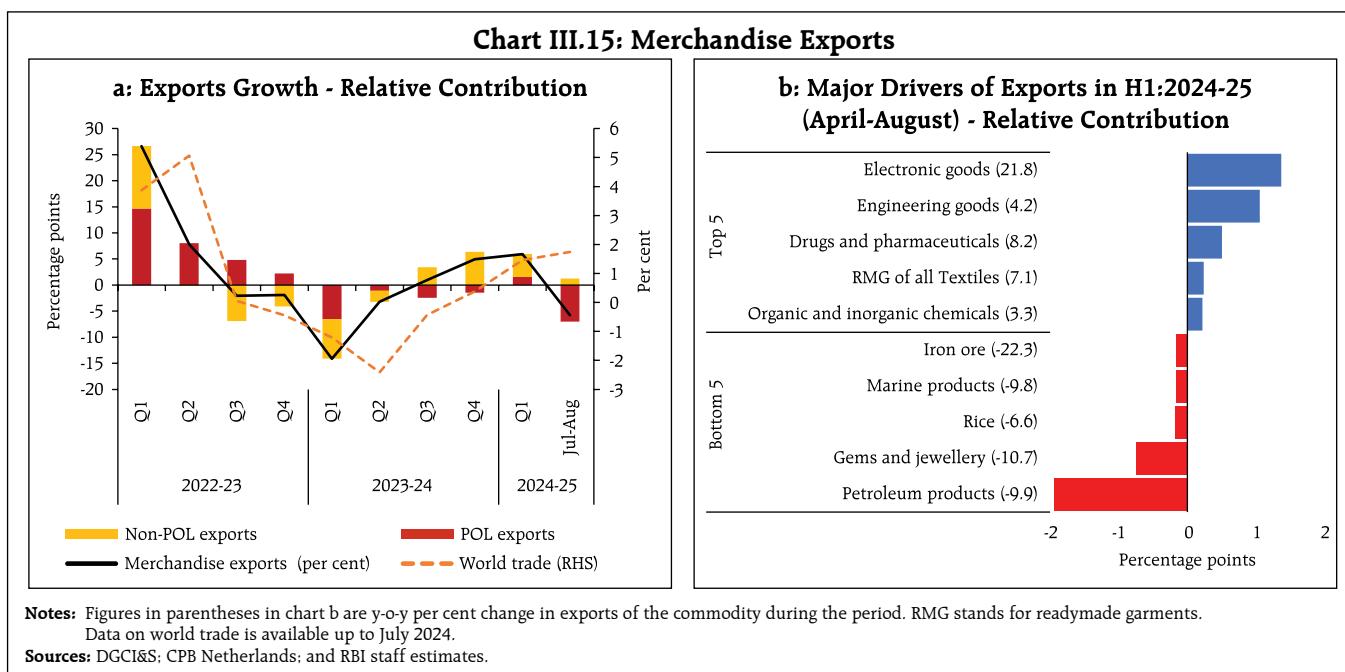
Merchandise exports growth, after experiencing a pickup in Q1:2024-25, contracted in Q2 (up to August). For H1:2024-25 (April-August), the growth in merchandise exports was mainly led by electronic goods, engineering goods, drugs and pharmaceuticals, readymade garments, and organic and inorganic chemicals. On the other hand, petroleum products, gems and jewellery, rice, marine products, and iron ore dragged down exports (Chart III.15).

The expansion in merchandise imports in H1:2024-25 (April-August) was driven by higher imports of petroleum, oil and lubricants (POL), gold and non-POL non-gold commodities such as electronic goods, transport equipment, and silver. Import of pearls, precious and semi-precious stones, chemical material and products, coal, coke and briquettes, fertilisers, and dyeing materials contributed negatively to the overall import growth (Chart III.16). POL imports grew by 9.2 per cent (y-o-y) to US\$ 76.4 billion in H1 (April-August), while non-POL non-gold imports rose by 4.5 per cent (y-o-y) to US\$ 196.2 billion during this period.

Services exports remained buoyant, with a growth of 9.8 per cent y-o-y in Q1:2024-25 and 10.9 per



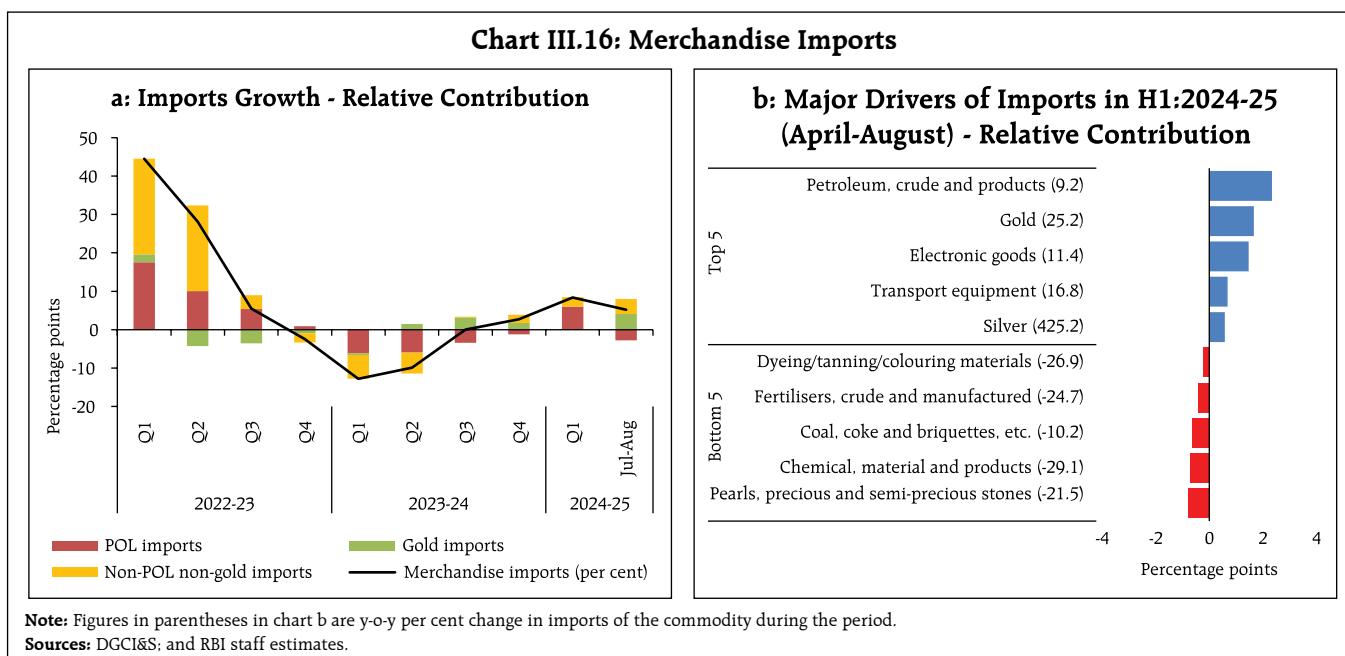
⁹ Based on the recommendations made by the Group constituted by the Reserve Bank and consisting of select State Finance Secretaries.

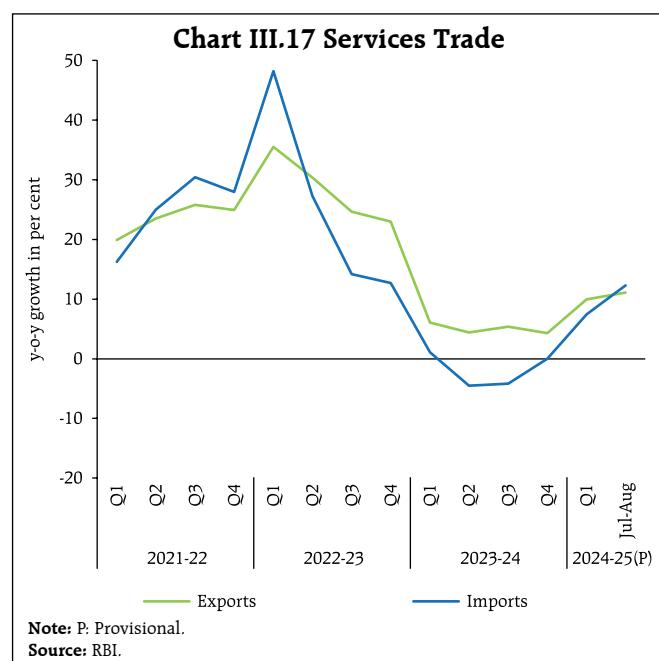


cent in July-August 2024 (Chart III.17). The growth in services exports was mainly driven by software, business, transportation and travel services, reflecting improving global demand for Indian services. Among the major exporters of services globally, India retained its position in the top ten exporting countries during January-June 2024. Services imports moved out of the contractionary zone, posting a 7.2 per cent y-o-y

growth in Q1 and 12.1 per cent in July-August 2024 on the back of buoyant domestic demand.

On a balance of payments basis, the current account deficit widened marginally to 1.1 per cent of GDP in Q1:2024-25 from a deficit of 1.0 per cent of GDP in Q1:2023-24 and a surplus of 0.5 per cent of GDP in Q4:2023-24, mainly due to higher merchandise trade deficit. For the fiscal year 2023-24, the current account

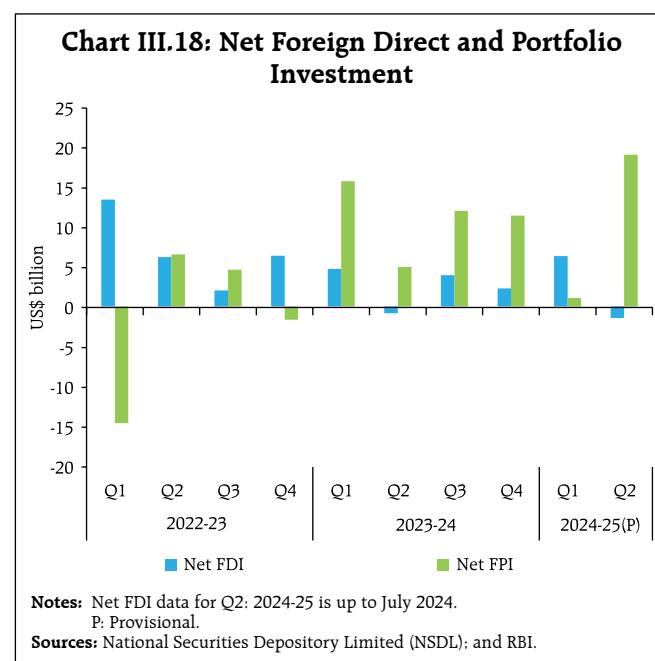




deficit (CAD) narrowed to 0.7 per cent of GDP from 2.0 per cent in 2022-23, driven by a lower merchandise trade deficit, robust services exports and substantial inward remittances.

In the financial account, net FDI flows increased to US\$ 4.9 billion in April-July 2024 from US\$ 3.8 billion a year ago, on account of robust gross equity inflows (Chart III.18). Singapore, Mauritius, Netherlands, USA and Belgium were the major sources of FDI inflows, accounting for a share of 70.8 per cent. On the sectoral front, manufacturing, financial services, communication services, computer services and electricity and other generation, distribution and transmission attracted the majority of FDI equity inflows with a share of 77.3 per cent.

Foreign portfolio investment (FPI) moderated in Q1:2024-25 mainly due to net outflows in equities, though debt inflows have remained robust after the announcement of inclusion of Indian government bonds in the J.P.Morgan's benchmark emerging market index. FPI inflows, however, registered a turnaround in Q2:2024-25 with continued surge in debt inflows and a revival in equity flows. FPI inflows of US\$ 20.1 billion were recorded in H1: 2024-25 as against net inflows of US\$ 20.3 billion a year ago.



External commercial borrowing flows moderated to US\$ 3.6 billion in April-August 2024 from US\$ 4.3 billion a year ago. On the other hand, net accretions to non-resident deposits surged to US\$ 5.8 billion in April-July 2024 from US\$ 3.0 billion a year ago, led by higher inflows in all three accounts [foreign currency non-resident (FCNR), non-resident external (NRE) and non-resident ordinary (NRO) accounts]. As on September 27, 2024 India's foreign exchange reserves amounted to US\$ 704.9 billion, equivalent to 12.1 months of annualised merchandise imports as per BoP basis and 103.3 per cent of outstanding external debt at end-June 2024.

III.2 Aggregate Supply

Aggregate supply – measured by real gross value added (GVA) at basic prices – expanded by 6.8 per cent y-o-y in Q1:2024-25 (8.3 per cent a year ago)- a three-quarter high, supported by industry and services (Table III.5). The momentum of GVA improved over the previous quarter (Chart III.19).

III.2.1 Agriculture

Real GVA in agriculture, forestry and fishing slowed to 2.0 per cent in Q1:2024-25 (3.7 per cent a year ago) on account of muted growth in foodgrains production

Table III.5: Real GVA Growth

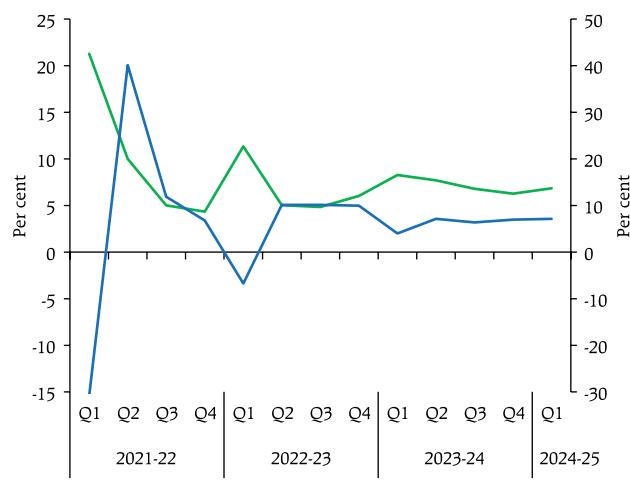
(y-o-y, per cent)

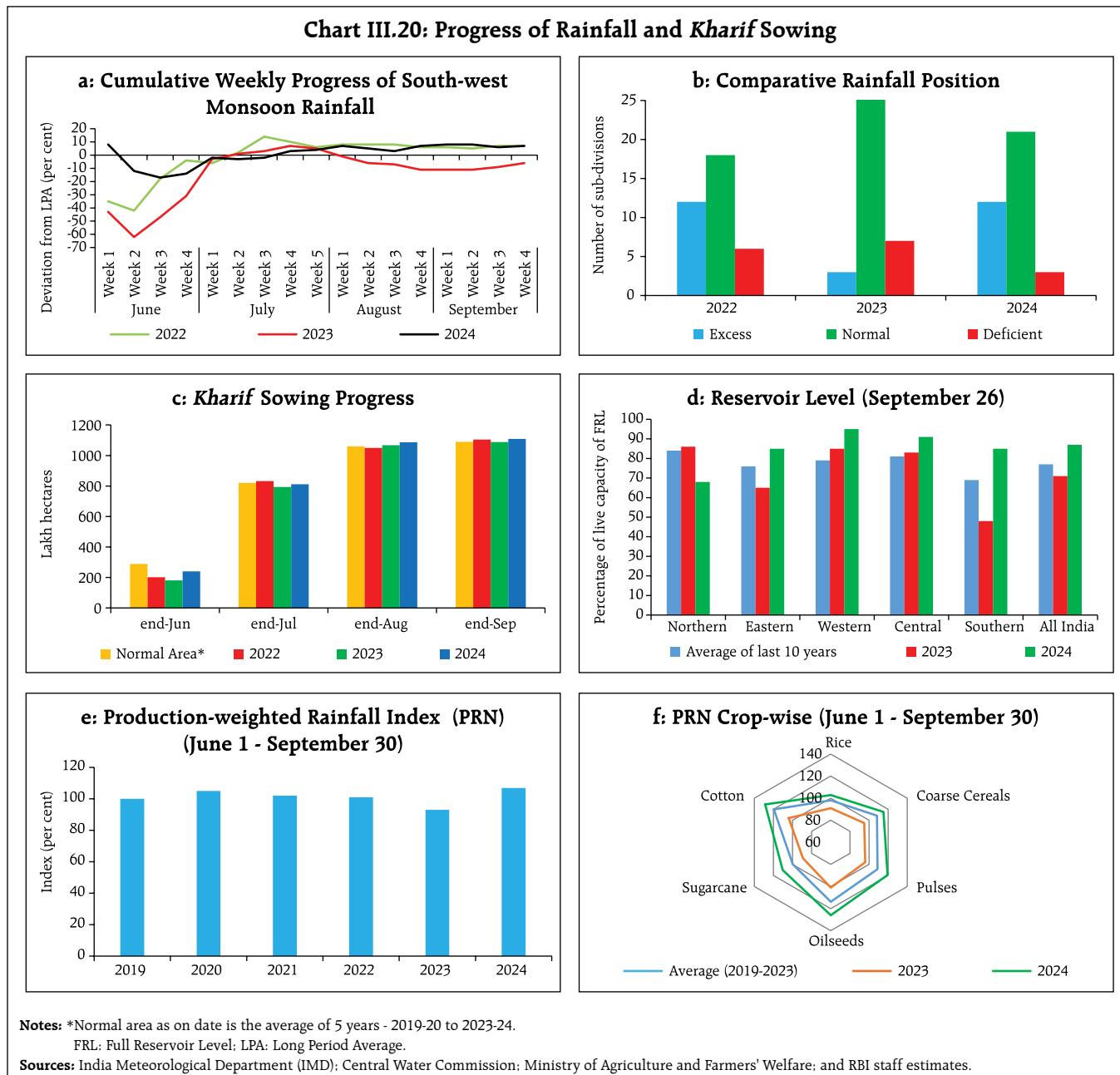
Sector	2022-23	2023-24	Weighted Contribution		2022-23				2023-24				2024-25
	(FRE)	(PE)	2022-23	2023-24	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Agriculture, forestry and fishing	4.7	1.4	0.7	0.2	2.7	2.3	5.2	7.6	3.7	1.7	0.4	0.6	2.0
Industry	-0.6	9.3	-0.1	2.0	4.0	-5.5	-2.8	1.7	5.0	13.6	10.8	8.3	7.4
Mining and quarrying	1.9	7.1	0.0	0.2	6.6	-4.1	1.4	2.9	7.0	11.1	7.5	4.3	7.2
Manufacturing	-2.2	9.9	-0.4	1.7	2.2	-7.2	-4.8	0.9	5.0	14.3	11.5	8.9	7.0
Electricity, gas, water supply and other utilities	9.4	7.5	0.2	0.2	15.6	6.4	8.7	7.3	3.2	10.5	9.0	7.7	10.4
Services	9.9	7.9	6.1	5.0	16.4	9.4	7.5	7.3	10.4	6.9	7.5	7.0	7.7
Construction	9.4	9.9	0.8	0.9	14.7	6.9	9.5	7.4	8.6	13.6	9.6	8.7	10.5
Trade, hotels, transport, communication	12.0	6.4	2.1	1.2	22.1	13.2	9.2	7.0	9.7	4.5	6.9	5.1	5.7
Financial, real estate and professional services	9.1	8.4	2.0	1.9	10.5	8.7	7.7	9.2	12.6	6.2	7.0	7.6	7.1
Public administration, defence and other services	8.9	7.8	1.1	1.0	23.6	7.3	3.5	4.7	8.3	7.7	7.5	7.8	9.5
GVA at basic prices	6.7	7.2	6.7	7.2	11.3	5.0	4.8	6.0	8.3	7.7	6.8	6.3	6.8

Note: FRE: First revised estimates; PE: Provisional estimates.**Sources:** NSO; and RBI staff estimates.

during *rabi* and summer seasons. The southwest monsoon (SWM) commenced at a sluggish pace in June; however, it gained momentum from July onwards. By July 2, 2024, monsoon rainfall had covered the whole country and precipitation turned into a surplus of 8 per cent by September 30, 2024 (Chart III.20a). Out of the 36 sub-divisions, 33 experienced normal or above-normal rainfall, reflecting a broadly equitable

distribution (Chart III.20b). The robust progression of monsoon rains enabled increased acreage of *kharif* sowing, which saw a 1.9 per cent rise over the previous year and exceeded normal sowing levels by 1.7 per cent as of September 27, 2024. The area devoted to all major crops, barring cotton, was greater than in the previous year. Specifically, the area under rice – constituting nearly 37 per cent of the *kharif* sowing area – rose by 2.5 per cent from the previous year's acreage. Similarly, the area covered by pulses and oilseeds sowing expanded by 7.4 per cent and 2.7 per cent, respectively (Chart III.20c). The enhanced rainfall also facilitated the replenishment of reservoir levels to 87 per cent of total capacity as of September 26, 2024, a marked improvement from the historically low levels recorded in June 2024 (Chart III.20d). With these elevated reservoir levels and the anticipated onset of *La Niña* later in the year, the outlook for *rabi* crop appears promising. As of September 30, 2024 the production-weighted rainfall index (PRN) stood at 107 per cent, surpassing the 93 per cent level recorded during the same period last year (Chart III.20e). The resurgence of rainfall in the North-Western states of India contributed to a higher PRN relative to the

Chart III.19: GVA Growth and Momentum**Note:** saar - Seasonally adjusted annualised rate.**Sources:** NSO; and RBI staff estimates.



previous year. Furthermore, the crop-specific PRN exceeded both last year's position and the five-year average across all crops (Chart III.20f).

According to the final estimates of crop production for 2023-24, total foodgrain production at 3,323 lakh tonnes recorded an increase of 0.8 per cent over the final estimates of 2022-23 and 1.0 per cent over the third advance estimates of 2023-24. Among major crops, rice and wheat production increased on y-o-y

basis by 1.5 per cent and 2.5 per cent, respectively, whereas coarse cereals, pulses, oilseeds, sugarcane and cotton recorded a decline in production during the year (Table III.6).

The government announced an increase of 1.4–12.7 per cent in minimum support prices (MSP) for kharif 2024-25 crops, ensuring a return of at least 50 per cent over the cost of production (as measured by A2 plus FL¹⁰). This adjustment aligns with the

¹⁰ A2 (out of pocket expenses) plus FL (family labour) includes all paid out costs such as expenses on hired labour, machines, rent paid for leased land, seeds, fertilisers, irrigation charges, depreciation as well as imputed value of family labour.

Table III.6: Agriculture Production in 2023-24

(Lakh tonnes)

Item	2022-23	2023-24		Variation in 2023-24 (Per cent)	
	Final	Third AE	Final	Over Third AE 2023-24	Over 2022-23
Foodgrains	3296.9	3288.5	3323.0	1.0	0.8
<i>Kharif</i>	1557.1	1566.8	1557.7	-0.6	0.0
<i>Rabi</i>	1578.4	1576.6	1600.1	1.5	1.4
Summer	161.4	145.2	165.2	13.8	2.4
Rice	1357.6	1367.0	1378.3	0.8	1.5
Wheat	1105.5	1129.3	1132.9	0.3	2.5
Coarse Cereals	573.2	547.3	569.4	4.0	-0.7
Pulses	260.6	244.9	242.5	-1.0	-7.0
Oilseeds	413.6	395.9	396.7	0.2	-4.1
Sugarcane	4905.3	4425.2	4531.6	2.4	-7.6
Cotton [#]	336.6	325.2	325.2	0.0	-3.4
Jute & Mesta ^{##}	93.9	97.1	96.9	-0.2	3.2

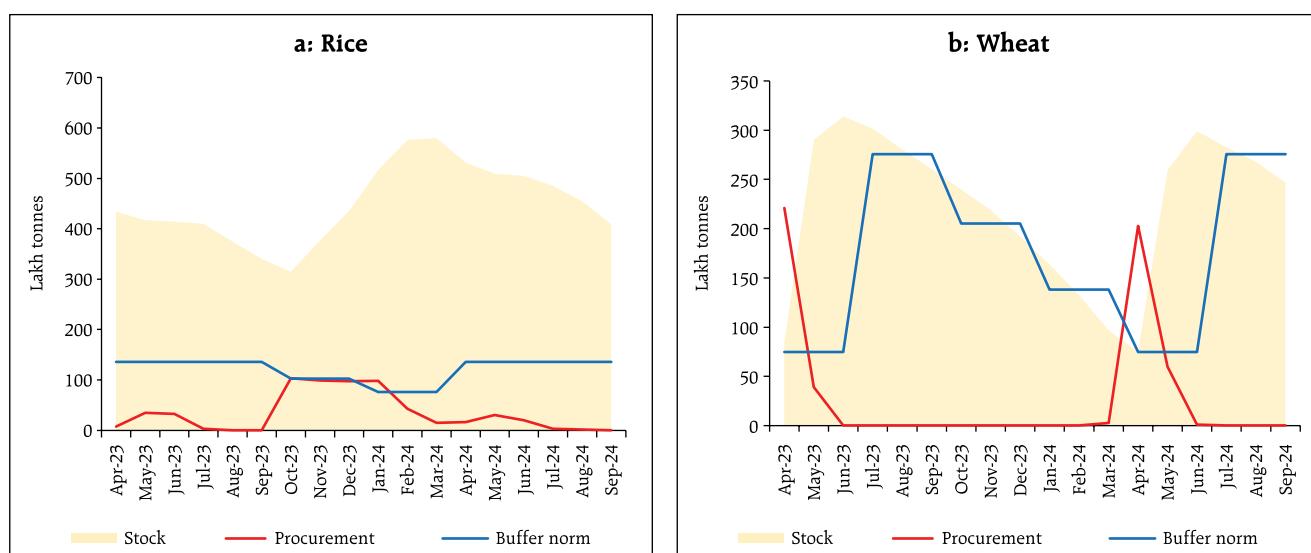
Notes: #: Lakh bales of 170 kgs each; ##: Lakh bales of 180 kgs each.

AE: Advance estimates

Source: Ministry of Agriculture and Farmers' Welfare.

Government's recent efforts to recalibrate MSPs in favour of oilseeds, pulses, and nutri-cereals, aiming to foster crop diversification, rectify the demand-supply disparity, and advance sustainable agricultural practices. Procurement of rice during the kharif marketing season 2023-24 (up to September 30, 2024) at 525.4 lakh tonnes was 7.7 per cent lower than in the previous year. Despite this reduction, the stock of rice

held by the Food Corporation of India at 408.8 lakh tonnes as of September 16, 2024 was the highest ever held by them compared to the corresponding date in the previous years and is 3 times the quarterly buffer norms. Rice allocation under the Open Market Sales Scheme (OMSS) fell way short of the target, partly owing to subdued demand for the variety of rice offered by the corporation (Chart III.21a). In contrast,

Chart III.21: Stock, Procurement and Offtake Position – Rice and Wheat**Sources:** Food Corporation of India; and GoI.

wheat procurement during the *rabi* marketing season 2024-25 stood at 266.1 lakh tonnes, reflecting a 1.6 per cent increase over the previous year. The wheat stock of 246.8 lakh tonnes, however, fell short of the buffer requirement by 29.0 lakh tonnes (Chart III.21b).

III.2.2 Industry

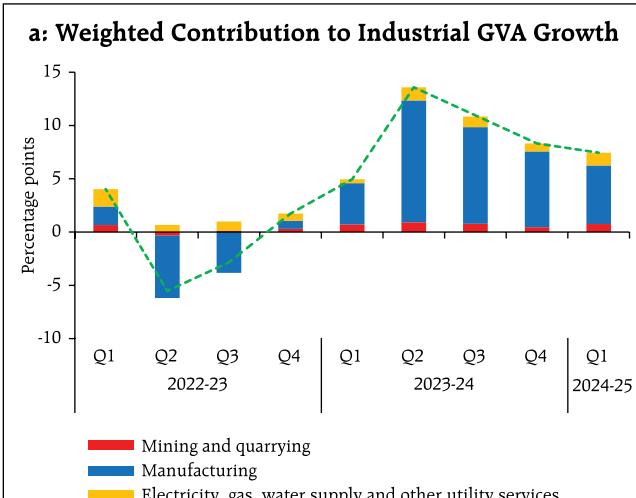
Industrial GVA expanded by 7.4 per cent in Q1:2024-25 (5.0 per cent a year ago), primarily on account of stronger manufacturing activity than a year ago, despite some build-up of supply chain pressures due to the rise in global freight and container costs. Manufacturing GVA expanded by 7.0 per cent y-o-y during Q1 on top of 8.9 per cent growth in Q4. GVA in mining and electricity, gas, water supply, and other utility services increased at a pace of 7.2 per cent and 10.4 per cent y-o-y, respectively, during Q1 (Chart III.22).

The index of industrial production (IIP) grew by 5.4 per cent in Q1:2024-25 and 4.8 per cent in July, with support from all constituents – mining, manufacturing, and electricity generation (Chart III.23 and Table III.7).

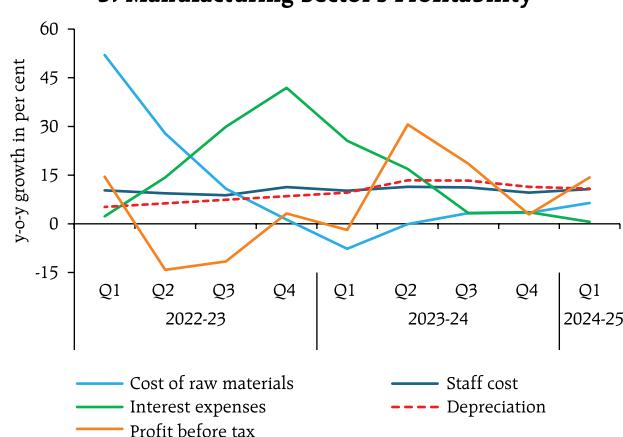
Mining and quarrying recorded a growth of 7.9 per cent in Q1 and 3.7 per cent in July. Manufacturing recorded an expansion of 4.1 per cent in Q1 (5.1 per cent during the previous year) and 4.6 per cent in July, while electricity registered a robust expansion of 10.8 per cent in Q1 (1.3 per cent during the previous year) and 7.9 per cent in July. While the production of basic metals, electrical equipment, motor vehicles and other transport equipment recorded an upsurge in Q1 and July, food products, textiles, and leather and related products acted as a drag on growth. In terms of the use-based classification, primary, capital, intermediate, infrastructure and consumer durables rose during Q1 and July. Consumer non-durable goods, however, registered a contraction during this period.

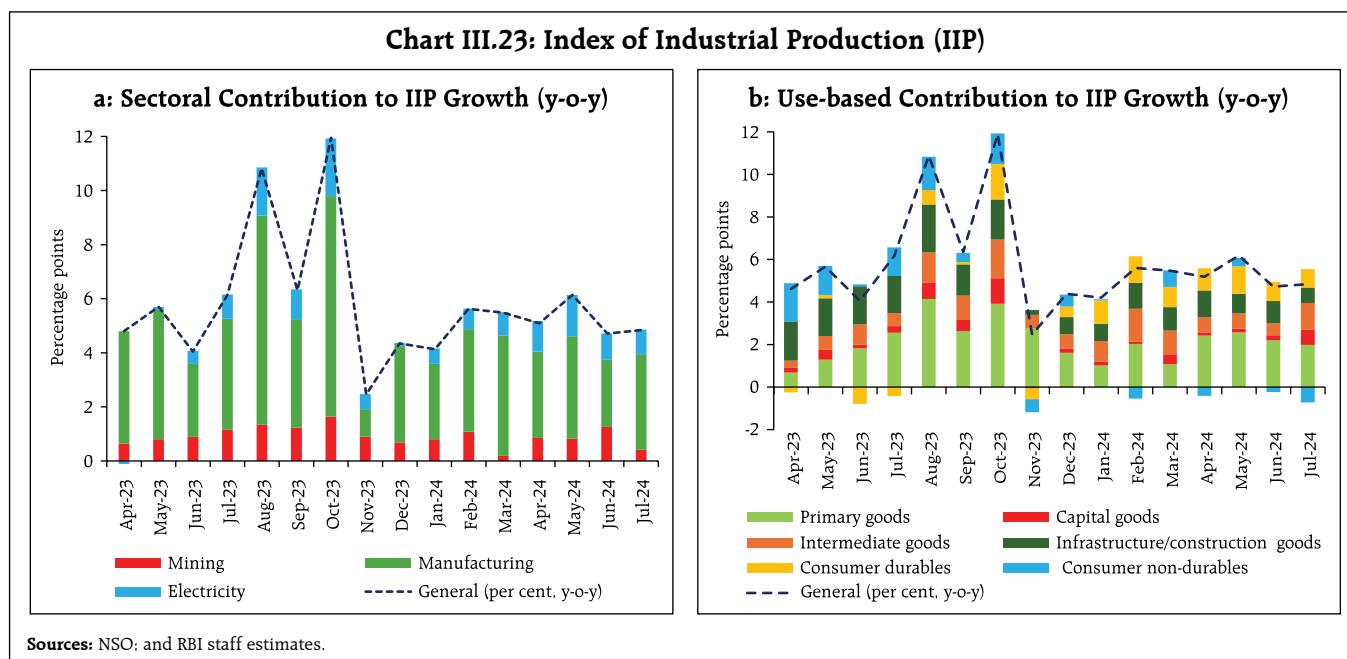
Electricity, gas, water supply and other utility services remained strong and posted a growth of 10.4 per cent y-o-y in Q1, reflecting underlying demand conditions. Electricity generation rose sharply by 7.2 per cent y-o-y during April-August 2024 (5.5 per cent a year ago), driven by thermal power generation which registered a growth of 7.8 per cent. Renewable

Chart III.22 Industrial GVA Growth



b: Manufacturing Sector's Profitability





energy sources, with a share of around 14.0 per cent in total electricity generation, registered a growth of 6.1 per cent during April-August 2024 (Chart III.24a). Region-wise, electricity demand remained strong in all regions during April-August 2024, with a sharp

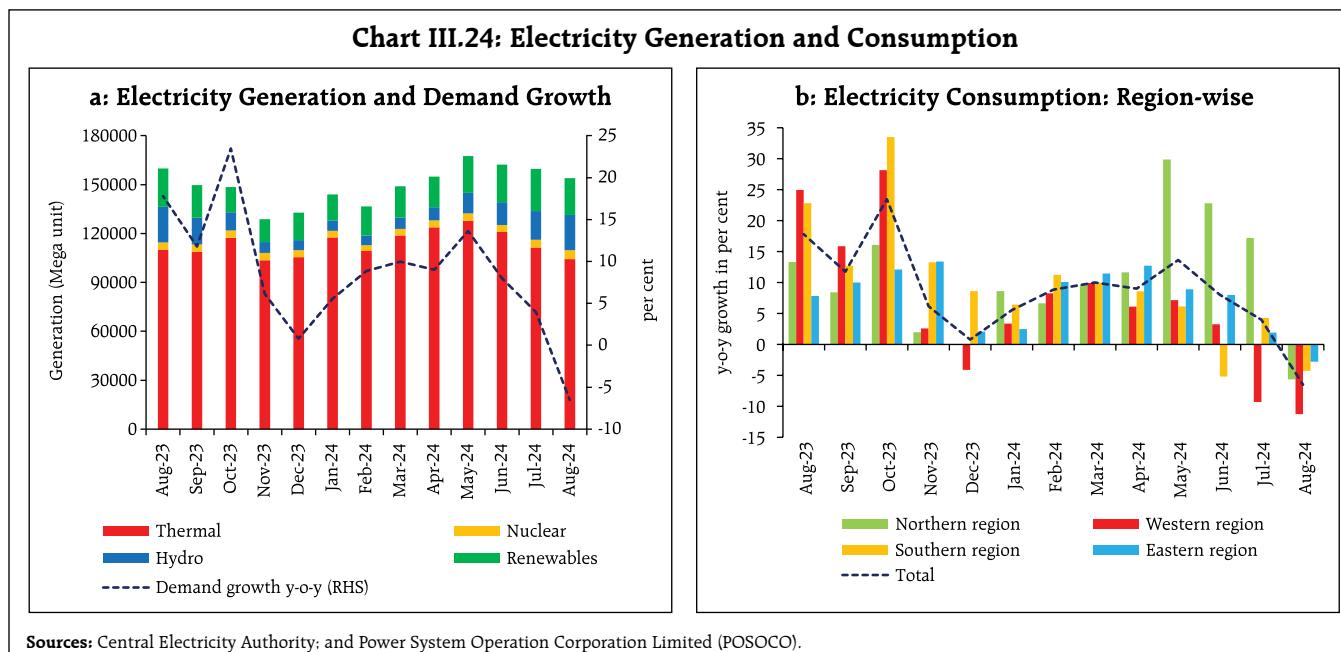
pick-up in demand from the northern region amidst extended spells of heatwaves, except a marginal moderation in western region. Electricity demand contracted in August 2024 owing to a high base (Chart III.24b).

Table III.7: Industrial Sector y-o-y growth

(per cent)

	Indicators	2023-24				2024-25			
		Q1	Q2	Q3	Q4	Q1	Jul	Aug	Sep
1	PMI: Manufacturing (>50 indicates growth over previous month)	57.9	57.9	55.5	57.5	58.2	58.1	57.5	56.5
2	Index of Industrial Production (IIP)	4.8	7.8	6.1	5.1	5.4	4.8		
3	IIP: Manufacturing	5.1	6.8	5.4	4.8	4.1	4.6		
4	IIP: Primary goods	3.6	9.3	8.1	3.9	6.9	5.9		
5	IIP: Capital goods	5.1	8.8	7.5	4.1	3.2	12.0		
6	IIP: Infrastructure and construction goods	13.2	12.8	6.5	7.1	7.3	4.9		
7	IIP: Consumer durables	-2.7	1.1	5.3	11.2	10.6	8.2		
8	IIP: Consumer non-durables	6.8	7.0	2.5	0.7	-0.5	-4.4		
9	Eight Core Industries (ECI)	6.0	10.5	8.4	5.8	6.3	6.1	-1.8	
10	ECI: Steel	16.5	15.4	10.5	8.7	8.5	6.4	4.5	
11	ECI: Cement	12.7	10.3	5.1	7.6	0.5	5.5	-3.0	
12	Electricity demand	1.5	13.9	9.9	8.1	10.2	4.0	-6.5	
Production of Automobiles									
13	Passenger vehicles	7.0	5.6	5.0	9.7	5.8	1.2	0.7	
14	Two wheelers	1.3	-1.5	19.0	26.4	19.6	21.1	4.9	
15	Three wheelers	24.4	19.6	13.4	8.4	9.4	6.0	9.0	
16	Tractors	-8.9	-10.1	-13.0	-15.1	1.0	8.1	-1.0	

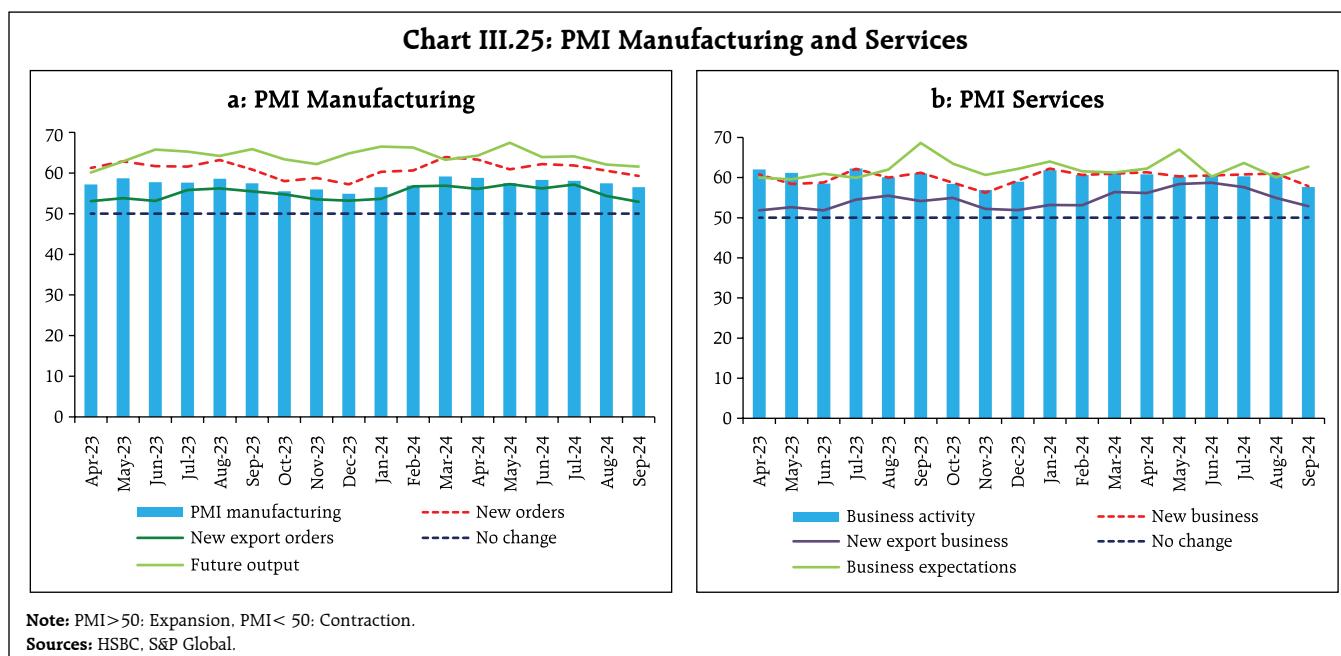
Sources: MOSPI; Office of Economic Adviser; CEIC; NSO; SIAM; HSBC, S&P Global; and RBI staff estimates.



The manufacturing purchasing managers' index (PMI) stayed in expansion mode all through H1:2024-25, though it eased to 57.4 in Q2 from 58.2 in Q1 with a moderation in new orders—both domestic and exports. The future output index moderated marginally but remained in expansion at 63.9 in H1 (Chart III.25a).

III.2.3 Services

Services remained the mainstay of the economy, with a contribution of over 70 per cent to GVA growth in Q1:2024-25. Services sector GVA growth accelerated to 7.7 per cent in Q1 from 7.0 per cent in Q4:2023-24, with the impetus from construction activity; financial, real estate and professional services; and public



administration, defence and other services (Chart III.26a). High frequency indicators point to strong construction activity in H1:2024-25 (up to August) – steel consumption recorded a robust growth, while cement production remained subdued on account of heat waves, and an unfavourable base effect (Chart III.26b).

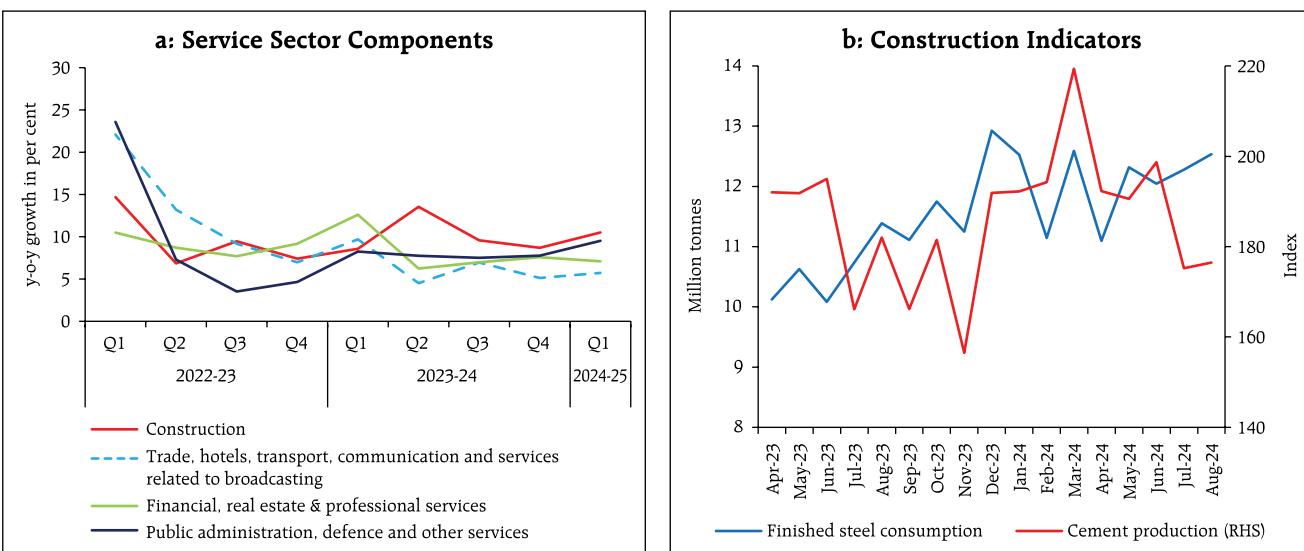
GVA growth of trade, hotels, transport, and communication accelerated to 5.7 per cent y-o-y in Q1:2024-25 (5.1 per cent in Q4:2023-24). GST collections and issuances of e-way bills – indicators of wholesale and retail trade – point towards robust economic activity. Domestic air passenger traffic improved in H1:2024-25, reflecting sustained growth in tourism and business-related travel. Indicators of transportation services displayed a mixed picture – commercial vehicle sales growth rebounded in Q1:2024-25 following a contraction in Q4:2023-24; the growth in toll collections remained subdued in Q1 before improving in Q2; port cargo and railway freight traffic recorded a modest growth of 5.0 per cent and 3.9 per cent, respectively, in H1: 2024-25 (up to August).

Real GVA growth in financial, real estate and professional services rose by 7.1 per cent y-o-y in Q1:2024-25 and was a major contributor to service sector GVA growth (38.1 per cent) as well as to aggregate GVA growth (27.7 per cent). Bank credit and deposits expanded by 14.4 per cent (y-o-y) and 12.0 per cent, respectively, as on September 20, 2024 suggesting continued buoyancy in financial services. Moreover, the growth of insurance premia in both life and non-life segments remained healthy in H1 (April-August) (Table III.8).

Nominal sales of non-IT services grew by 6.3 per cent during Q1:2024-25 as against 10.4 per cent during Q4:2023-24. The performance of the IT sector improved in Q1 after decelerating in the previous six quarters (Chart III.27).

Real estate activity in Q1:2024-25 remained robust, with a moderation in unsold inventory as sales surpassed new launches for the third consecutive quarter (Chart III.28a). The growth in all-India housing prices moderated in Q1:2024-25, largely due to a drop in prices in Delhi (Chart III.28b). Public

Chart III.26: Services Sector



Sources: NSO; Office of Economic Adviser; and Joint Plant Committee.

Table III.8: Services Sector y-o-y growth

(per cent)

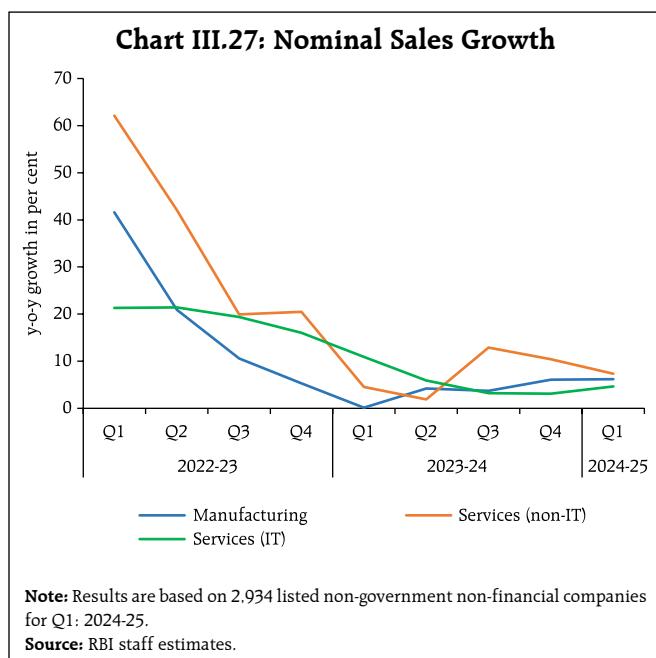
Indicators	2023-24				2024-25			
	Q1	Q2	Q3	Q4	Q1	Jul	Aug	Sep
1 PMI: Services (>50 indicates growth over previous month)	60.6	61.1	58.1	61.2	60.5	60.3	60.9	57.7
Construction								
2 Steel consumption	12.1	17.6	14.5	10.7	15.0	14.4	10.0	
3 Cement production	12.7	10.3	5.1	7.6	0.5	5.5	-3.0	
Trade, Hotels, Transport, Communication and Services related to Broadcasting								
4 Commercial vehicle sales	-3.5	6.9	3.5	-3.8	3.5			
5 Domestic air passenger traffic	19.1	23.0	9.1	5.2	5.6	7.6	6.7	
6 Domestic air cargo	-4.7	-1.0	9.5	10.0	7.1	8.8	0.6	
7 International air cargo	0.1	3.7	10.7	23.9	18.4	24.4	20.7	
8 Freight traffic	1.1	4.8	6.4	8.4	5.0	4.5	0.0	
9 Port cargo	1.9	2.9	10.1	3.1	3.9	6.0	6.7	
10 Toll collection: volume	15.4	13.3	12.8	10.9	5.6	9.4	6.8	6.5
11 Petroleum consumption	6.4	6.3	2.1	5.5	3.9	10.6	-2.3	-1.6
12 GST E-way bill	15.8	15.0	17.1	16.3	16.0	19.2	12.9	18.5
13 GST revenue	11.6	10.6	12.9	11.5	10.2	10.3	10.0	6.5
Financial, Real Estate and Professional Services								
14 Credit outstanding	16.2	15.3	15.6	16.3	13.9	15.1	15.0	14.4
15 Bank deposits	12.9	12.3	12.6	12.9	10.6	11.0	11.3	12.0
16 Life insurance premium	-0.9	-21.2	5.4	26.0	22.9	14.2	21.9	
17 Non-life insurance premium	17.8	12.6	12.1	9.5	13.3	9.3	4.2	

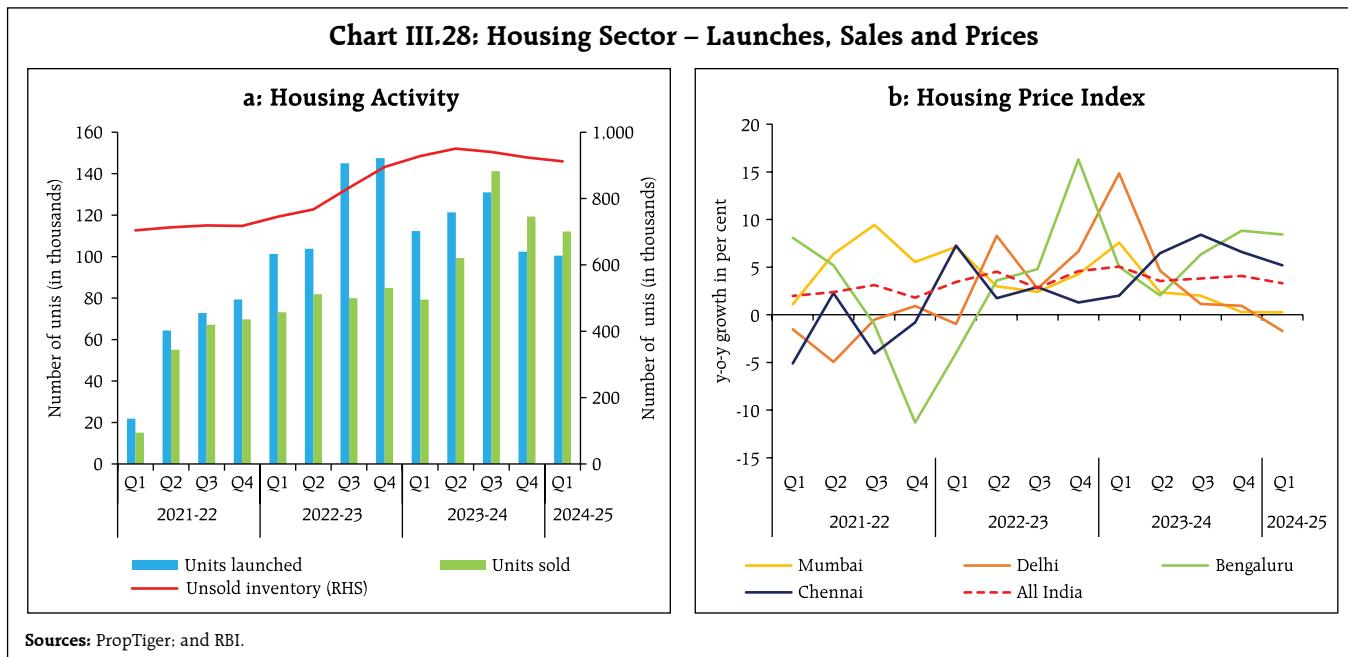
Sources: CEIC; NSO; HSBC, S&P Global; MOSPI; IRDAI; and RBI staff estimates.

administration, defence, and other services (PADO) grew at an 8-quarter high of 9.5 per cent y-o-y in

Q1:2024-25. The centre's revenue expenditure, excluding interest payments and subsidies, contracted by 1.5 per cent in Q1 before expanding by 9.6 per cent during July-August. Healthy growth in other services like health, education and other personal services, however, helped in offsetting muted government consumption in Q1.

The services PMI remained in expansionary zone at 60.5 in Q1:2024-25 and 59.6 in Q2, slightly down from 61.2 in Q4:2023-24, supported by strong demand and new business activity (Chart III.25b). The composite PMI index declined marginally from 61.2 in Q4:2023-24 to 61.0 in Q1:2024-25, and further to 59.9 in Q2. PMI manufacturing and PMI services readings for India have remained the highest globally since July 2022 and April 2023, respectively.





III.3 Conclusion

Domestic economic activity has held up well in H1:2024-25, despite slowdown in government expenditure. Private consumption rebounded strongly, with rural demand augmenting sustained urban demand. Investment activity demonstrated resilience despite lower government capex in Q1:2024-25. Looking ahead, brighter agriculture

prospects, sustained buoyancy in services, consumer and business optimism, the government's continued thrust on capex and healthy balance sheets of banks and corporates should support economic activity. Geopolitical tensions and geo-economic fragmentation, volatility in global financial markets, unseasonal rains and weather disturbances pose downside risks to the domestic outlook.

IV. Financial Markets and Liquidity Conditions

Domestic financial markets exhibited orderly movements in contrast to volatile global market conditions during H1:2024-25. Money market rates evolved in line with liquidity shifts while long-term bond yields eased. Banks' lending and deposit rates increased, reflecting ongoing monetary policy transmission. The Reserve Bank conducted two-way market operations while ensuring adequate liquidity to meet the productive requirements of the economy.

Introduction

During H1:2024-25, global financial markets sporadically turned volatile in response to changing perceptions on the future monetary policy trajectory, sparked by data releases. Global bond yields moderated in response to the improving inflation outlook and cooling labour markets. Global equity markets gained in H1 amidst intermittent bouts of sell-offs. The US dollar traded with a weakening bias and currencies of emerging market economies (EMEs) mirrored its movements, exacerbated by

swings in capital flows. Since the second half of September, however, bond yields hardened and the dollar index firmed up reversing its earlier trend (see Chapter V for details).

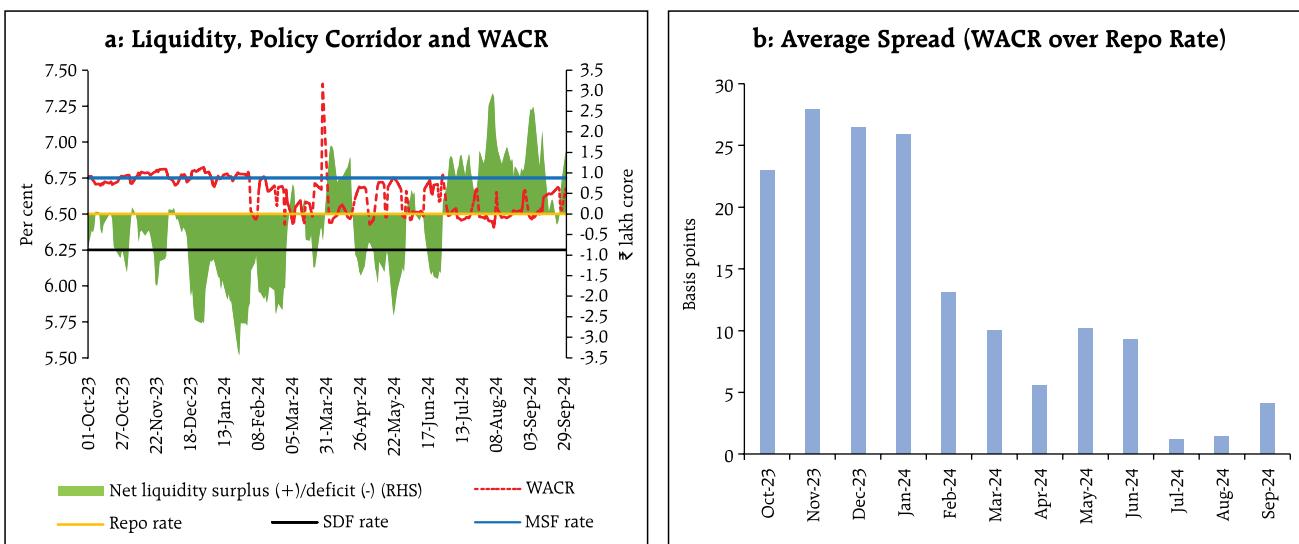
IV.1 Domestic Financial Markets

In contrast to global developments, domestic financial markets remained relatively stable and resilient. Money market rates evolved in sync with liquidity shifts. Long-term government bond yields eased in response to domestic developments and global cues. Equity markets remained buoyant, with sporadic episodes of course corrections. The INR traded with a depreciating bias against the US dollar in H1 but remained among the least volatile major EME currencies. In the credit market, growth in bank credit outpaced deposit expansion although the wedge has narrowed more recently.

IV.1.1 Money Market

During H1:2024-25, liquidity conditions transitioned to surplus from deficit in H2:2023-24 (see Section IV.3 for details). As a result, overnight money market rates softened and generally remained within the Liquidity Adjustment Facility (LAF) corridor (Chart IV.1a).

Chart IV.1: Policy Corridor and WACR



Sources: Reserve Bank of India (RBI); and RBI staff calculations

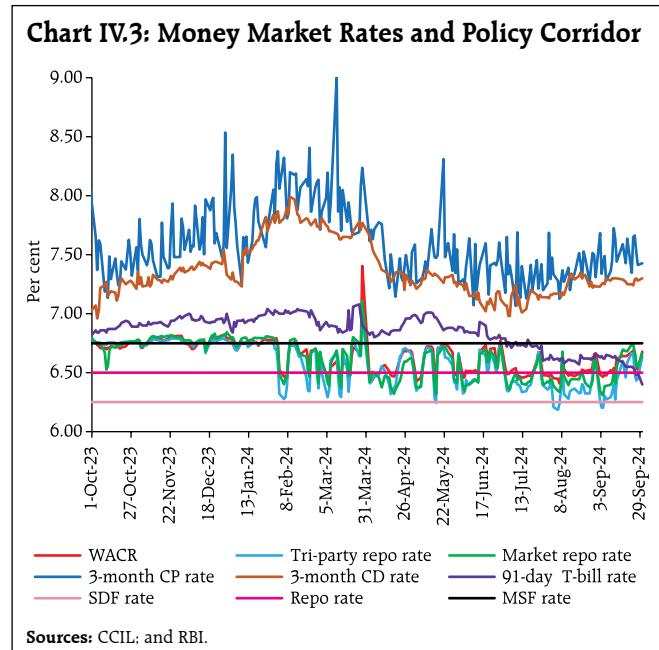
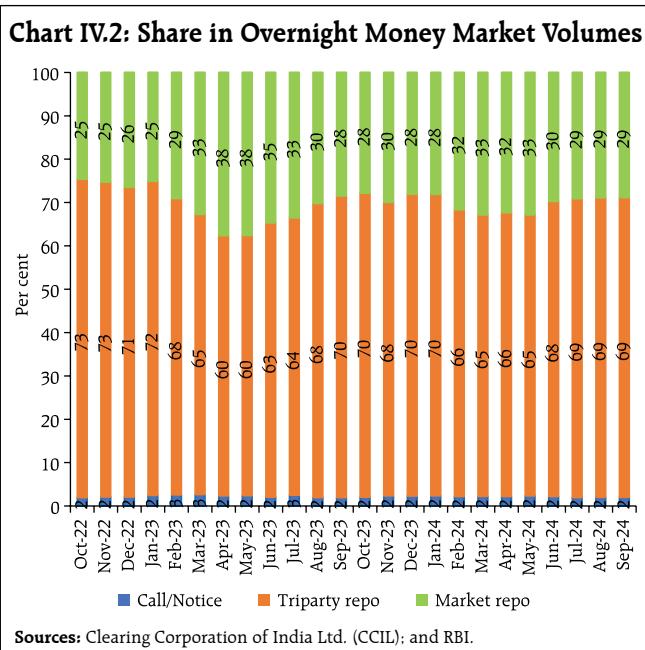
In response to the changing liquidity dynamics, the Reserve Bank conducted two-way operations under the LAF to ensure that the weighted average call rate (WACR) – the operating target of monetary policy – remained closely aligned with the policy repo rate. The WACR increased sharply during June 27-28 due to quarter-end liquidity tightness, also evident from a sudden spike in borrowings under the marginal standing facility (MSF). The WACR, which remained mostly above the repo rate until end-June 2024, moderated from July 2024 as liquidity conditions eased with a pick-up in government spending. At the end of H1 (September 30), however, the WACR increased by 15 bps on account of banks reducing their exposures in the uncollateralised market which incur higher Capital to Risk (Weighted) Assets Ratio (CRAR) requirements in the ensuing quarter.¹ On an average basis, the WACR remained 5 basis points (bps) above the policy repo rate during H1, as compared with 21 bps in H2:2023-24 (Chart IV.1b). Volatility in the WACR, as measured by the coefficient of variation (CV), moderated to 1.61 per cent during H1 from 1.77 per cent during H2:2023-24. Movements in overnight

rates in the collateralised segment, i.e., tri-party repo (TREPS) and market repo were broadly aligned with the WACR.

Money market activity was dominated by the collateralised segments, with their share in overnight money market volumes remaining unchanged at 98.0 per cent in H1 (Chart IV.2).

Mutual funds (MFs) remained the major lenders in TREPS, although their share moderated to 65 per cent in H1 from 66 per cent in H2:2023-24. In the market repo segment, the share of MFs increased to 41 per cent in H1 from 33 per cent, with a concomitant decline in the share of foreign banks to 34 per cent from 43 per cent. On the borrowing side, public sector banks (PSBs) remained the dominant players in TREPS, with their share increasing to 47 per cent in H1 from 45 per cent in H2:2023-24. In market repo, however, their share reduced to 4 per cent from 9 per cent over the same period.

In the longer-term segments of the money market, rates on commercial papers (CPs), certificates of deposit (CDs) and T-bills softened during H1



¹ Additionally, the tightness in the overnight segment was compounded by mutual funds reducing their lending in tri-party repo due to redemption pressures.

relative to H2:2023-24 due to improved liquidity in the banking system and reduced supply of shorter maturity T-bills (Chart IV.3). Rates on CPs issued by non-banking financial companies (NBFCs), however, remained elevated reflecting, *inter alia*, the increase in risk weights on bank lending to NBFCs announced by the Reserve Bank on November 16, 2023. The average spreads of T-bills, CDs and CPs over the MSF rate softened to zero, 49 bps and 61 bps, in H1 from 19 bps, 74 bps and 100 bps, respectively, in H2:2023-24.

Fresh issuances of CDs moderated to ₹4.0 lakh crore in H1 from ₹5.5 lakh crore in H2:2023-24, mainly due to surplus liquidity conditions since July 2024. Within H1, CD issuances in the shorter tenor (up to 91-day) declined, with their share in total issuances reducing to 54 per cent in July 2024 from 84 per cent in May 2024. Concomitantly, the share of longer tenor CDs (181-365 days) increased to 45 per cent in July 2024 from 14 per cent in May 2024 (Chart IV.4). The persistent gap in credit and deposit growth prompted banks to explore alternative sources such as CDs of longer tenors to bridge the funding gap.

Resource mobilisation through fresh issuances of CPs increased to ₹7.5 lakh crore during H1 from ₹6.7

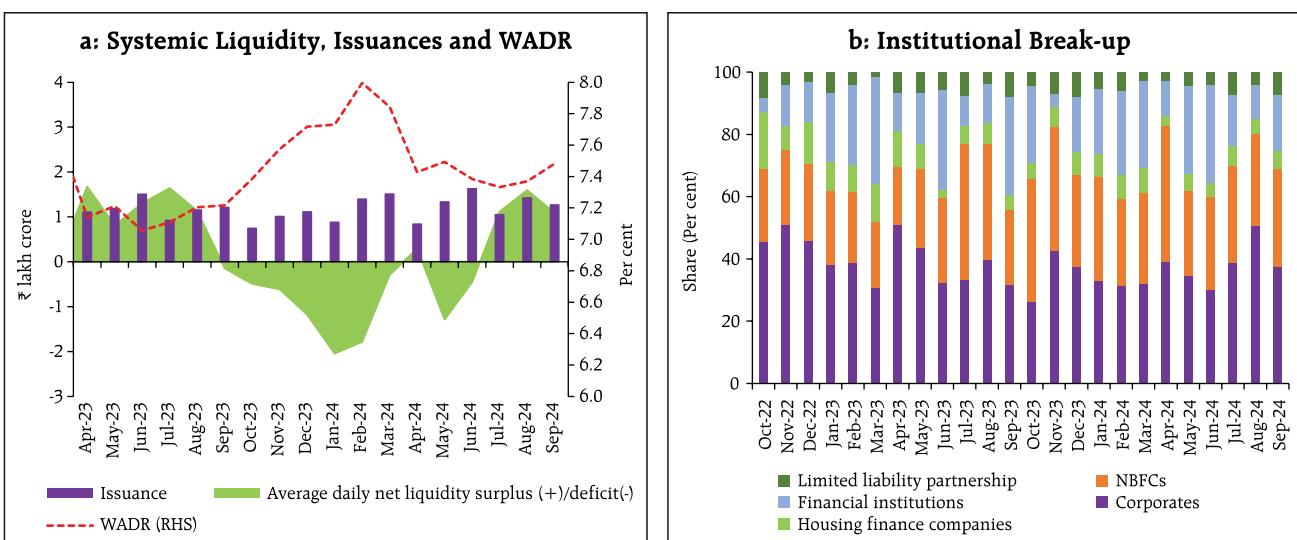
Chart IV.4: Tenor Wise Break up of CD Issuances



Sources: CCIL; and RBI staff estimates.

lakh crore in H2:2023-24 (Chart IV.5a). Among fresh issuances, the average share of NBFCs increased to 32 per cent in H1 from 29 per cent in the corresponding period of the previous year. Thus, NBFCs have resorted to greater mobilisation of resources from the market in the wake of the November 2023 measures, as mentioned earlier. In the CP market, corporates were the major players with a share of 38 per cent in total issuances (Chart IV.5b).

Chart IV.5: Primary Issuances of Commercial Papers



Sources: RBI; CCIL F-TRAC; and RBI staff estimates.

Table IV.1: Maturity Profile of CP Issuances

(₹ lakh crore)

Tenor	H1: 2023-24	H2: 2023-24	H1: 2024-25
7- 30 days	0.45	0.48	0.63
31-90 days	3.18	2.32	2.35
91-180 days	2.75	3.11	3.94
181-365 days	0.70	0.77	0.64
Total	7.09	6.67	7.55
Outstanding (as at end-period)	4.12	3.89	3.98

Sources: CCIL; F-TRAC; and RBI.

Among various maturity buckets, the 91-180 days segment had the largest share of fresh CP issuances [52 per cent in H1 (Table IV.1)].

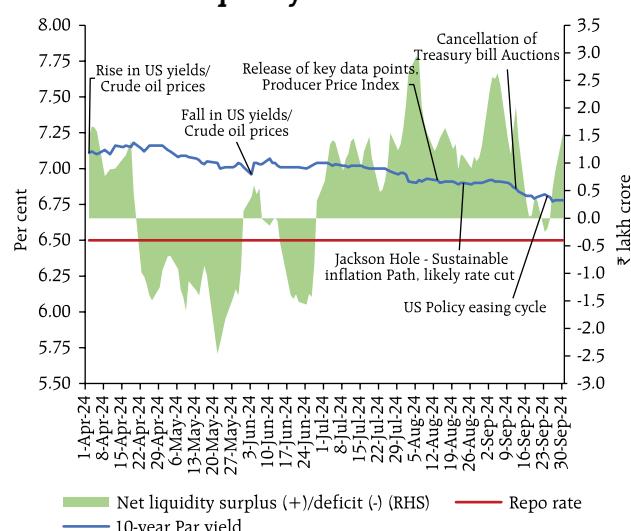
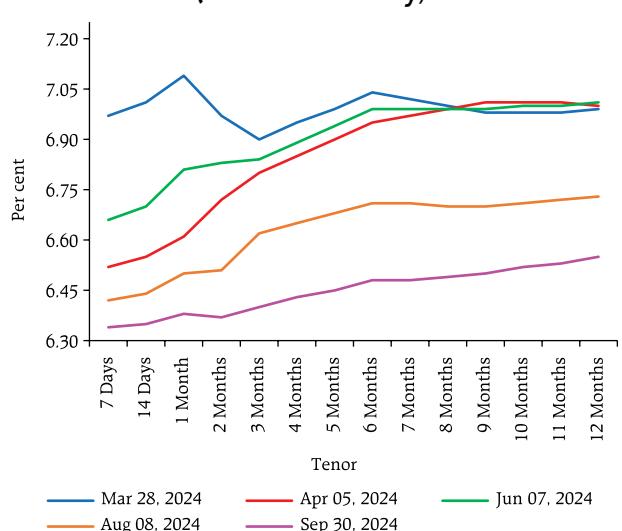
IV.1.2 Government Securities (G-sec) Market

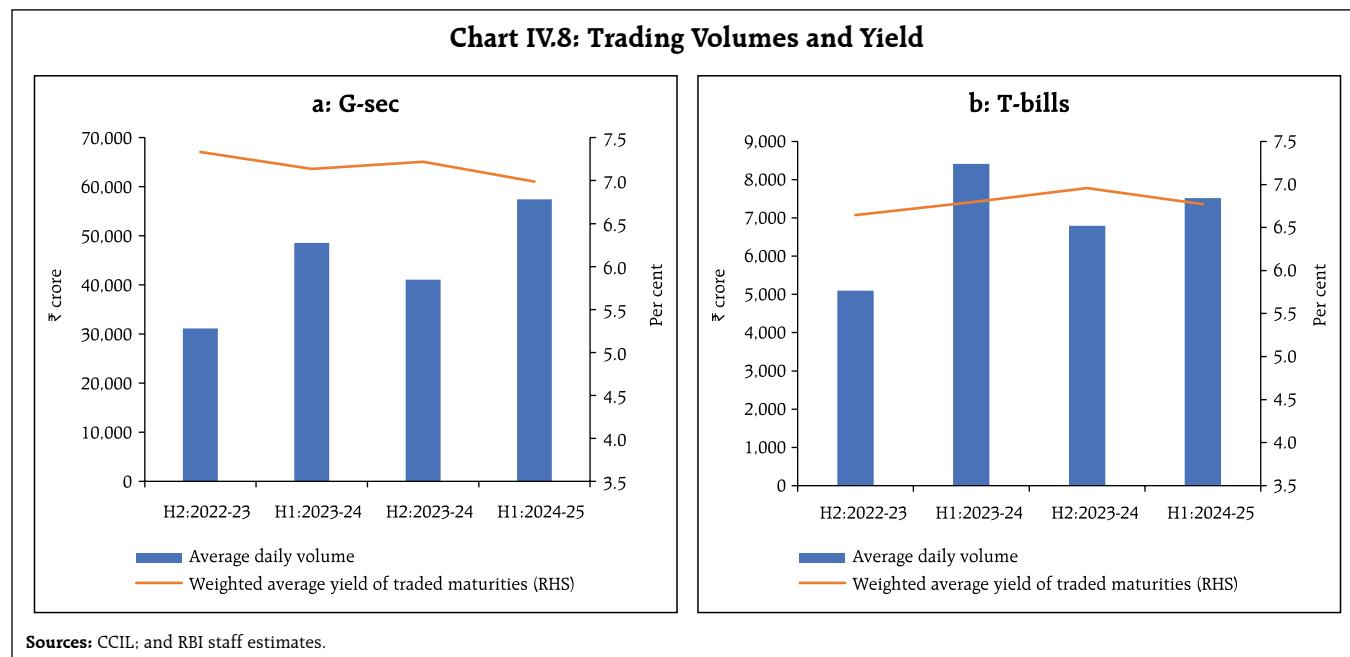
During H1, G-sec yields softened (Chart IV.6). At the beginning of the financial year, yields hardened, tracking movements in US yields and the increase in crude oil prices. Thereafter, they eased during the first week of May with the softening of US yields and easing crude oil prices in the wake of the US Federal Open Market Committee's (FOMC's) announcement to reduce the pace of balance sheet runoff from June 2024. Yields eased further in the second and third

week of May, buoyed by positive sentiments on the inclusion of Indian G-secs in global bond indices and the buyback of government paper. Yields remained largely stable during the month of June and July, moderating towards the end of July due to market reactions to a potential increase in the Liquidity Coverage Ratio (LCR) based on the draft guidelines on LCR issued by the RBI. Yields continued to moderate in August and September on lower inflation prints (for July and August) and the start of the policy easing cycle in the US.

The yields on T-bills moderated during May and June amidst reduction in the supply of T-bills by ₹60,000 crore. The softening bias continued to prevail thereafter till September as liquidity continued to remain in surplus and also in the wake of the cancellation of treasury bill auctions scheduled for the second half of the month (Chart IV.7).

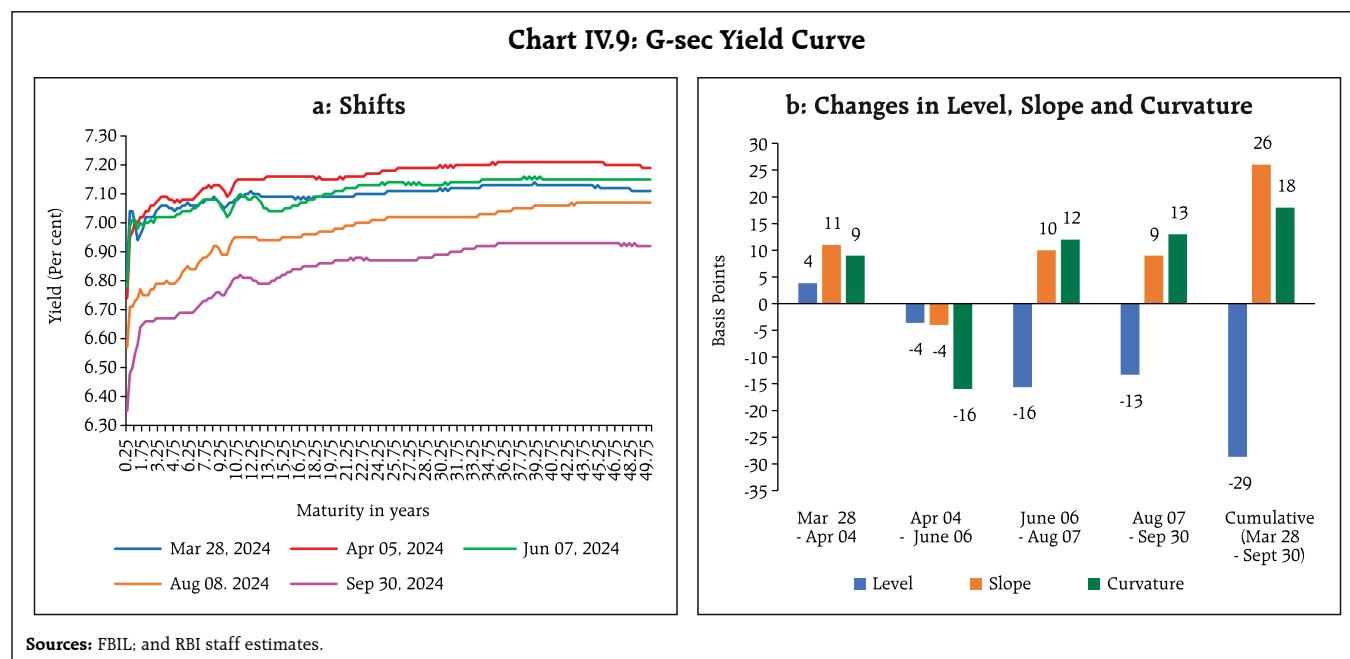
The average trading volume in G-secs and T-bills increased in H1:2024-25 relative to H2:2023-24 (Chart IV.8). The weighted average yield (WAY) on traded maturities for G-secs and T-bills declined by 23 bps and 19 bps, respectively, in H1 from that in H2:2023-24.

Chart IV.6: 10-year Par Yield, Repo Rate and Liquidity Conditions**Sources:** RBI; and Financial Benchmarks India Pvt. Ltd. (FBIL).**Chart IV.7: FBIL T-bill Benchmark (Yield to Maturity)****Source:** FBIL.



The overall dynamics of the yield curve are captured by its latent factors viz., level, slope and curvature². Yields have softened across the term structure as reflected in the downward shift of the yield curve during H1 (Chart IV.9a), with the average level of yields softening by 29 bps while the slope of the

yield curve increased by 26 bps due to the relatively higher decline in short-term rates (Chart IV.9b). The curvature, on the other hand, increased by 18 bps, reflecting the hardening bias in the mid-segment vis-à-vis the short and long term. In the Indian context, the level and curvature of the yield curve are



² The level is the average of par yields of all tenors up to 30-years published by FBIL and the slope (term spread) is the difference in par yields of 3-months and 30-year maturities. The curvature is calculated as twice the 15-year yield minus the sum of 30-year and 3-month yields.

found to have more information content on future macroeconomic outcomes than the slope, unlike in AEs (Patra *et al.*, 2022)³.

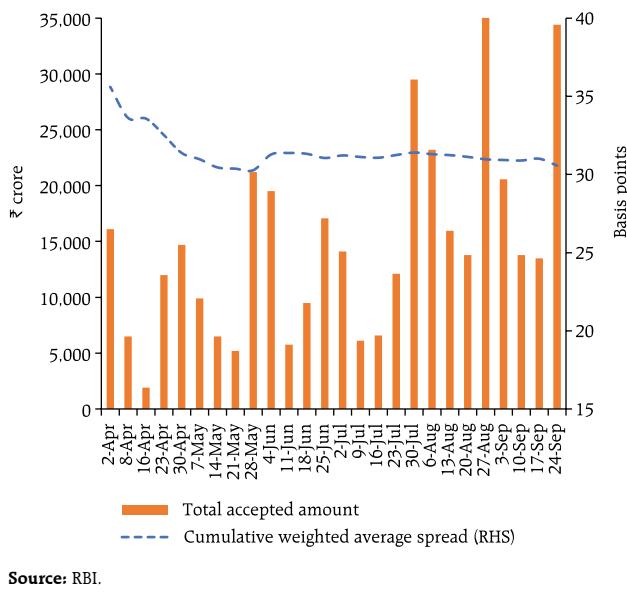
On a review of prevailing market conditions, the Reserve Bank, in consultation with the Government of India (GoI), announced that all securities under the market borrowing programme of the GoI shall be auctioned by the multiple price auction method, effective April 1, 2024. The return to multiple price auctions for all the securities after a gap of three years was aimed at encouraging better price discovery in the G-sec market.

To facilitate debt consolidation, the Reserve Bank conducted six switch auctions on behalf of the GoI, amounting to ₹1.16 lakh crore during H1:2024-25. Even as the weighted average maturity (WAM) of the outstanding stock of G-secs increased to 12.96 years at end-September 2024 from 12.54 years at end-March 2024, the weighted average coupon (WAC) at 7.28 per cent was nearly identical to 7.29 per cent over the same period.

In May and early June 2024, five buyback auctions were announced with a view to retiring some of the GoI's debt ahead of schedule, particularly in the backdrop of its improved cash position.⁴ The market response to the auctions, however, was tepid, with the Reserve Bank accepting offers aggregating only ₹0.3 lakh crore against the notified amount of ₹2.3 lakh crore.

The weighted average spread of cut-off yields on state government securities (SGS) over GoI G-sec yields of comparable maturities was 31 bps in H1:2024-25 (Chart IV.10). The average inter-state spread on securities of 10-year tenor (fresh issuances) was 2 bps in H1 as against 4 bps in H2:2023-24.

Chart IV.10: SGS - Amount Raised and Spread



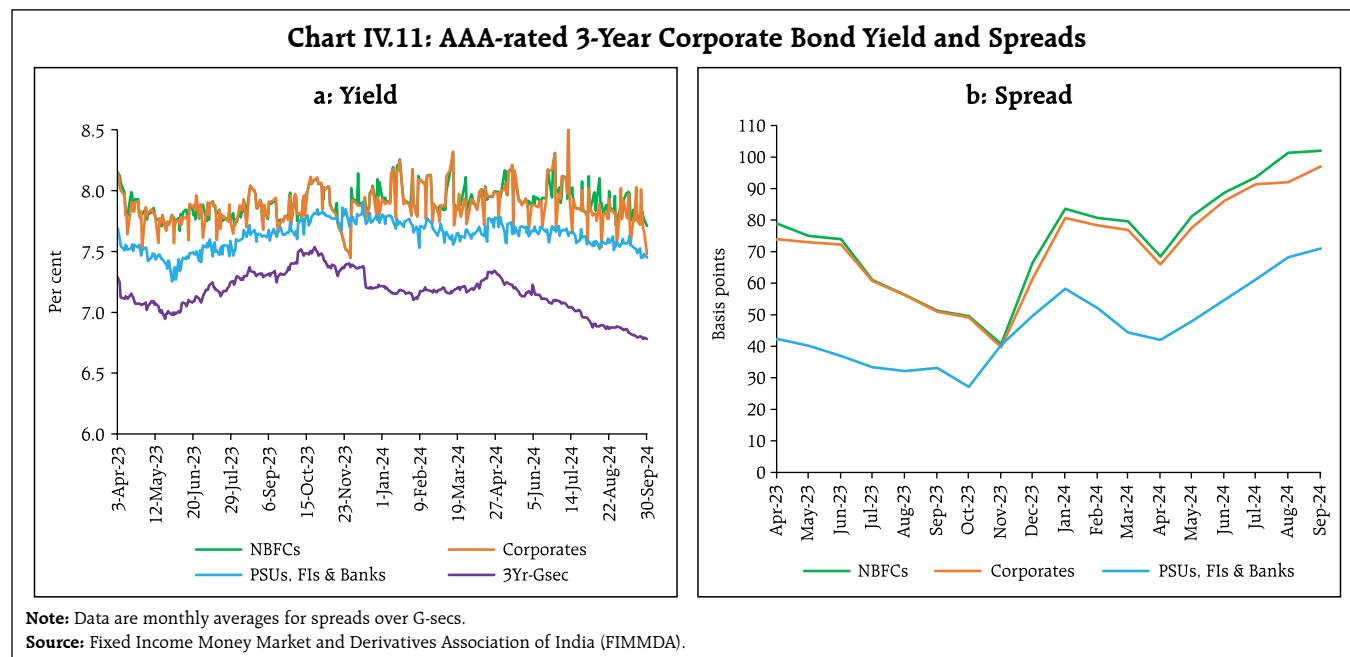
IV.1.3 Corporate Bond Market

Corporate bond yields softened while spreads widened during H1:2024-25. Issuer-wise, the average yield on AAA-rated 3-year bonds issued by public sector undertakings (PSUs), financial institutions (FIs) and banks softened by 10 bps (to 7.53 per cent), while those by non-banking financial companies (NBFCs) and corporates declined by 14 bps (to 7.84 per cent) and 15 bps (to 7.80 per cent), respectively, in September over March 2024 (Chart IV.11a). Nevertheless, the risk premium (the spread of 3-year AAA corporate bond yields over 3-year G-sec yields) increased from 44 bps to 71 bps for PSUs, FIs and banks; from 80 bps to 102 bps for NBFCs; and from 77 bps to 97 bps for corporates, in H1:2024-25 due to sharper decline in G-sec yields (Chart IV.11b).

The increase in risk premia was evident across tenors and the rating spectrum amidst moderation in corporate performance in Q1:2024-25 (Table IV.2).

³ Patra, M.D., Joice, J., Kushwaha, K.M., and I. Bhattacharyya (2022), "What is the Yield Curve telling us about the Economy?", Reserve Bank of India Bulletin, June.

⁴ Although buybacks have a liquidity impact, they should not be construed as liquidity management operations; instead, they are part of an active debt consolidation strategy.



In contrast, the average 3-year credit default swap (CDS) spreads that are trading overseas for the State Bank of India and ICICI Bank reduced by 3 bps each in H1 over H2:2023-24.

Primary issuances of listed corporate bonds in domestic markets declined to ₹3.3 lakh crore during H1 (up to August 2024) from ₹4.6 lakh crore during

H2:2023-24⁵ (Chart IV.12a). Overseas issuances at ₹29,029 crore during H1 were lower than ₹31,492 crore during H2:2023-24. Almost the entire resource mobilisation in the corporate bond market (99.0 per cent) was through the private placement route (up to August 2024). Outstanding investments by foreign portfolio investors (FPIs) in corporate bonds increased to ₹1.18 lakh crore at end-September 2024, from ₹1.08 lakh crore at end-March 2024, with the utilisation of the approved limits improving marginally to 16.4 per cent from 16.2 per cent over the same period (Chart IV.12b). Secondary market activity, however, picked up with daily average trading volume at ₹6,168 crore during H1 (up to end-July 2024) from ₹5,791 crore during H2:2023-24 (Chart IV.12c). From a regulatory perspective, the Securities and Exchange Board of India (SEBI) lowered the denomination of debt securities for private placements to ₹10,000 from ₹1 lakh with a view to encouraging retail participation and enhancing liquidity in the corporate bond market.

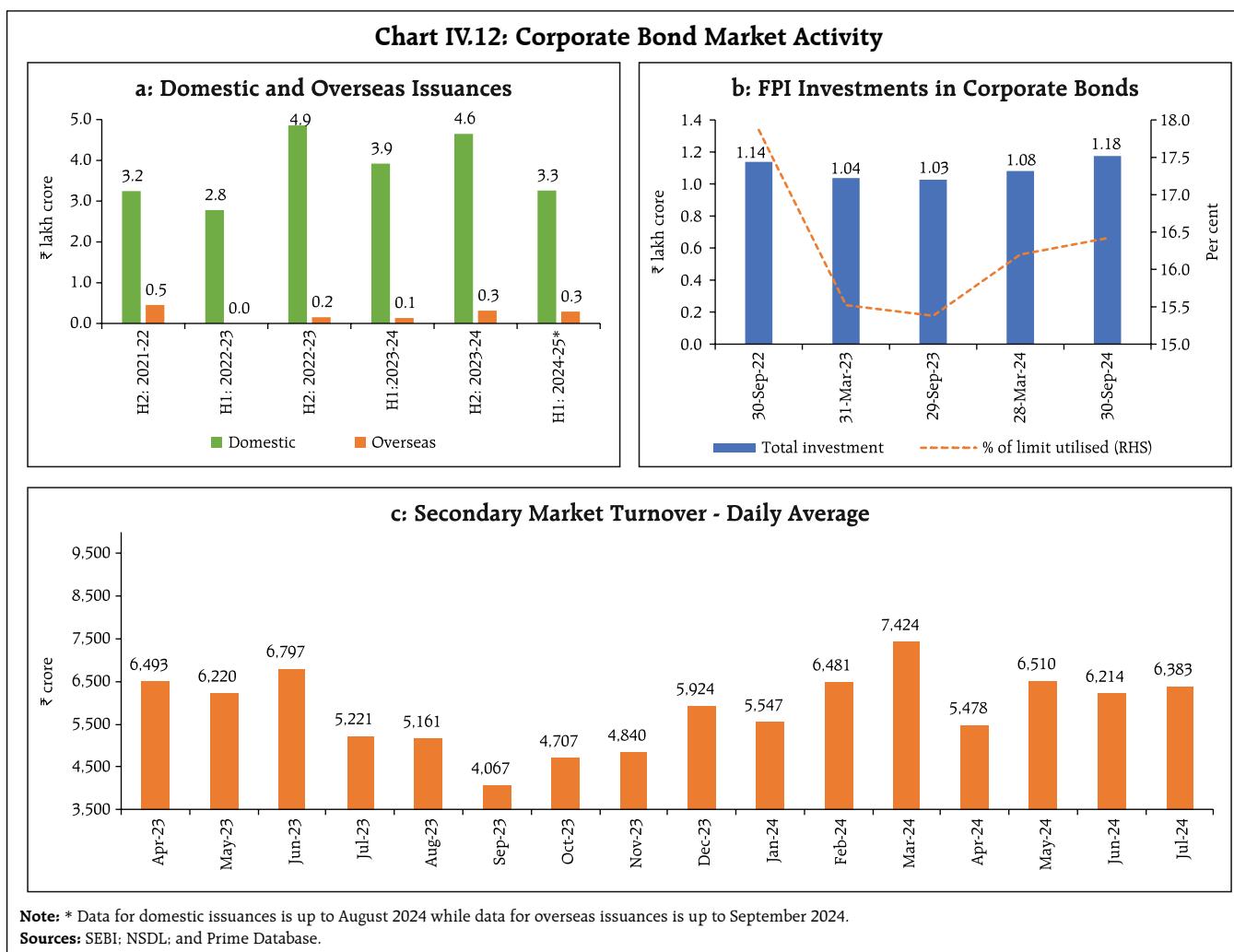
Table IV.2: Financial Markets - Rates and Spread

Instrument	Interest Rates (per cent)			Spread (bps) (over corresponding risk-free rate)		
	September 2023	March 2024	September 2024	September 2023	March 2024	September 2024
1	2	3	4	5	6	7
<i>Corporate Bonds</i>						
(i) AAA (1-yr)	7.68	7.97	7.92	53	77	117
(ii) AAA (3-yr)	7.83	7.95	7.80	51	77	97
(iii) AAA (5-yr)	7.69	7.74	7.70	37	54	86
(iv) AA (3-yr)	8.46	8.55	8.55	113	137	172
(v) BBB-minus (3-yr)	12.14	12.19	12.14	481	500	531

Note: Yields and spreads are computed as monthly averages.

Source: FIMMDA.

⁵ Issuances in the first half of the financial year are usually lower than the second half as the borrowing plans of corporates are chalked out gradually. Moreover, central government borrowing is usually frontloaded, which provides greater space to corporates for resource mobilisation in the second half.



IV.1.4 Equity Market

Despite transient surges in volatility, Indian equity markets maintained an upward trajectory in H1:2024-25, with the BSE Sensex surpassing the historic 80,000 mark in July 2024. Amidst these gains, market valuation, as measured by the trailing price-earnings ratio of the BSE Sensex, continued to remain above its long-term average and reached 24.8 at end-September 2024. Indian equities began the financial year positively, driven by strong domestic and global macroeconomic data and robust domestic corporate earnings. Thereafter, markets declined briefly amidst rising geopolitical tensions in the Middle-East. After the initial losses in May, the market capitalisation of Indian listed companies surpassed US\$ 5 trillion in the

wake of positive market sentiments from improved GoI finances and other domestic and global cues. In early June, the market exhibited large swings during the announcement of Lok Sabha election results, which drove the India VIX⁶ to its highest levels since the onset of the Russia-Ukraine war.

Thereafter, markets recovered quickly amidst expectations of policy continuity, release of softer than-expected domestic as well as US inflation for May and India's current account turning into a surplus in Q4:2023-24. In July, gains in IT sector stocks and dovish signals from the US Fed propelled the Sensex past the 80,000 mark before its correction later in the month on the budgetary announcement of changes in the capital gains tax structure.

⁶ A measure of short-term expected volatility of Nifty 50.

Indian financial markets faced a fresh bout of volatility in early August 2024 on account of a combination of factors: (i) elevated geopolitical tensions in the Middle-East; (ii) weaker-than-expected economic data from the US; and (iii) the Bank of Japan (BoJ) raising rates for the second time in 17 years. The BoJ's actions prompted a sudden and large unwinding of yen carry trade. The resulting US equity market meltdown led to heightened

global market volatility and a significant churning of portfolio flows. Thereafter, markets recovered as expectations of a US Fed rate cut grew stronger after the release of dovish US FOMC minutes and the remarks of the US Fed Chairman at the Jackson Hole Economic Symposium hinting at the possibility of an imminent policy pivot. The resulting surprises on the future path of monetary policy have a profound impact on financial asset prices (Box IV.1). Domestic

Box IV.1: Monetary Policy Surprises and Equity Markets

Monetary policy surprises can be decomposed into 'target' and 'path' factors. The former reflects unexpected changes in the contemporaneous policy rate, while the latter represents surprises in its future trajectory.

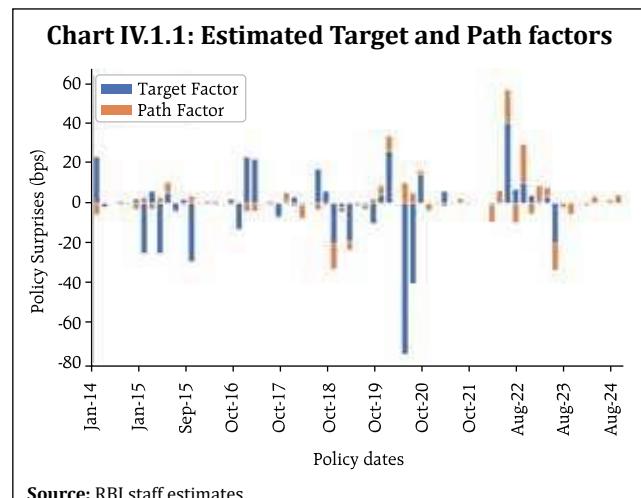
Intraday changes in 1-year MIBOR-linked OIS rates on policy announcement days are used as a measure of policy surprise (Lloyd, 2018).⁷ The target factor is the difference between the actual repo rate and the mean expectations of the repo rate from the Bloomberg Economists' survey (Anderson 2010). The path factor is estimated as the residual of a regression of changes in OIS rate on the target factor:

$$\Delta OIS_t^{1Y} = \alpha + \beta(i_t - \bar{i}_t) + \varepsilon_t \quad (1)$$

where ΔOIS_t^{1Y} is the change in 1-year OIS rates, i_t is the actual repo rate, \bar{i}_t is the expected/mean repo rate in the Bloomberg survey and ε_t is the path factor. To minimise the impact of other significant macroeconomic events on asset prices, changes are measured over a narrow window around policy announcements (Gurkaynak et al., 2004). The estimated target and path factors on each policy announcement day around a 60-minute window for the period January 2014-August 2024 encompassing 67 policy announcement dates, including 5 unscheduled ones, are presented in Chart IV.1.1.⁸

To assess the relative importance of target and path factors for movements in equity prices, BSE Sensex returns over two different, but narrow, time windows are regressed on the target and path factors:

$$R_{\delta,t} = \alpha + \beta_1 TF_{\delta,t} + \beta_2 PF_{\delta,t} \quad (2)$$



Source: RBI staff estimates.

where the δ,t subscript represents changes/returns in alternative time windows (in minutes) with $\delta \in \{30,60\}$ being returns on policy day t . The windows thus constructed span 30 minutes (i.e., 10 minutes before and 20 minutes after the policy announcement) and 60 minutes (i.e., 15 minutes before and 45 minutes after) around the policy announcement. The findings indicate that Sensex returns are affected significantly by the surprise in the future path of monetary policy (path factor), and it is stronger for the 60-minute window vis-à-vis the 30 minutes window (Table IV.1.1). As expected, a positive path factor or an expected policy tightening in the future leads to negative equity returns as equity markets price in changes in longer-term borrowing costs. The results,

(Cont.)

⁷ Assuming that changes in the OIS rates are in response to unanticipated changes in monetary policy and that other factors such as risk premia remain constant in these intraday windows.

⁸ Gupta et al. (2024) conducts a similar exercise on policy dates for the period June 2018-June 2022.

Table IV.1.1: Monetary Policy Announcement Impact on BSE Sensex

Variables	30 minutes	60 minutes
Intercept	-0.033 (0.039)	-0.032 (0.062)
Target Factor	0.192 (0.621)	0.727 (1.230)
Path Factor	-0.016* (0.009)	-0.034** (0.015)
Observations	67	67
Adjusted R ²	0.041	0.138

Notes: a) Significance level: ***' 0.01 (1%), **' 0.05 (5%), '*' 0.1 (10%).
b) Newey-West standard errors are presented in parentheses.

Source: RBI staff estimates.

therefore, underscore the impact of central bank communication on market movements and sentiments.

equities continued to rally in September amid a US Fed rate cut of 50 bps and reached new highs, with the weight of Indian equities surpassing that of China in a key global MSCI index.

Overall, the BSE Sensex gained 14.5 per cent during H1:2024-25 to close at 84,300 at end-September 2024. The broader market indices continued to outperform the benchmark Sensex, with the BSE MidCap and the BSE SmallCap index increasing by 25.5 per cent and 32.4 per cent, respectively, during H1:2024-25

References:

Anderson, M. (2010). Using intraday data to gauge financial market response to federal reserve and ECB monetary policy decision. *International Journal of Central Banking*, 6(2), 107-116.

Gupta, M., Pawar, A., Kumar, S., Borad, A. & Seet, S. (2024). Equity Markets and Monetary Policy Surprises (Working Paper No. 3). Reserve Bank of India.

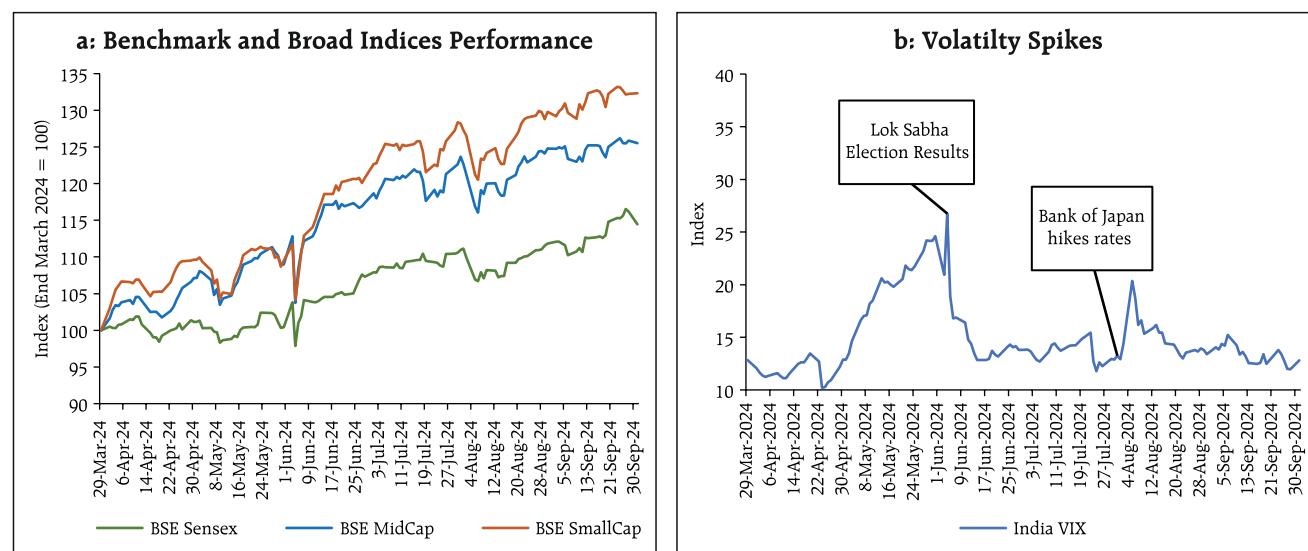
Gurkaynak, R. S., Sack, B., & Swanson, E. T. (2004). Do actions speak louder than words? The response of asset prices to monetary policy actions and statements. *Finance and Economics Discussion Series*, 2004(66), 1–43.

Lloyd, S. P. (2018). Overnight index swap market-based measures of monetary policy expectations. Staff Working Paper No. 709.

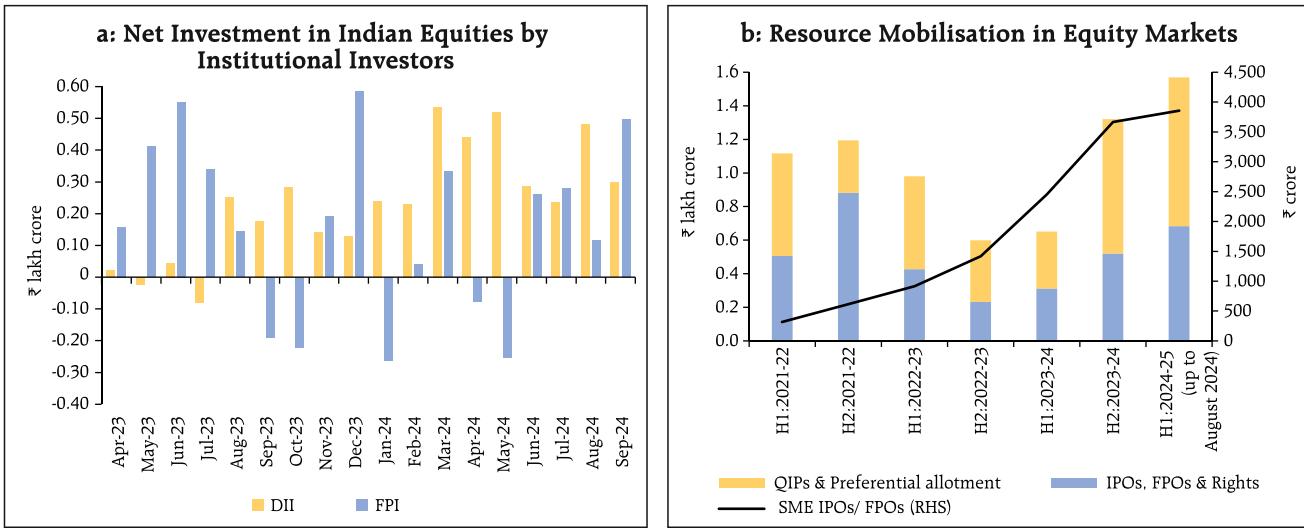
(Chart IV.13a). Amid bouts of volatility, India VIX averaged higher at around 14.8 during H1:2024-25 than 13.2 during H2:2023-24 (Chart IV.13b).

Foreign Portfolio Investment (FPI) flows remained volatile in the early half of H1:2024-25, with FPIs turning net sellers during April and May 2024. Foreign investors, however, remained overall net buyers in equities during H1:2024-25. Support from domestic institutional investors (DIIs), on the other hand, remained robust. Overall, DIIs and FPIs

Chart IV.13: Stock Market Performance in H1: 2024-25



Source: Bloomberg.

Chart IV.14: Institutional Investments and Resource Mobilisation

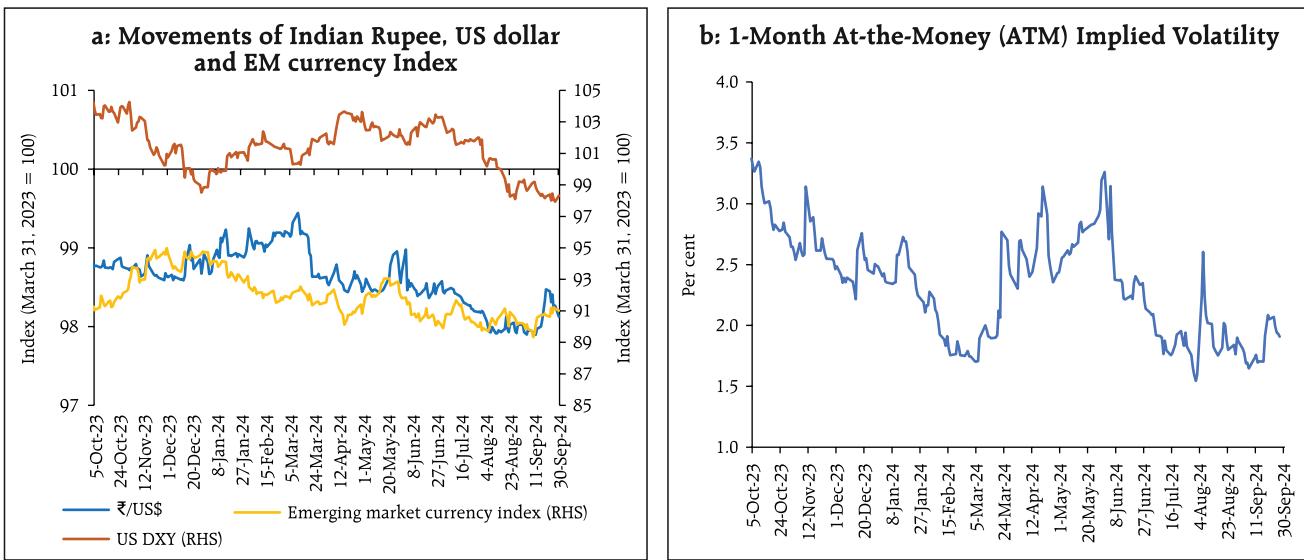
Note: IPO – Initial Public Offer. QIP – Qualified Institutional Placement. FPO – Follow On Public Offer
Sources: Capitaline; NSDL; and SEBI.

were net buyers to the tune of ₹2.26 lakh crore and ₹0.82 lakh crore, respectively, in H1 (Chart IV.14a). In terms of systematic investment plan (SIP) contributions through mutual funds, monthly collections crossed the ₹20,000 crore mark for the first time in April 2024, followed by fresh highs in each of the subsequent months in H1 (up to August 2024). Primary market resource mobilisation in equity markets was placed at ₹1.58 lakh crore during

H1 (up to August 2024) as against ₹1.32 lakh crore in H2:2023-24 (Chart IV.14b). Of the total resource mobilisation from the primary market, SME companies mobilised ₹3,858 crores (up to August 2024) through public issues.

IV.1.5 Foreign Exchange Market

The Indian rupee (INR) traded in a range-bound manner with a depreciating bias during the first half

Chart IV.15: Indian Rupee and Volatility

Sources: FBIL; Refinitiv Eikon; and Bloomberg.

of 2024-25 (Chart IV.15a). The US dollar remained strong on the back of elevated US treasury yields between April and mid-July 2024 but depreciated thereafter due to strong market expectations of a potential rate cut by the US Fed, which was eventually corroborated by the 50 bps rate cut by the US Fed on September 18. The unwinding of yen carry trade in early-August exacerbated volatility in global financial markets, *albeit* briefly. Overall, the volatility of the INR – measured by the 1-month at the money (ATM) option implied volatility – fell marginally to an average of 2.2 per cent during H1 from 2.4 per cent during H2:2023-24 (Chart IV.15b).

Between end-March and end-September 2024, the INR depreciated by 0.5 per cent against the US dollar, although it outperformed several EME peer currencies (Chart IV.16).

In terms of the Reserve Bank's 40-currency real effective exchange index, the INR appreciated by 0.1 per cent between March 2024 (average) and September 27, 2024 (Table IV.3).

Forward premia remained stable in Q1:2024-25 but rose in Q2, particularly for longer maturities, due to

Table IV.3: Nominal and Real Effective Exchange Rate Indices (Trade-weighted)
(Base: 2015-16 = 100)

Item	Index:	Appreciation (+) / Depreciation (-) (Per cent)
	September 27, 2024 (P)	September 27, 2024, over March (average) 2024
40-currency REER	104.7	0.1
40-currency NEER	90.2	-2.1
6-currency REER	101.7	2.0
6-currency NEER	81.3	-16.4
₹/US\$ (September 30)	83.8	-0.9

P: Provisional.

Sources: RBI; and FBIL.

increased expectations of a US rate cut. The 1-month forward premia averaged 1.18 per cent during H1:2024-25, marginally higher than 1.13 per cent in H2:2023-24, while the 12-month premia rose to 1.84 per cent in H1:2024-25 from 1.72 per cent in H2:2023-24 (Chart IV.17).

A composite view of all market segments suggest benign financial conditions in H1 (Box IV.2).

Chart IV.16: Global Movement in Currencies

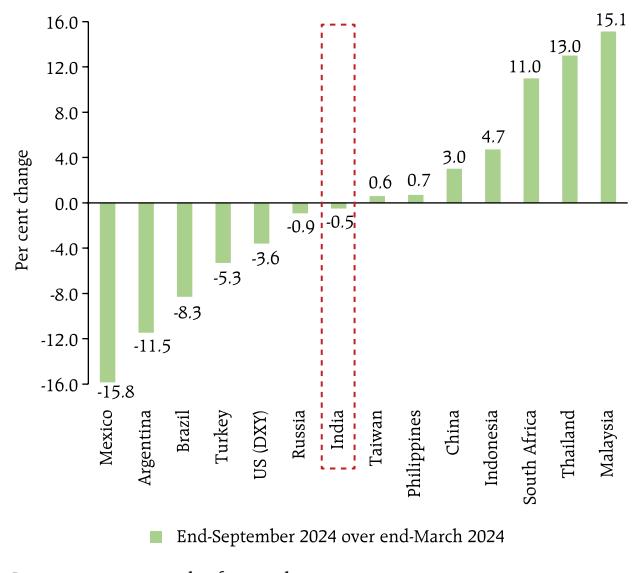


Chart IV.17: Movements in Forward Premia



Box IV.2: Financial Conditions Index – A High-Frequency Approach

A financial conditions index (FCI) is a summary measure that encapsulates the information content in a broad array of financial variables and helps to gauge the incipient stress in financial markets. Monetary policy actions impact financial conditions through channels of monetary transmission although financial conditions often change independently of policy decisions. The FCI is, thus, a valuable input for monetary policy in so far as it measures the impact of financial variables on real activity, *over and above* the direct effects of monetary policy (Hatzis et al., 2010). It can, therefore, serve as a guide on the effective stance of policy (Bowe et al., 2023).

An FCI for India is constructed by using twenty financial market indicators at daily frequency for the period January 1, 2012 to September 30, 2024. The chosen indicators represent 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 (Table IV.2.1). The money market segment includes indicators on liquidity conditions while the G-sec market segment is represented by latent factors *viz.*, level, slope, and curvature of the sovereign yield curve. The corporate bond market segment is captured through credit risk indicators. Finally, indicators on return and volatility of currency and equities constitute the forex and equity market segments, respectively. All indicators are factored into the index in a manner such that an increase in these indicate a tightening of financial conditions.

Table IV.2.1: Variables for FCI

Money Market	WAMMR spread over repo rate WAMMR volatility Net LAF / NDTL 3M CP (NBFC) over T-Bill
G-sec Market	Yield Curve level Yield Curve slope Yield Curve curvature
Corporate Bond Market	AAA 3yr spread AAA 5yr spread AA 3yr spread AA 5yr spread
Forex Market	India US 10yr yield differential USD-INR 1M ATM volatility Currency return 1M forward premia
Equity Market	India VIX PE level relative to 2yr moving average BSE Sensex return BSE Mid-Cap return BSE Small-Cap return

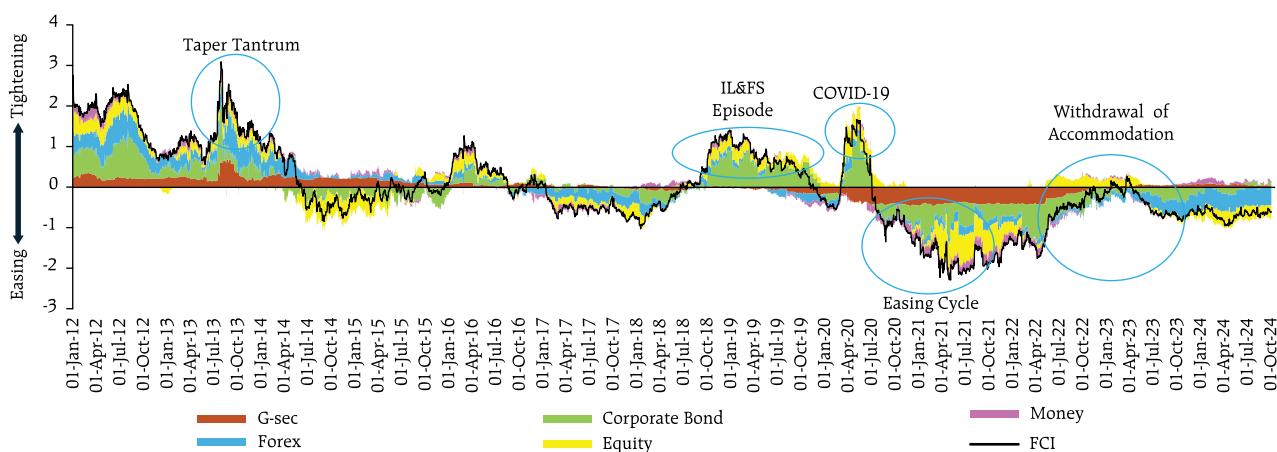
The FCI is computed using a dynamic factor model (DFM):

$$\begin{aligned} X_t &= \lambda(L)f_t + \xi_t \\ f_t &= \Psi(L)f_{t-1} + \eta_t \end{aligned} \quad (1)$$

where X_t is the vector of financial indicators, f_t is the underlying common factor representing the financial conditions index, and ξ_t and η_t are mean-zero serially uncorrelated idiosyncratic errors.

The standardized FCI along with the contribution of its constituent blocks is presented in Chart IV.2.1.

Chart IV.2.1: FCI and its Drivers



(Cont.)

The estimated FCI closely tracks the evolution of financial conditions in India over the years. The peaks in FCI are associated with major events like the taper tantrum, stress in the NBFC sector during the Infrastructure Leasing and Financial Services (IL&FS) episode and the COVID-19 pandemic. The major drivers of FCI, however, vary across events. While the forex market was the key factor during the taper tantrum, domestic factors were the primary drivers during the IL&FS and COVID-19 episodes. The exceptionally easy financial condition in the aftermath of the pandemic was driven by all market segments.

Since mid-2023, financial conditions have remained benign even as the policy repo rate remained on pause at 6.5 per cent and the stance continued to focus on

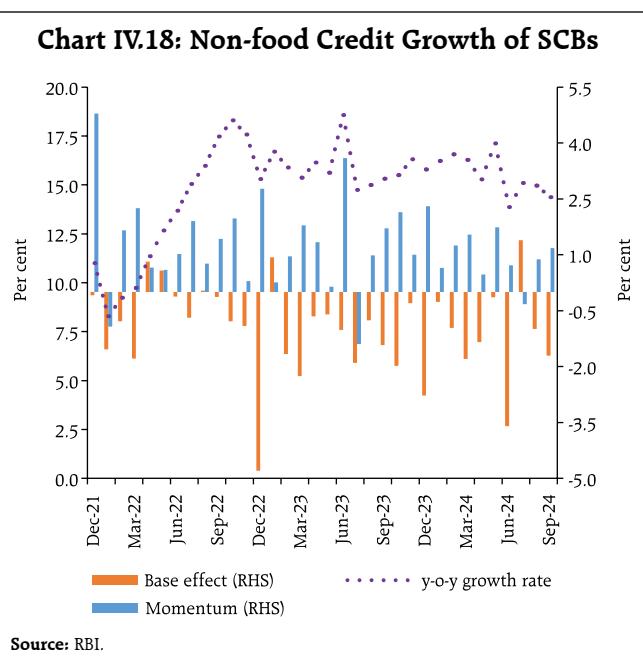
withdrawal of accommodation. Congenial financial conditions during this period were mainly driven by stable forex market conditions and the buoyant equity market, reflecting improved global investor confidence in India's economic outlook.

References:

- Bowe, F., Gerdrup, K.R., Maffei-Faccioli, N., and Olsen, H. (2023). A high-frequency financial conditions index for Norway. Staff Memo No. 1. Norges Bank.
- Hatzius, J., Hooper, P., Mishkin, F.S., Schoenholtz, K.L., and Watson, M.W. (2010). Financial Conditions Indexes: A Fresh Look After the Financial Crisis. *NBER Working Paper No. 16150*

IV.1.6 Credit Market⁹

Growth in bank credit remained strong in H1:2024-25, albeit with a slowing momentum. Non food bank credit of scheduled commercial banks (SCBs) decelerated to 14.4 per cent (y-o-y) as on September 20, 2024 from 15.3 per cent a year ago (Chart IV.18).



Across bank groups, credit growth of private sector banks (PVBs) remained higher (16.4 per cent) than that of public sector banks (PSBs) (12.9 per cent), while foreign banks' credit offtake picked up pace (Chart IV.19a). PSBs continued to account for the largest share of incremental credit, although their share declined vis-à-vis PVBs and foreign banks (Chart IV.19b).

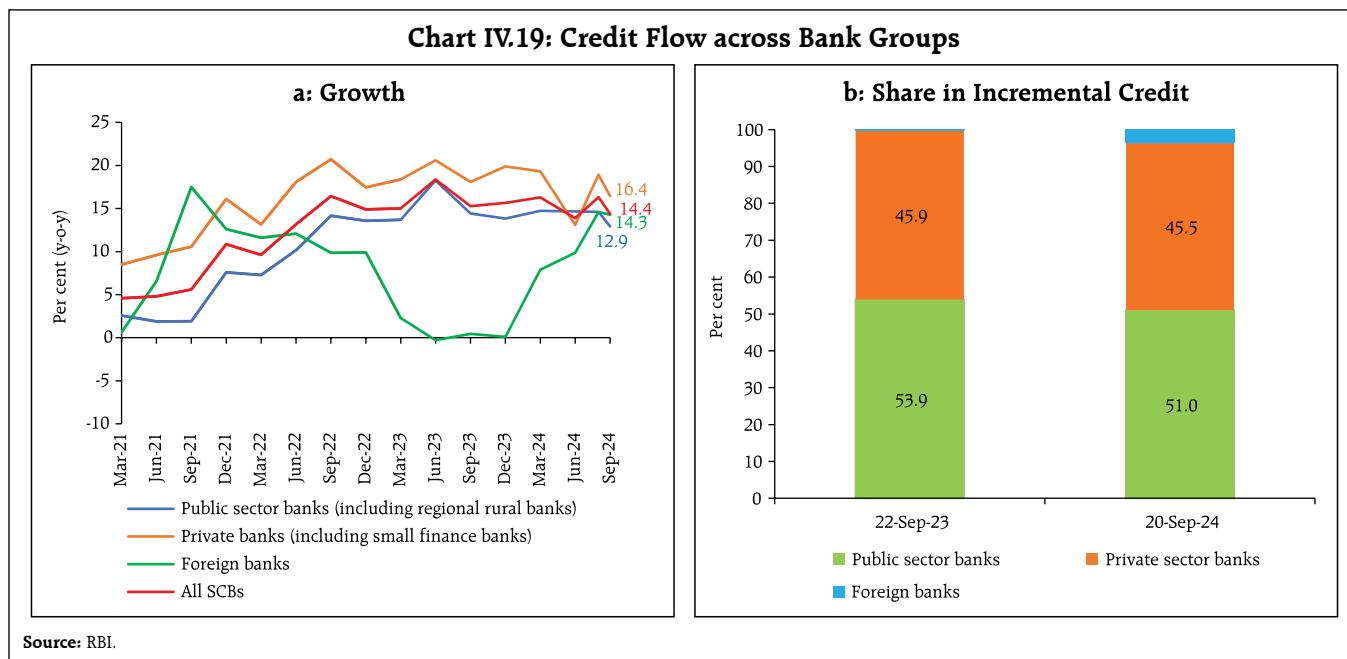
From a sectoral perspective, the overall growth (y-o-y) in bank credit was primarily driven by personal loans and services, although their share in total incremental credit moderated in H1:2024-25 (up to August) vis-à-vis the same period of the previous year¹⁰. Credit growth to the agriculture sector remained in double digits. Industrial credit growth, which was tepid during H1:2023-24, recorded an uptick in H1:2024-25 (up to August). Credit to services and personal loans segments, however, moderated, reflecting the impact of the regulatory measures¹¹ undertaken by the Reserve Bank in November 2023 (Chart IV.20a).

The share of agriculture and industry in SCBs' incremental credit offtake rose to 16.1 per cent and

⁹ While overall bank credit and non-food credit data are based on Section-42 return (which covers all SCBs), sectoral non-food credit data are based on sector-wise and industry-wise bank credit (SIBC) return, which covers select banks accounting for about 95 per cent of total non-food credit extended by all SCBs. Data on bank credit exclude the impact of merger of a non-bank with a bank.

¹⁰ The sectoral credit growth (y-o-y) for May 2024 is based on 27 fortnights as against the usual 26 fortnights.

¹¹ Risk weights on bank lending to NBFCs and retail loans excluding housing, education, vehicle loans, and loans against gold and gold jewellery were increased on November 16, 2023 (<https://rbidocs.rbi.org.in/rdocs/notification/PDFs/REGULATORYMEASURES8785E7886A044B678FB8AF2C6C051807.PDF>).



16.6 per cent, respectively, in August 2024 from 14.4 per cent and 9.6 per cent, respectively, in the previous year. In contrast, the incremental share of services and personal loans moderated over the same period (Chart IV.20b).

Credit to agriculture and allied activities registered double digit growth, improving to 17.7 per cent (y-o-y) in August 2024 from 16.5 per cent a year ago (Chart IV.20a), driven by favourable monsoon and continued

support from the Government through the price support scheme (PSS) for pulses & oilseeds and market intervention scheme (MIS) for perishable agricultural commodities.

Credit to industry grew by 9.8 per cent in August 2024 from 5.3 per cent a year ago, primarily driven by a pickup in offtake to large industry (Chart IV.21a). Higher credit expansion in micro, small and medium industries further supported growth in this

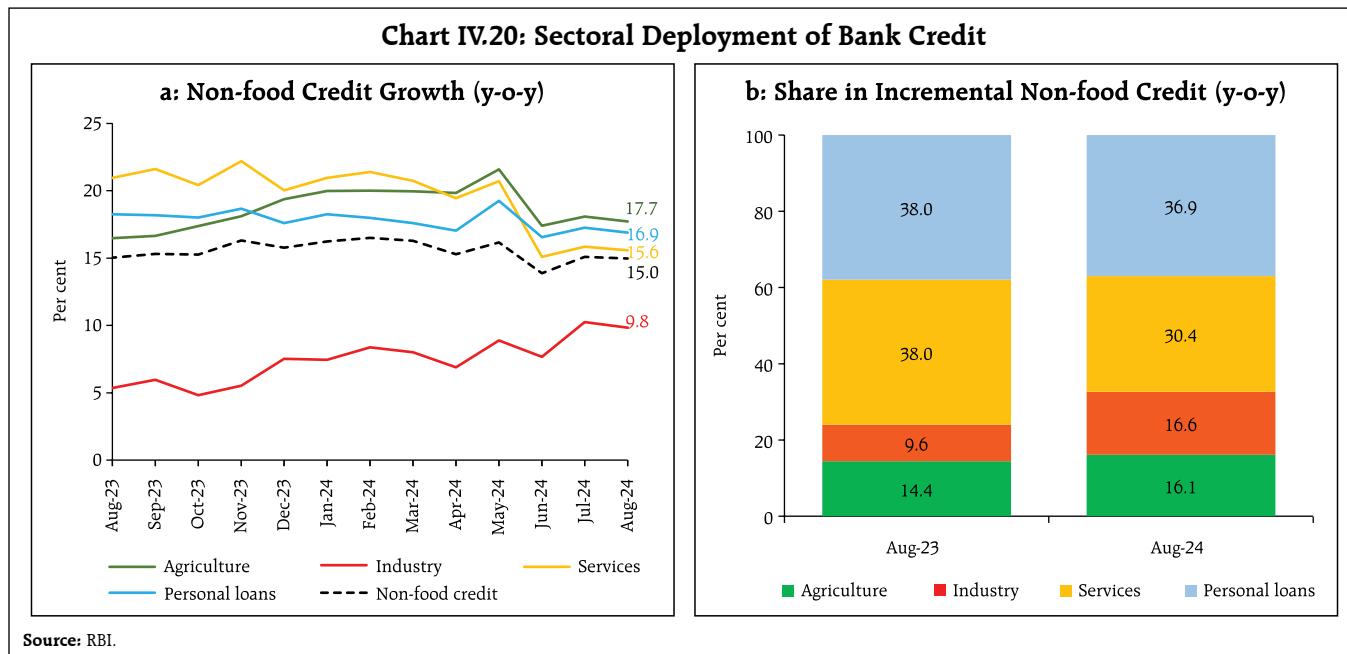
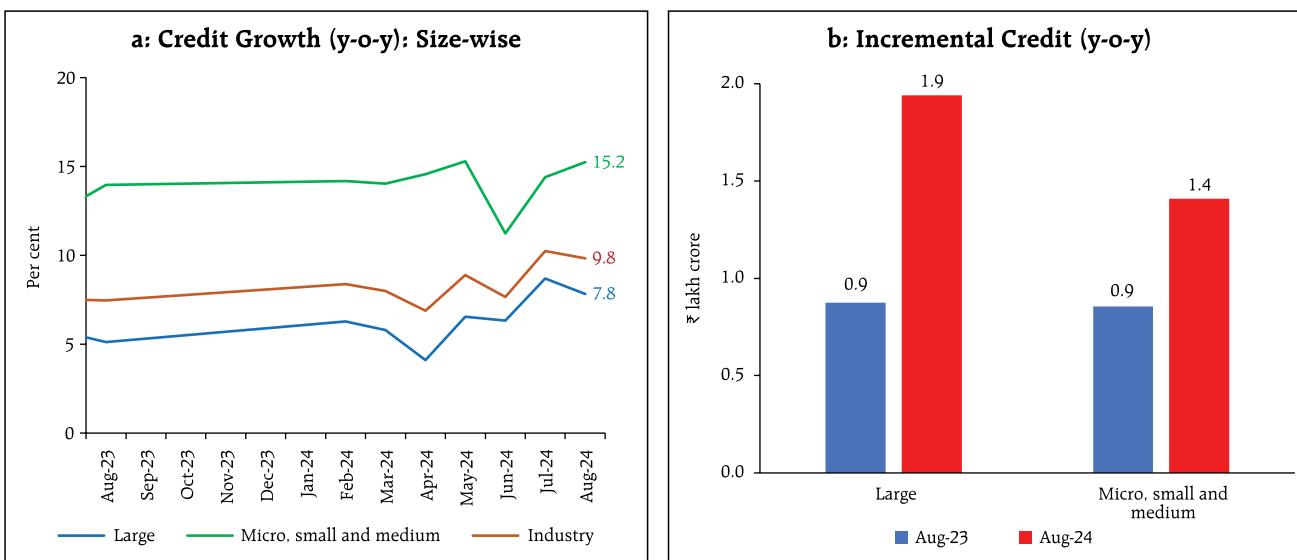


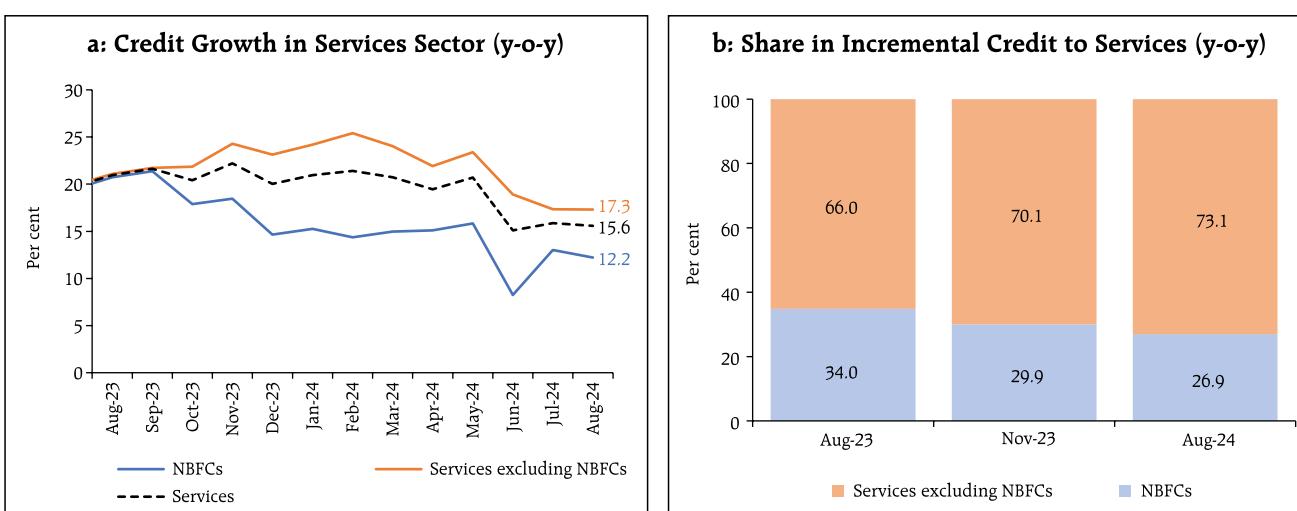
Chart IV.21: Bank Credit to Industry Sector

Source: RBI.

segment (Chart IV.21b). Among the major industrial sub-sectors, credit growth to chemicals and chemical products, food processing, infrastructure, and petroleum, coal products and nuclear fuels accelerated in August 2024.

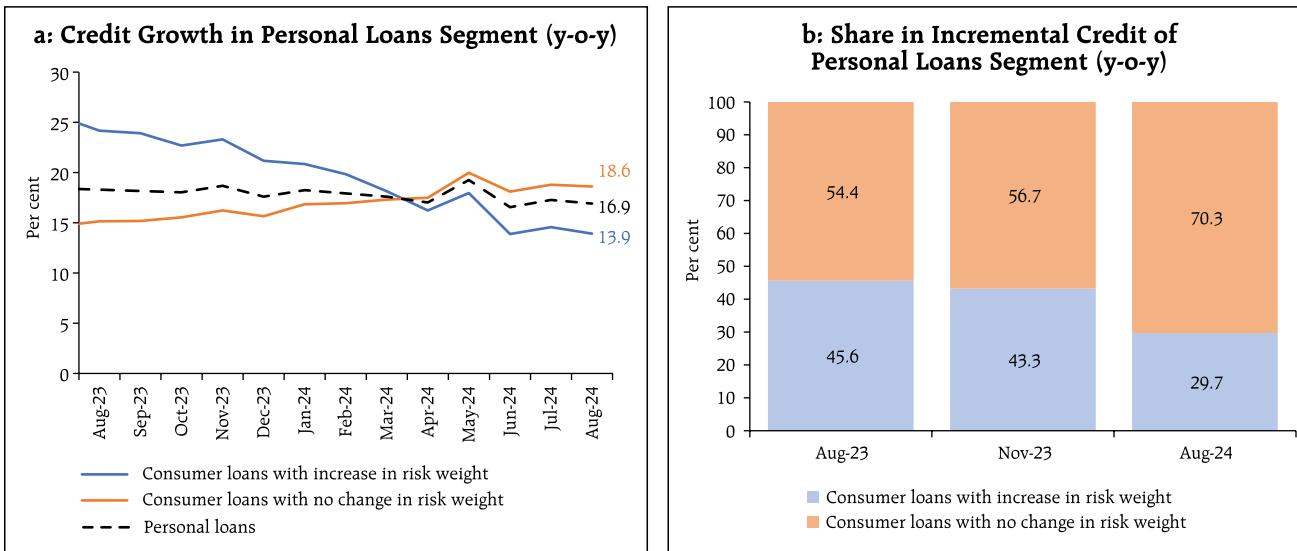
Credit growth to services and personal loans segments at 15.6 per cent and 16.9 per cent, respectively, in August 2024 displayed gradual moderation (Chart IV.22a and IV.23a). Within the services sector,

NBFCs were the main driver of overall growth. Increasing dependency of NBFCs on bank borrowings triggered regulatory concerns. Similarly, certain components showed higher growth in the personal loans segment, which led to concerns about incipient stress. To address the build-up of any potential risk, the Reserve Bank tightened lending norms in November 2023 as alluded to earlier. Consequently, total consumer loan growth in the sub-segments

Chart IV.22: Bank Credit to Services Sector

Note: In the case of NBFCs, a few banks have reported prepayment/repayment of their advances from some HFCs/PFIs/NBFCs, which also contributed to the decline in growth.

Source: RBI.

Chart IV.23: Bank Credit in Personal Loans Segment

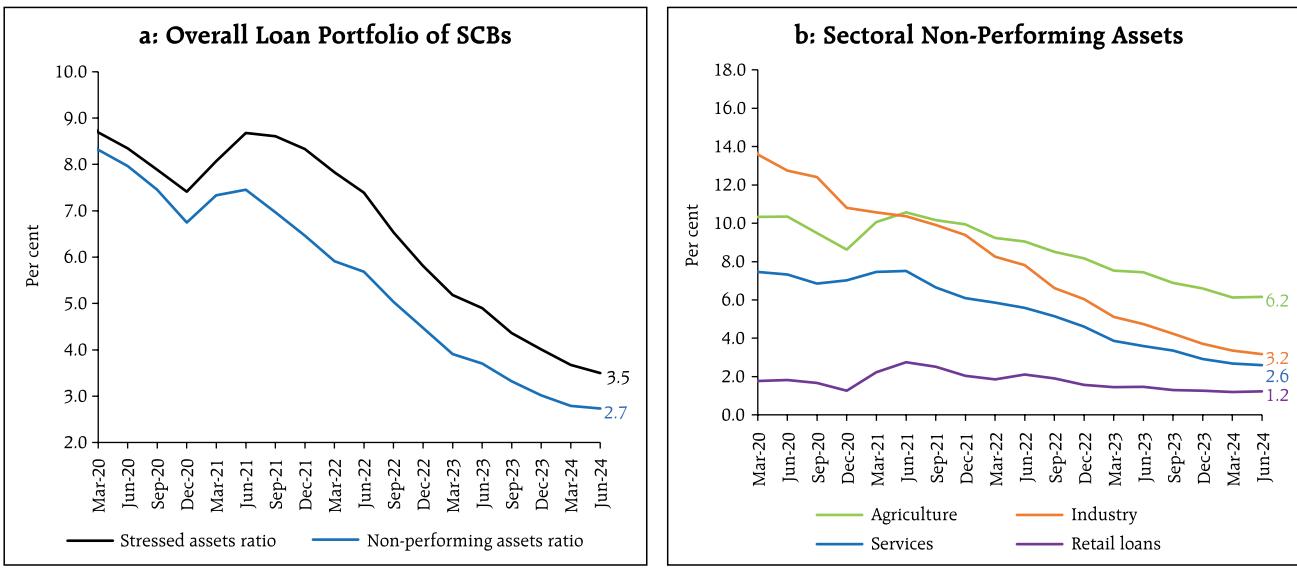
Source: RBI.

where risk weights were increased, moderated to 13.9 per cent while their share in incremental credit to the sector declined to 29.7 per cent in August 2024 (Chart IV.23b).

In tandem, growth in bank credit to NBFCs moderated to 12.2 per cent, bringing down its share to 26.9 per cent of incremental credit extended to services during the same period (Chart IV.22b).

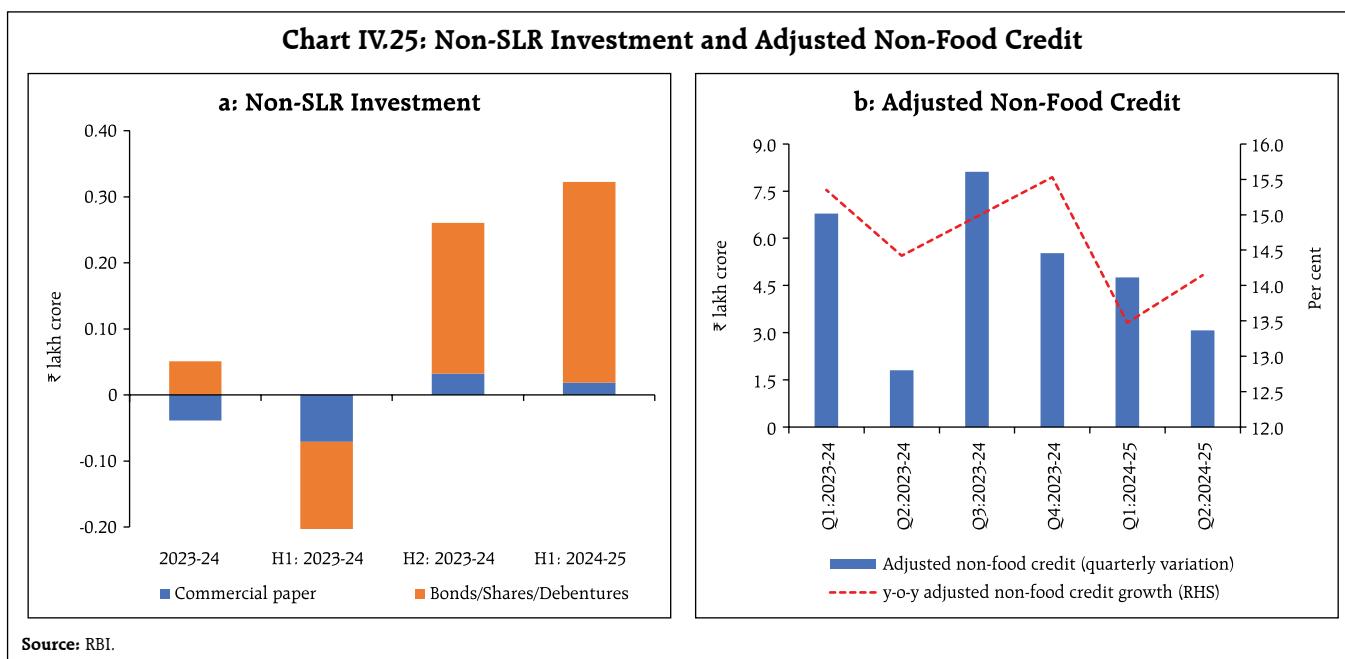
The asset quality of SCBs improved during 2024-25 (up to June 2024), with the overall gross non-performing assets (NPA) ratio declining to 2.7 per cent in June 2024 from 3.7 per cent a year ago (Chart IV.24a). Asset quality improved across all the major sectors (Chart IV.24b).

Growth in non-SLR¹² investments of banks (comprising investments in CPs, bonds, debentures and shares of

Chart IV.24: Stressed Assets and Non-Performing Assets of SCBs

Source: RBI.

¹² Statutory Liquidity Ratio



public and private corporates) increased to 4.8 per cent in H1:2024-25 from 4.1 per cent in H2:2023-24 (Chart IV.25a). The growth in adjusted non-food credit (*i.e.*, non-food bank credit *plus* non-SLR investments by banks) was marginally lower at 14.1 per cent in Q2:2024-25 as compared to 14.4 per cent in Q2:2023-24 (Chart IV.25b).

Excess holdings of SLR securities by SCBs as on September 6, 2024 were 8.8 per cent of their net

demand and time liabilities (NDTL), up from 8.6 per cent at end-September 2023 (Chart IV.26). Excess SLR holdings provide collateral buffers to banks for availing funds under the LAF as well as wholesale funding in the TREPS and market repo segments. They are also a component of the liquidity coverage ratio (LCR).

IV.2 Monetary Policy Transmission

Transmission to lending and deposit rates of banks continued in H1:2024-25, with the latter adjusting faster in the wake of persistent credit demand and the widening gap between credit and deposit growth. During H1:2024-25, the median 1-year marginal cost of funds based lending rate (MCLR) of SCBs increased by 10 bps, indicating a slightly higher cost of borrowing. During April-August 2024, the weighted average lending rates (WALRs) on fresh and outstanding rupee loans increased by 4 bps and 6 bps, respectively. In the current tightening cycle, *i.e.*, May 2022 to August 2024, in which the policy repo rate was cumulatively increased by 250 bps, the WALR of SCBs on fresh and outstanding rupee loans increased by 190 bps and 119 bps, respectively.

On the deposit side, the weighted average domestic term deposit rates (WADTDRs) on outstanding rupee

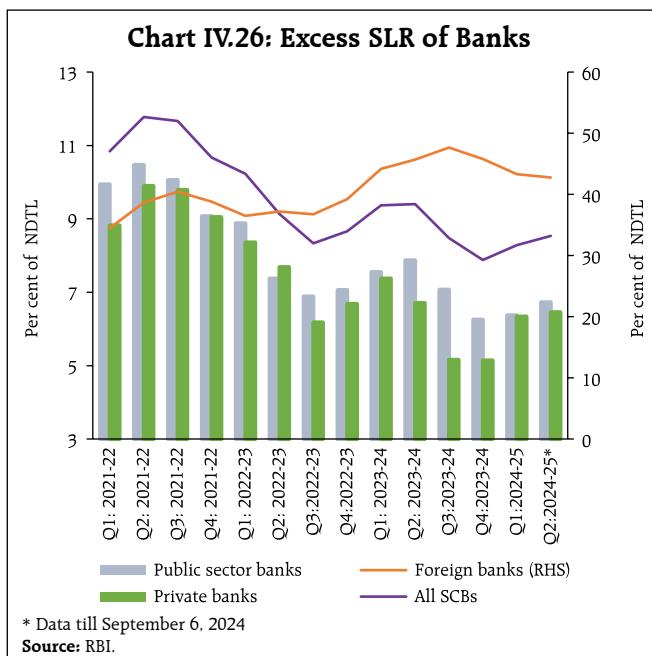


Table IV.4: Transmission from the Repo Rate to Banks' Deposit and Lending Rates
(Variation in basis points)

Period	Repo Rate	Term Deposit Rates			Lending Rates			
		WADTDR - Fresh Deposits		WADTDR- Outstanding Deposits	EBLR	1-Yr. MCLR (Median)	WALR - Fresh Rupee Loans	WALR- Outstanding Rupee Loans
		Retail Deposits	Retail and Bulk Deposits	Retail and Bulk Deposits				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Easing Phase Feb 2019 to Mar 2022	-250	-209	-259	-188	-250	-155	-232	-150
Tightening Period May 2022 to Aug 2024*	+250	186	243	190	250	170	190	119
Of which								
Apr 2023 to Aug 2024*	0	12	-2	77	-	40	9	19
Apr 2024 to Aug 2024*	0	21	-16	4	-	10	4	6

Notes: Data on EBLR pertain to 32 domestic banks.

*: Latest data on EBLR and MCLR pertain to September 2024.

WALR: Weighted average lending rate; WADTDR: Weighted average domestic term deposit rate;

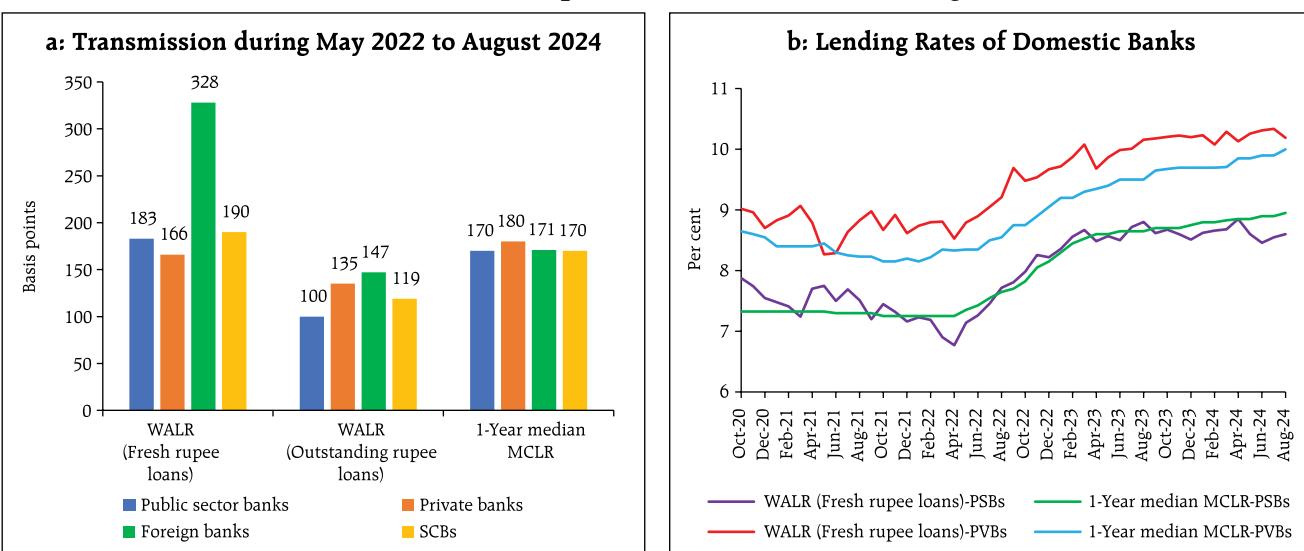
MCLR: Marginal cost of funds-based lending rate; EBLR: External benchmark-based lending rate.

Source: RBI.

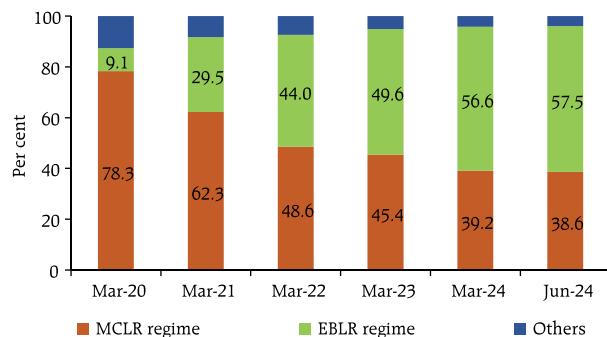
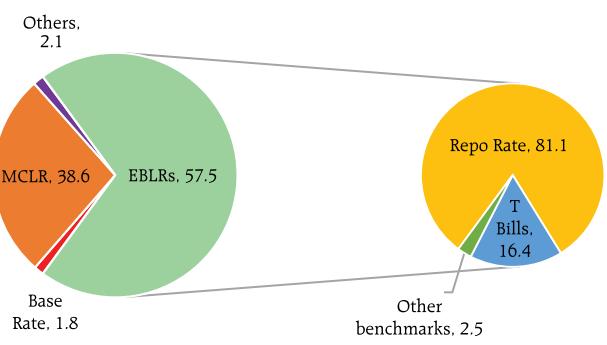
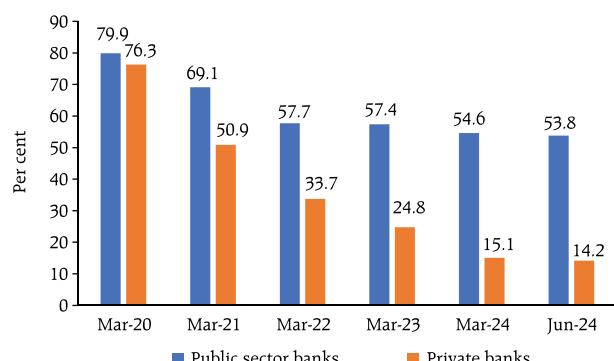
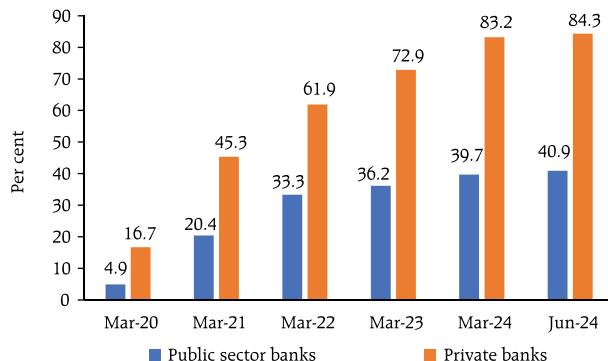
deposits of SCBs increased by 4 bps in H1:2024-25 (up to August 2024); however, it moderated by 16 bps for fresh deposits. Banks have increased their rates on fresh retail deposits by 21 bps during the same period. The WADTDRs on fresh and outstanding rupee deposits of SCBs increased by 243 bps and 190 bps, respectively, during May 2022 to August 2024 (Table IV.4).

Bank group-wise, the transmission to WALRs on fresh rupee loans of PSBs was higher than that of PVBs, while it was lower for outstanding loans (Chart IV.27a). The lending rates of PVBs remained above those of PSBs (Chart IV.27b). The maximum pass-through to lending rates was witnessed in the case of foreign banks, reflecting their higher share of low-cost and wholesale deposits of lower maturity. Moreover, the

Chart IV.27: Bank Group wise Transmission to Lending Rates



Source: RBI.

Chart IV.28: Outstanding Floating Rate Rupee Loans of SCBs across Interest Rate Benchmarks
a: Share of Outstanding Floating Rate Rupee Loans of SCBs across Interest Rate Benchmarks

b: As on June 2024

c: Share of MCLR linked Loans

d: Share of EBLR linked Loans


Notes: 1. Data pertain to 73 scheduled commercial banks.

2. 'Others' include benchmark prime lending rate, base rate and other internal benchmarks.

3. 'Other benchmarks' include any other market interest rate published by FBIL.

Source: RBI.

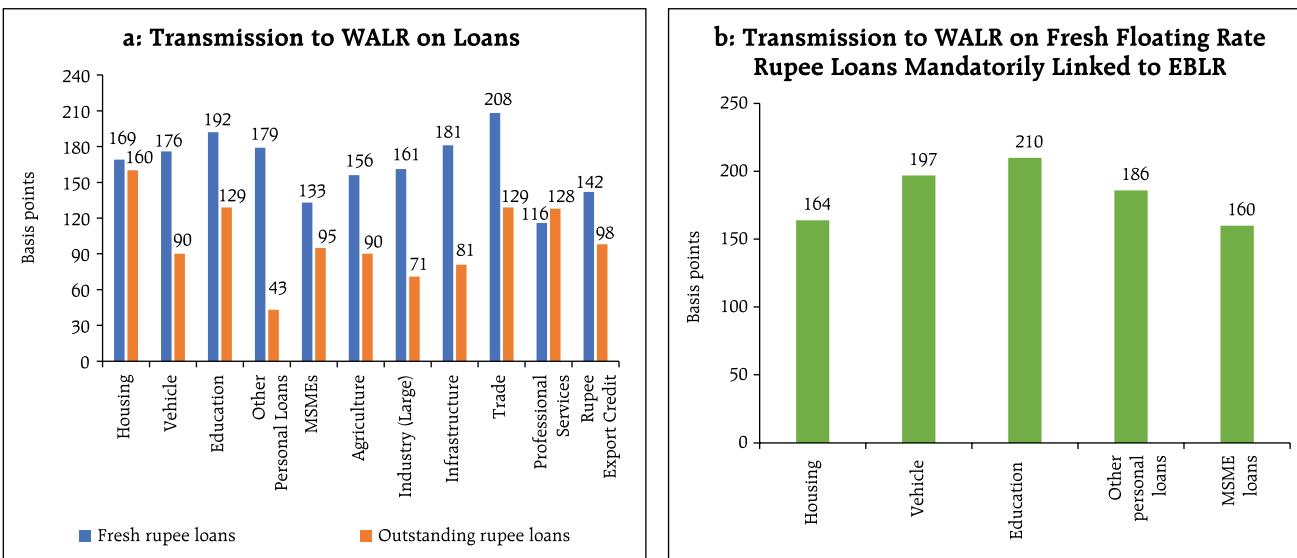
higher share of external benchmark-based lending rate (EBLR)-linked loans in foreign banks further facilitated monetary policy transmission¹³.

The share of EBLR-linked loans in total outstanding floating rate loans increased to 57.5 per cent at end-June 2024 from 56.6 per cent at end-March 2024. Concomitantly, the share of MCLR-linked loans declined to 38.6 per cent from 39.2 per cent over the same period (Chart IV.28a,b). The increasing share of EBLR-linked loans with shorter reset periods aided transmission to WALRs of SCBs in the current tightening cycle. There is still a significant proportion of loans linked to MCLR in the case of PSBs (Chart IV.28c). The

share of EBLR-linked loans is higher among private banks (Chart IV.28d). The persistence of loans linked to MCLR and other legacy rates – based on internal benchmarks and having longer reset periods – are impediments to faster monetary policy transmission.

During May 2022 to August 2024, the transmission to WALRs on fresh and outstanding loans has been broad-based across sectors (Chart IV.29a). The differential pace of transmission in various sectors is on account of the proportion of credit portfolios linked to fixed and floating interest rates in the particular sector and the varied spreads charged by banks. In the case of floating rate loans that are mandatorily linked to

¹³ The proportion of EBLR-linked loans for foreign banks was 90.1 per cent as at end-June 2024.

Chart IV.29: Sector-wise Transmission to WALRs of Domestic Banks (May 2022 to August 2024)

Source: RBI.

EBLR, the WALRs on fresh loans of domestic banks increased by 210 bps for education loans, 197 bps for vehicle loans, 164 bps for housing loans and 160 bps for MSME loans (Chart IV.29b).

Banks have reduced their spreads (WALRs on fresh floating rate rupee loans over the policy repo rate), which moderated the extent of transmission (Table IV.5).

Table IV.5: Spread of WALR (Fresh Loans) over the Repo Rate for the Loans linked to External Benchmark

(Per cent)

Sectors	Apr-22			Aug-24		
	Public sector banks	Private sector banks	Domestic banks	Public sector banks	Private sector banks	Domestic banks
MSME Loans	4.27	3.93	4.04	3.18	3.13	3.14
Personal Loans						
Housing	2.91	3.32	3.21	2.11	2.44	2.35
Vehicle	3.37	4.39	3.55	2.62	3.86	3.02
Education	4.42	5.71	4.71	3.62	4.78	4.31
Other personal loans	3.54	7.35	4.01	2.97	5.44	3.37

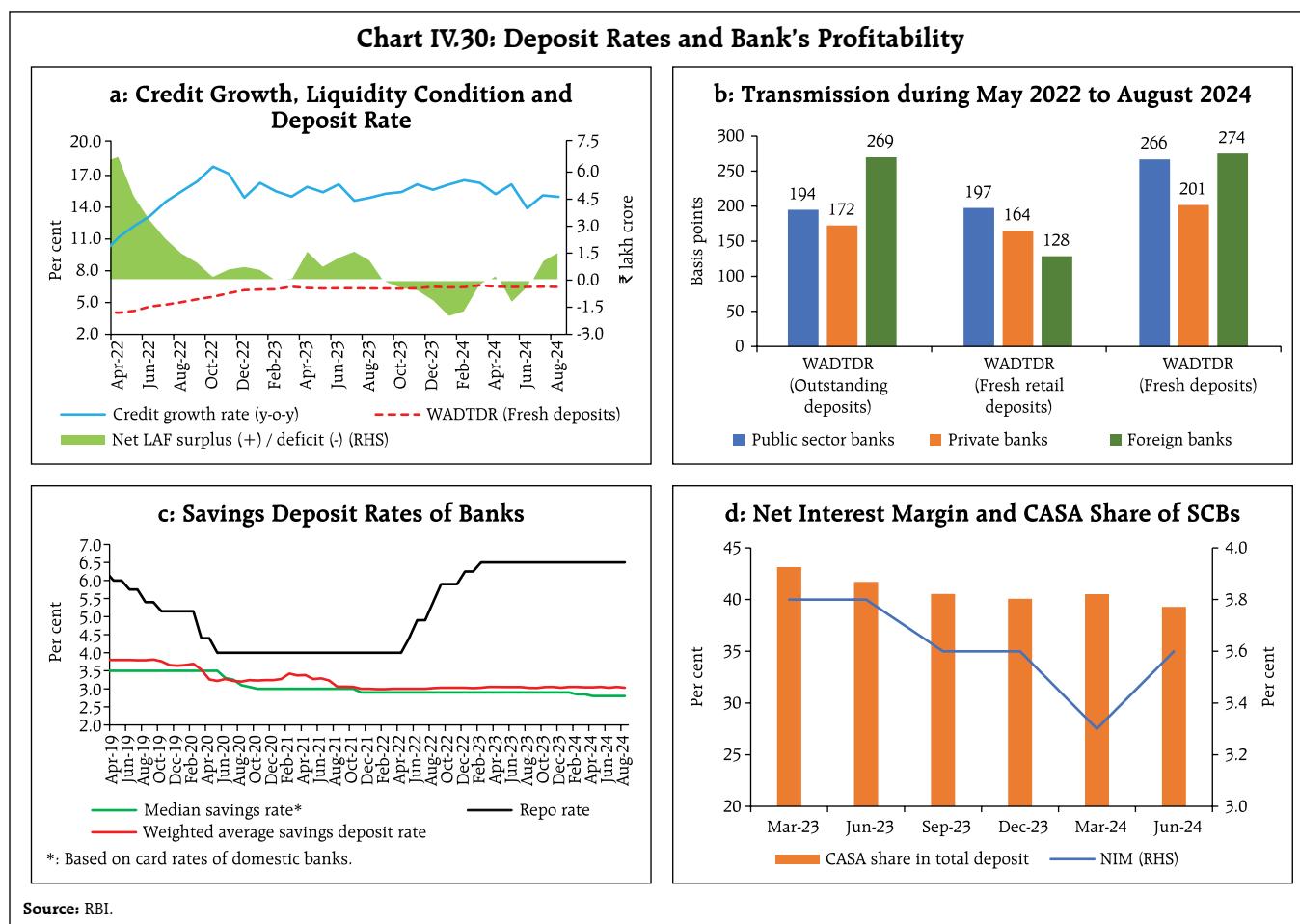
Note: Other personal loans include loans other than housing, vehicle, education and credit card loans.

Sources: RBI; and RBI staff estimates.

The combination of sustained credit demand and persistent gap between credit and deposit growth prompted banks (especially PSBs) to increase their term deposit rates to bridge the funding gap (Chart IV.30a). Across bank groups, the pass-through to WADTDRs on fresh and outstanding deposit rates was higher for PSBs than PVBs (Chart IV.30b).

Despite deregulation of interest rates by the Reserve Bank in October 2011, savings bank deposit rates have remained mostly sticky and unresponsive to evolving macro-financial conditions (Chart IV.30c). Given that savings deposit comprise about 30 per cent of total deposits, the overall transmission to deposit rates remains low if savings deposit rates remain immune to policy rate changes. Moreover, the decline in the share of current account and savings account (CASA) deposits in total deposits, along with the higher increase in term deposit rates *vis-a-vis* lending rates have exerted downward pressure on the net interest margins (NIMs) of banks (Chart IV.30d).

Since Q3:2022-23, interest rates on various small savings instruments have been cumulatively increased in the range of 70-250 bps by the GoI (Chart IV.31).



With these adjustments, the rates on most of the instruments are now aligned with the formula-based

rates, except for those on public provident funds and post office recurring deposits. Competitive rates are now being offered on post office time deposits of shorter tenor (Table IV.6).

IV.3 Liquidity Conditions and the Operating Procedure of Monetary Policy

The Reserve Bank of India (RBI) Act, 1934 requires the RBI to place the operating procedure relating to the implementation of monetary policy and changes thereto from time to time, if any, in the public domain. During H1:2024-25, the monetary policy committee (MPC) kept the policy repo rate unchanged at 6.50 per cent and continued with the stance of withdrawal of accommodation to ensure that inflation progressively aligns to its target of 4 per cent, while supporting growth. In view of the changing liquidity dynamics, the Reserve Bank conducted two-way operations

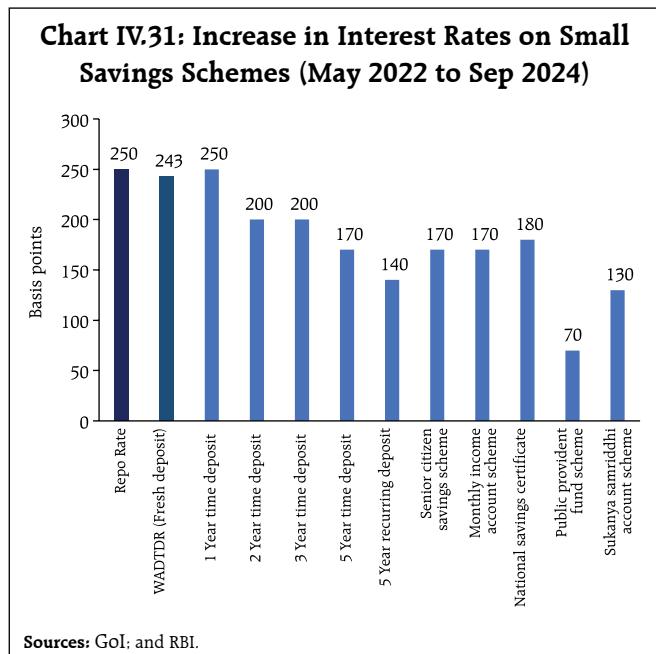


Table IV.6: Interest Rates on Small Savings Instruments – Q3:2024-25

Small Savings Schemes	Maturity (years)	Spread (Percentage point) \$	Average G-sec yield (%) of corresponding maturity (Jun 2024-Aug 2024)	Formula based rate of Interest (%) (applicable for Q3: 2024-25)	GoI Announced Rate of interest for Q3:2024-25 (in %)	Difference (Percentage point)
(1)	(2)	(3)	(4)	(5) = (3) + (4)	(6)	(7) = (6) - (5)
Savings Deposit	-	-	-	-	4.00	-
Public Provident Fund	15	0.25	7.09	7.34	7.10	-0.24
Term Deposits						
1 Year	1	0	6.81	6.81	6.90	0.09
2 Year	2	0	6.81	6.81	7.00	0.19
3 Year	3	0	6.82	6.82	7.10	0.28
5 Year	5	0.25	6.83	7.08	7.50	0.42
Recurring Deposit Account	5	0	6.82	6.82	6.70	-0.12
Monthly Income Scheme	5	0.25	6.79	7.04	7.40	0.36
Kisan Vikas Patra	115 Months [#]	0	7.09	7.09	7.50	0.41
NSC VIII issue	5	0.25	7.01	7.26	7.70	0.44
Senior Citizens Saving Scheme	5	1.00	6.83	7.83	8.20	0.37
Sukanya Samridhhi Account Scheme	21	0.75	7.09	7.84	8.20	0.36

\$: Spreads for fixing small saving rates as per Government of India Press Release of February 2016.

#: Current maturity is 115 months.

Note: Compounding frequency varies across instruments.

Sources: GoI; FBIL; and RBI staff estimates.

under the LAF to ensure orderly evolution of financial markets.

Drivers and Management of Liquidity

System liquidity transited from deficit in H2:2023-24 to surplus in H1:2024-25. Within H1, system liquidity was in deficit in Q1 with seasonal expansion in currency in circulation (CiC), build-up of government cash balances, and the increase in excess cash reserve ratio (CRR) balances held by banks. As a result, average daily net injection under the LAF (including MSF) stood at ₹0.5 lakh crore in Q1:2024-25. The liquidity dynamics changed in Q2 with the return of currency to the banking system, the Reserve Bank's forex purchases and the pick-up in government spending after the elections. The Reserve Bank modulated excess liquidity through open market operations

(OMOs) under the NDS-OM¹⁴ in Q2. Consequently, average daily net absorption under the LAF stood at ₹1.3 lakh crore in Q2 (Table IV.7).

During H1:2024-25, average daily net absorption under the LAF at ₹0.4 lakh crore was sharply in contrast to an average daily net injection of ₹1.1 lakh crore during H2:2023-24. Consequently, average borrowings under the MSF declined to ₹8,004 crore in H1:2024-25 from ₹71,574 crore in H2:2023-24. Of the average total absorption under the LAF, placement of funds under the SDF was ₹0.84 lakh crore (73.2 per cent), while the remaining was absorbed through variable rate reverse repo (VRRR) auctions during H1.

The Reserve Bank remained nimble and flexible in liquidity management and conducted two-way operations during H1 in view of the shifting liquidity dynamics. With system liquidity remaining in surplus

¹⁴ Negotiated Dealing System - Order Matching.

Table IV.7: Liquidity – Key Drivers and Management

(₹ crore)

	2023-24			2024-25		
	Q1	Q2	H1	Q1	Q2	H1
Drivers						
(i) CiC [withdrawal (-) / return (+)]	18,103	71,253	89,356	-47,264	80,820	33,556
(ii) Net Forex Purchases (+)/ Sales (-)	1,60,738	-16,071	1,44,667	-13,016	83,418	70,402
(iii) GoI Cash Balances [build-up (-) / drawdown (+)]	-2,37,937	-1,79,913	-4,17,850	-97,774	-52,720	-1,50,494
(iv) Excess Reserves [build-up (-) / drawdown (+)]	-31,485	-3,440	-34,925	-58,523	21,755	-36,768
Management						
(i) Net OMO Purchases (+)/ Sales (-)	0	-8,480	-8,480	0	-24,040	-24,040
(ii) Required Reserves [including both change in NDTL and CRR]	-33,712	-1,01,508	-1,35,220	-30,413	-25,200	-55,613
Memo Item						
Net Absorption (+)/ Injection (-) as at end-period	1,29,194	-40,636	-40,636	37,004	1,54,395	1,54,395

CiC: Currency in Circulation.

GoI: Government of India

Note: (+) / (-) sign suggests accretion/depletion in banking system liquidity.

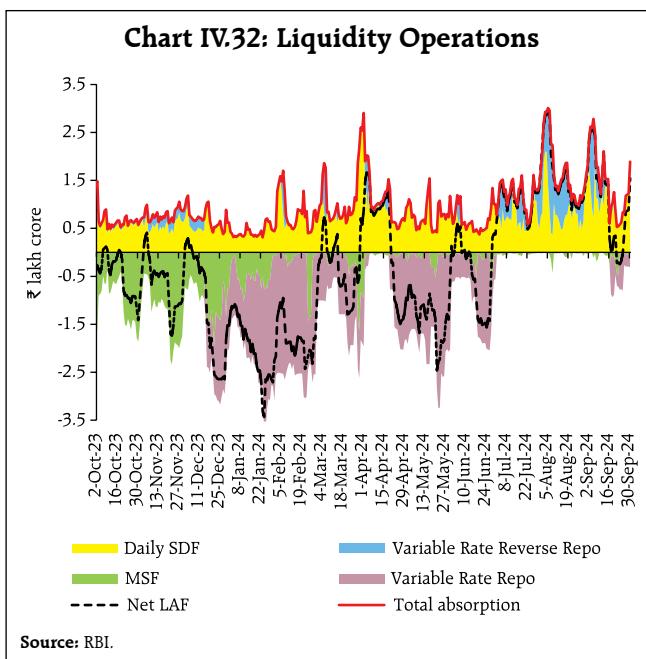
Data pertain to the last Friday of the respective period.

Source: RBI.

during April 2024 (up to April 19), the Reserve Bank conducted one main and seven fine-tuning VRRR auctions (1-3 days maturity), cumulatively mopping up ₹2.3 lakh crore from the banking system. As liquidity turned into deficit since the latter half of April, five main and 17 fine-tuning variable rate repo (VRR) auctions were conducted, cumulatively injecting ₹15.5 lakh crore into the system to ease liquidity tightness in Q1:2024-25¹⁵. A 3-day VRR auction was conducted on June 28 (Reporting Friday) instead of the main operation as liquidity conditions were expected to improve significantly in the near term. As systemic liquidity turned into surplus at the beginning of July, the Reserve Bank switched to variable rate reverse repo (VRRR) auctions to absorb surplus liquidity. Overall, 49 VRRR auctions – 5 main and 44 fine-tuning operations of maturities ranging 1-7 days – were conducted during Q2 to absorb surplus liquidity (Chart IV.32). As liquidity turned into deficit in the latter half of September, the Reserve Bank conducted one main and 3 fine-tuning VRR operations, cumulatively injecting ₹2.1

lakh crore into the system during the second half of September to ease liquidity conditions.

The fine-tuning VRRR auctions, on average, elicited better response from the banks than the fortnightly main operations in H1.¹⁶ Given the tepid response of



¹⁵ During this period, 3 fine-tuning VRRR operations were conducted on May 6 and June 4, cumulatively absorbing liquidity to the tune 0.7 lakh crore.

¹⁶ The average bid-offer ratio of fine-tuning auctions was 0.48 as compared to 0.17 for the fortnightly main auctions.

Table IV.8: Banking and Monetary Aggregates
(y-o-y growth, per cent)

Indicator	March 2023	March 2024	June 2024	September 2024
Reserve money (Adjusted for CRR changes)	10.0 (7.6)	6.7 (6.7)	7.4 (7.4)	4.7 (6.8)
Broad money (M3)	9.0	11.2	9.7	10.8
Currency in circulation	7.8	4.1	6.0	5.7
Aggregate deposits	9.6	12.9	10.6	12.0
Demand deposits	5.2	12.1	6.2	13.3
Time deposits	10.2	13.7	11.8	11.3
Bank credit	15.0	16.3	13.9	14.4

Note: Data is as on last reporting fortnight of the quarter. Data on broad money, deposits and credit growth exclude the impact of merger of a bank with a non-bank.

Source: RBI.

banks in parking surplus liquidity for longer tenors as reflected in the lower bid-offer ratio in the main VRRR operations, the Reserve Bank conducted more fine-tuning operations in Q2.

As on September 20, 2024, reserve money (RM) expanded by 6.8 per cent (y-o-y) (adjusted for the first-round impact of the change in CRR) as against 6.7 per cent at end-March 2024. The growth in CiC

accelerated to 5.7 per cent in September 2024 from 4.1 per cent at end-March 2024. Money supply (M3) growth decelerated to 10.8 per cent (y-o-y) as on September 20, 2024, from 11.2 per cent in end-March 2024 (Table IV.8).

IV.4 Conclusion

In contrast to volatile global financial markets, domestic market conditions remained stable in H1:2024-25. Money market rates evolved in tune with liquidity shifts, consistent with the monetary policy stance. Domestic long-term bond yields eased amidst an improving inflationary outlook and positive global sentiment on India's prospects. Equity market scaled new highs, mainly supported by domestic investors. The INR traded with a depreciating bias but remained among the least volatile EME currencies during H1. Monetary transmission continued with credit growth continuing to outpace deposit expansion. Going forward, the Reserve Bank will remain agile and nimble in conducting market operations to ensure financial stability while providing liquidity to meet the productive requirements of the economy.

V. External Environment

Global growth remains resilient. Headline inflation decelerated at a sluggish pace as sticky services prices hindered strong disinflation in goods. Most central banks tread the path of monetary policy normalisation but with measured cuts and cautious pace, while others retain their restrictive stance. Fluctuating perceptions on the monetary policy trajectory imparted volatility to global financial markets. Stubborn services inflation, high public debt, geopolitical risks, potential escalation of trade tensions, and extreme weather events pose downside risks to the global growth outlook.

Global economic activity remains resilient. World trade has firmed up, propelled by strong exports from Asia. Both headline and core inflation (headline excluding food and energy) continue to decelerate, albeit at a sluggish pace, with strong disinflation in goods hindered by persistence of higher-than-average services inflation. With inflation still above target for some inflation targeting advanced economies (AEs), central banks remain cautious while unwinding their restrictive stance. Some emerging market economies (EMEs), on the other hand, that had initiated preemptive tightening to curb inflation persistence at elevated levels have continued to normalise their monetary policies while others retain policy rates at restrictive levels. Global financial markets remain volatile in response to fluctuating perceptions on the monetary policy trajectory and how it impacts the growth-inflation trade-off. Equity markets have broadly gained notwithstanding intermittent bouts of sharp spikes in volatility. Sovereign bond yields have softened, while the US dollar has pared strength since April 2024. Off-late, however, both sovereign bond yields and US dollar index have inched up,

reversing its earlier trend. Risks to the global growth outlook remain broadly balanced.

V.1 Global Economic Conditions

In 2024 so far, global economic activity has moderated in the face of tight financial conditions and persistent geopolitical risks. High frequency indicators for Q3:2024 point to faltering momentum in manufacturing but a durable expansion in services sector activity. In its World Economic Outlook (WEO) update of July 2024, the International Monetary Fund (IMF) retained global growth projections at 3.2 per cent for 2024 while increasing it to 3.3 per cent for 2025.¹

Amongst the AEs, the US economy grew by 3.0 per cent (quarter-on-quarter seasonally adjusted annualised rates (q-o-q, saar)) in Q2:2024, faster than in Q1 (1.6 per cent) (Table V.1). This improvement was driven by consumer spending, private inventory investment, and non-residential fixed investment, while imports also increased. Labour market conditions have been easing, with the unemployment rate picking up to 4.1 per cent in September (3.8 per cent in March). The US composite Standard and Poor's (S&P) global purchasing managers' index (PMI) was robust at 54.0 in September 2024, though increasingly uneven as services activity exhibited solid expansion while manufacturing output declined.

Real GDP growth in the euro area decelerated in Q2 to 0.8 per cent (q-o-q, saar) from 1.3 per cent in Q1 due to decline in gross fixed capital formation. Labour markets remained resilient, with the unemployment rate at 6.4 per cent in August, its lowest level since the start of the euro. The Eurozone composite PMI hit a seven-month low of 49.6 in September from 51.0 in August as downturn in

¹ The Organisation for Economic Co-operation and Development (OECD) in its Interim Economic Outlook (September 2024) revised up global growth forecast for 2024 by 10 bps to 3.2 per cent from May 2024 projections and retained it at 3.2 per cent for 2025.

Table V.1: Real GDP Growth
(Per cent)

Country	Q3-2023	Q4-2023	Q1-2024	Q2-2024	2023	2024 (P)	2025 (P)
Quarter-on-quarter, seasonally adjusted, annualised rate (q-o-q, saar)							
Canada	-0.3	0.1	1.8	2.1			
Euro area	0.2	0.3	1.3	0.8			
Japan	-4.3	0.2	-2.4	2.9			
South Korea	3.0	1.8	5.3	-0.9			
UK	-0.4	-1.3	2.8	1.8			
US	4.4	3.2	1.6	3.0			
Year-on-year							
Advanced Economies							
Canada	0.7	1.0	0.6	0.9	1.2	1.3	2.4
Euro area	0.0	0.2	0.5	0.6	0.5	0.9	1.5
Japan	1.3	0.9	-0.9	-1.0	1.9	0.7	1.0
South Korea	1.4	2.1	3.3	2.3	1.4	2.5	2.2
UK	0.3	-0.3	0.3	0.7	0.1	0.7	1.5
US	3.2	3.2	2.9	3.0	2.5	2.6	1.9
Emerging Market Economies							
Brazil	2.0	2.1	2.5	3.3	2.9	2.1	2.4
China	4.9	5.2	5.3	4.7	5.2	5.0	4.5
India	8.1	8.6	7.8	6.7	8.2	7.0	6.5
Indonesia	4.9	5.0	5.1	5.1	5.0	5.0	5.1
Philippines	6.0	5.5	5.8	6.3	5.5	6.0	6.2
Russia	5.7	4.9	5.4	4.1	3.6	3.2	1.5
South Africa	-0.9	1.4	0.5	0.3	0.7	0.9	1.2
Thailand	1.4	1.7	1.6	2.3	1.9	2.9	3.1
Memo:							
World		2023		2024 (P)		2025 (P)	
Year-on-year							
Output			3.3		3.2		3.3
Trade volume			0.8		3.1		3.4

P: Projection.

Note: India's data correspond to fiscal year (April-March); e.g., 2024 pertains to April 2024-March 2025.

Sources: Official statistical agencies; Bloomberg; IMF WEO Update, July 2024 and RBI staff estimates.

manufacturing output deepened amidst a sustained reduction in new orders.

GDP growth in the UK, despite moderating from 2.8 per cent (q-o-q, saar) in Q1:2024, remained resilient at 1.8 per cent in Q2 supported by increases in gross capital formation, government consumption and household spending. The unemployment rate increased to 4.3 per cent in April-July 2024 from the average of 4.0 per cent in 2023. The UK composite PMI posted 52.6 in September, down from 53.8 in August with

slower upturns reflected in both the sectors. Japan's GDP rebounded strongly and grew by 2.9 per cent in Q2:2024 (q-o-q, saar) *vis-à-vis* a contraction of 2.4 per cent in Q1, driven by robust private consumption and capital expenditure. The composite PMI (au Jibun Bank) remained elevated at 52.0 in September following a 15-month high of 52.9 in August, driven by resilient services activity.

Amongst EMEs, China's real GDP moderated to 4.7 per cent (y-o-y) in Q2:2024 from 5.3 per cent in Q1, amidst continued downturn in the real estate sector and tepid consumer demand. Secondary and tertiary industries also witnessed a slowdown in the second quarter. Nonetheless, the economy grew by 5.0 per cent in the first half of 2024 – propelled by monetary easing and regulatory relaxations for the real estate sector – meeting the official target of 5.0 per cent for 2024 so far. The composite PMI (Caixin) posted 50.3 in September, down from 51.2 in August due to slower expansions in both manufacturing and services sectors.

Among other major EMEs, Brazil's GDP growth accelerated to 3.3 per cent (y-o-y) in Q2:2024 *vis-à-vis* 2.5 per cent in Q1, driven by expansion in the services and industrial sectors. The labour market, however, remained tight as the unemployment rate continued to decline to 6.6 per cent in August 2024, its lowest level since 2014. The composite PMI was up from an eight-month low of 52.9 in August to 55.2 in September due to quicker upturn in services activity and a renewed expansion in factory production. The South African economy grew at a tardy pace of 0.3 per cent (y-o-y) in Q2:2024 (0.5 per cent in Q1) as financial industry expansion was offset by the decline in the transport, storage and communication industry. The composite PMI for South Africa rose from 50.5 in August to 51.0 in September signalling improved demand conditions. The Russian economy grew by 4.1 per cent (y-o-y) in Q2:2024 (5.4 per cent in Q1), partly driven by higher military and defence spending. The composite PMI, however, posted 49.4 in September, down from 52.1 in August.

The ASEAN² economies recorded resilient growth in Q2:2024 amidst higher new orders and increased activity. Southeast Asian economies are projected to grow at a robust pace³, driven by improved domestic and external demand conditions, stable prices, and increased tourism-related activities. In Q3:2024 so far, growth has decelerated marginally but remains healthy due to positive sentiments on future output amidst persistent price pressures.

Among the BRICS economies barring South Africa, GDP growth for 2024 is projected to moderate marginally (Table V.2). The inflation scenario in these countries is expected to improve in 2024 for all, barring Russia where inflation has risen due to demand-supply imbalance. China is facing weak rise in prices amidst a property slump and subdued consumer confidence.

Turning to high frequency indicators, the OECD composite leading indicators (CLIs) for September 2024 showed that most economies remained above the long-term trend (Chart V.1a). The global composite PMI remained in expansion zone for the eleventh consecutive month in September at 52.0 as strong expansion in the services sector offset weakness in manufacturing (Chart V.1b). The global manufacturing PMI, however, plunged to an eleven-month low of 48.8 in September as output, new orders and employment contracted.

Global merchandise trade volume grew for the fourth consecutive month in July 2024, recording an expansion of 1.7 per cent (y-o-y). EMEs remained the major driver for the sixth consecutive quarter in Q2:2024, while trade volume continued to contract in AEs (Chart V.2a). In July 2024, however, trade volume

Table V.2: Select Macroeconomic Indicators for BRICS

Real GDP growth rate (y-o-y, per cent)	Country	2023	2024(P)	2025(P)	General Government gross debt (per cent of GDP) [#]	Country	2023	2024(P)	2025(P)
		Brazil	2.9	2.1	2.4		Brazil	84.7	86.7
CPI inflation rate (y-o-y, per cent)	Country	2023	2024(P)	2025(P)	Current account balance (per cent of GDP)	Country	2023	2024(P)	2025(P)
	Brazil	4.6	4.1	3.0		Brazil	-1.3	-1.4	-1.5
	Russia	5.9	6.9	4.5		Russia	2.5	2.7	2.7
	India	5.7	4.6	4.2		India	-1.2	-1.4	-1.6
	China	0.2	1.0	2.0		China	1.5	1.3	1.4
	South Africa	5.9	4.9	4.5		South Africa	-1.6	-1.8	-1.9
General Government net lending/ borrowing (per cent of GDP)	Country	2023	2024(P)	2025(P)	Forex reserves* (in US\$ billion)	Country	2022	2023	2024
	Brazil	-7.9	-6.3	-5.5		Brazil	324.7	355.0	369.2
	Russia	-2.3	-1.9	-1.2		Russia	582.0	598.6	602.0
	India	-8.6	-7.8	-7.6		India	562.7	622.5	704.9
	China	-7.1	-7.4	-7.6		China	3466.8	3610.0	3695.3
	South Africa	-6.0	-6.1	-6.3		South Africa	60.6	62.5	63.2

P: Projection.

*: Forex reserves for 2024 pertain to August 2024 for all countries except for Russia (July 2024) and India (September 2024).

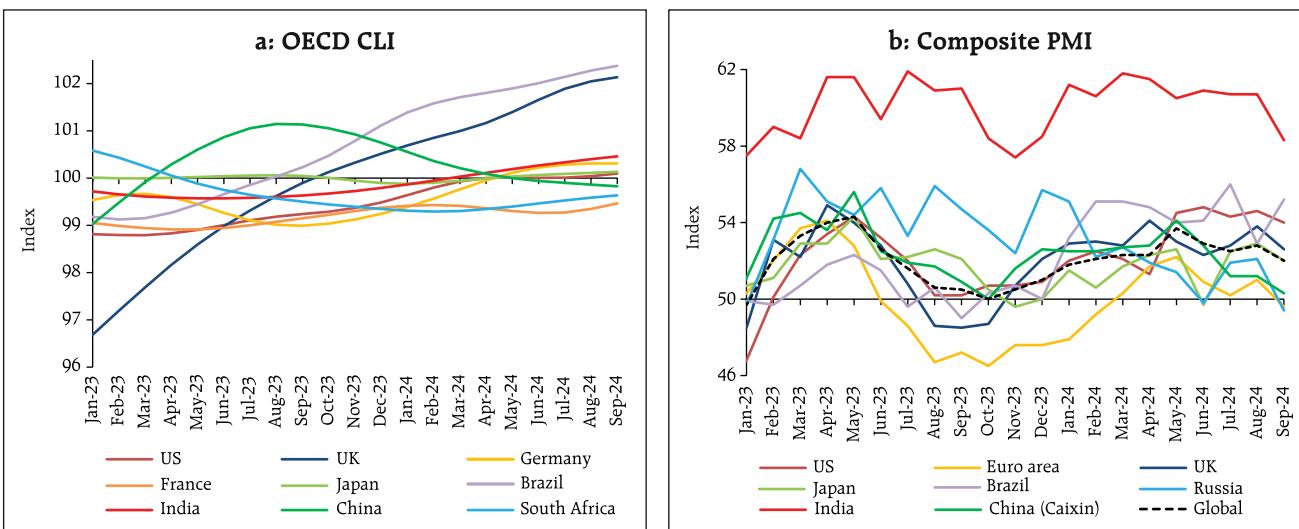
#: Gross debt refers to the nonfinancial public sector, excluding Eletrobras and Petrobras, and includes sovereign debt held by the central bank.

Note: India's data correspond to fiscal year (April-March) except data on forex reserves which are as per calendar year.

Sources: Official statistical agencies; WEO April 2024 database and July 2024 Update, IMF; and International Reserve and Foreign Currency Liquidity (IRFCL), IMF; and RBI.

² Association of Southeast Asian Nations (ASEAN) includes Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam.

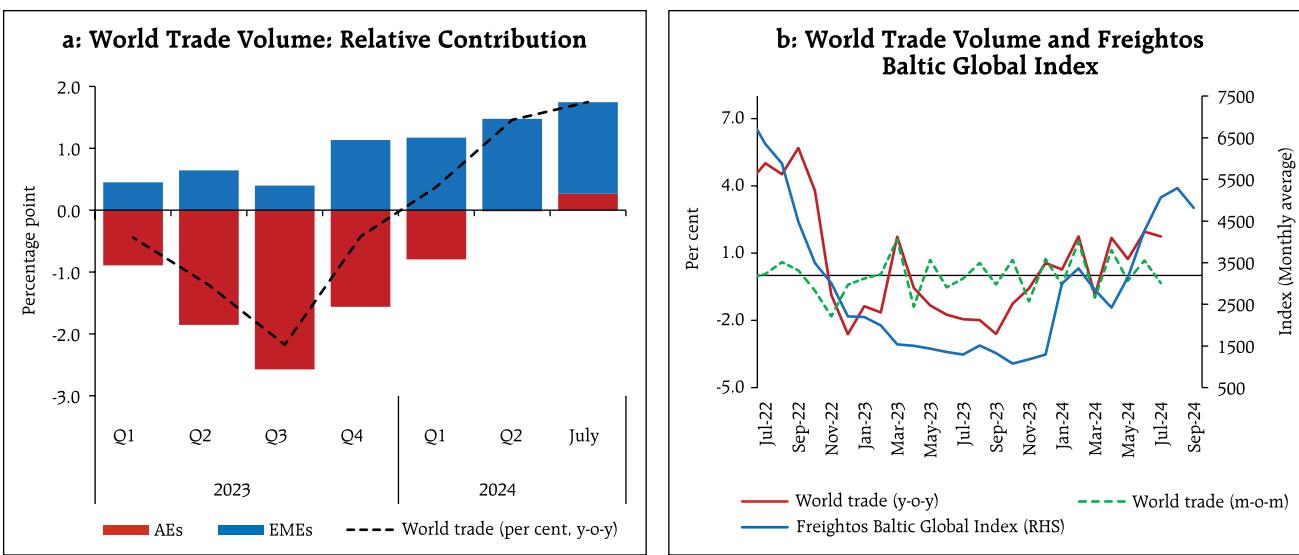
³ As per Asian Development Bank's (ADB) Asian Development Outlook July 2024, Southeast Asian economies are projected to grow at a robust pace of 4.6 per cent in 2024 from 4.1 per cent in 2023.

Chart V.1: Survey Indicators

Note: For PMI indices a reading above 50 indicates an overall increase compared to the previous month, and below 50 an overall decrease. The indices are seasonally adjusted.
Sources: OECD; and Bloomberg.

marginally revived in AEs. The Freightos Baltic Global Index – the global ocean freight container pricing index that measures 40-feet container prices – remained elevated on y-o-y basis in September 2024 as attacks on commercial shipping continued in the Red Sea trade route (Chart V.2b). These attacks necessitated rerouting of maritime trade from the Suez Canal to around the Cape of Good Hope, leading to longer transit time, rise

in freight costs and an uptick in war-risk premia. In September, however, the Freightos Baltic Global Index fell on m-o-m basis as demand moderated. Global trade value continued to expand in Q1:2024, with around 1 per cent growth in merchandise trade (q-o-q) on the back of higher exports from China, India, and the US.⁴ Trade in green energy and Artificial Intelligence related products increased strongly in Q1. The latest

Chart V.2: World Trade Volume

Sources: CPB Netherlands; Refinitiv Eikon; and RBI staff estimates.

⁴ Global Trade Update, July 2024, UNCTAD.

WTO trade barometer (September 2024) indicates that global merchandise trade volume continued to grow in Q3:2024. The global trade outlook for 2024 remains positive; however, persistent geopolitical tensions, rising shipping costs and emerging industrial policies could impact trade patterns. According to the IMF's WEO update of July 2024, global trade volume is estimated to grow by 3.1 per cent and 3.4 per cent in 2024 and 2025, respectively, with faster expansion in trade in emerging market and developing economies (EMDEs).

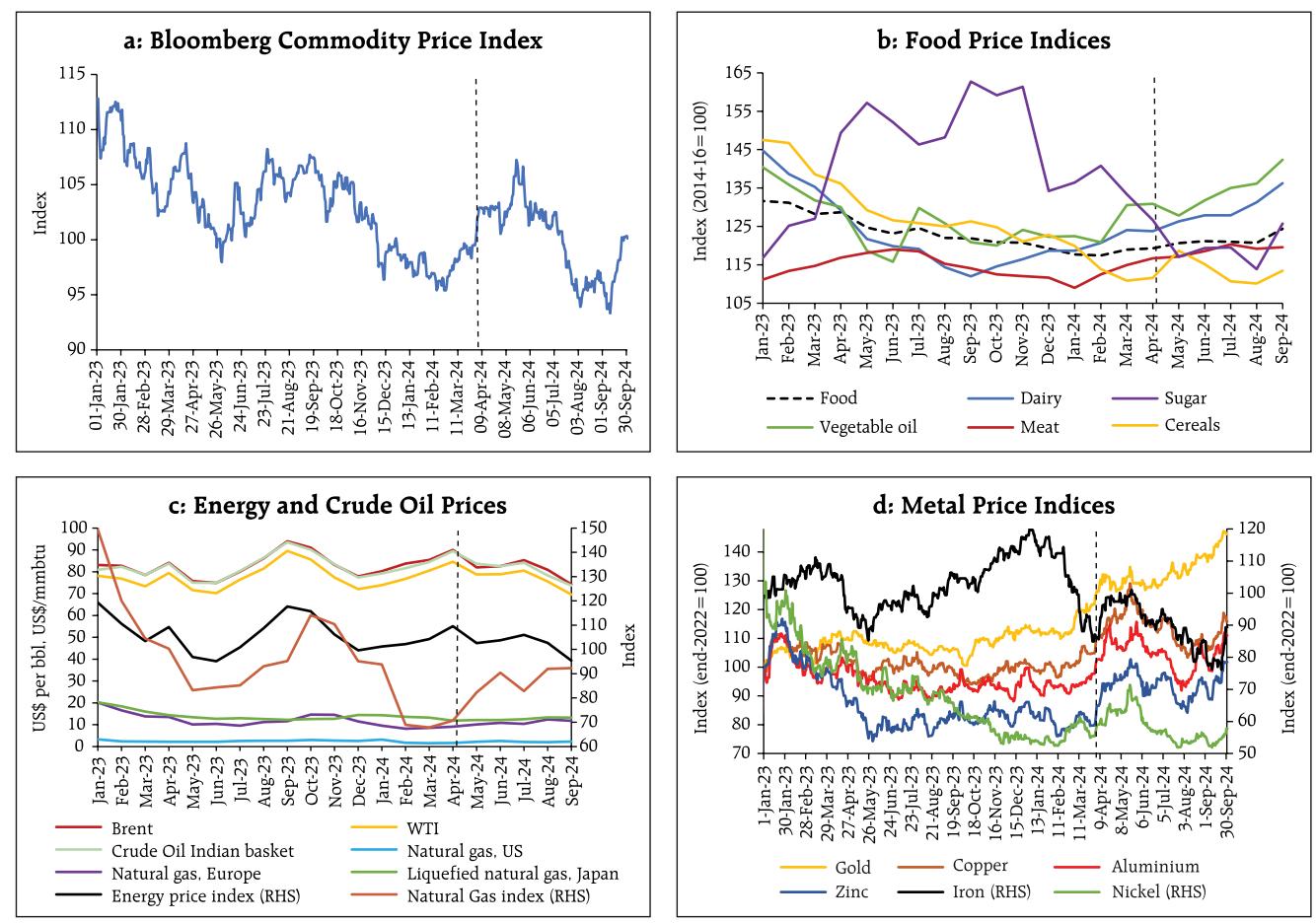
V.2 Commodity Prices and Inflation

In Q2:2024, global commodity prices as measured by the Bloomberg commodity price index remained volatile but maintained the levels attained in Q1. Gains recorded in May were corrected towards the

end of the month and early June due to a significant drop in crude oil prices. Prices softened by 0.6 per cent (q-o-q) in Q3 due to moderating energy and metal prices amidst weak demand from China (Chart V.3a). According to the Food and Agriculture Organization (FAO), global food prices edged up by 2.0 per cent (q-o-q) in Q2 and by 1.4 per cent in Q3, primarily due to increase in the prices of vegetable oil, dairy and meat, though partly offset by decline in sugar and cereals prices (Chart V.3b).

Crude oil prices have moderated since the April 2024 MPR. Brent prices hovered above US\$ 90 per barrel in the first half of April following heightened geopolitical tensions, but corrected over the rest of the period in Q2 (till early June) in the wake of weak demand and increased oil inventories. Crude oil prices fell to a low

Chart V.3: Commodity Prices



of US\$ 76 per barrel in early June after the meeting of OPEC+, wherein eight members agreed to reverse some "voluntary" cuts from October 2024.⁵ Thereafter, with escalation of geopolitical tensions and larger than expected decline in US crude oil inventory, prices rose for a short while before again moderating in July over demand concerns, fuelled by lower-than-expected Chinese GDP growth and signs of cooling US labour market. Crude prices firmed up in August with tensions escalating in the Middle East, however, it began to soften in early September, prompting the postponement of the scheduled unwinding of the "voluntary" production cuts by eight OPEC+ members from October to December 2024. Notwithstanding the announcement, prices dropped below \$70 per barrel on September 10 – the first time since December 2021 – but recouped some losses thereafter. Natural gas prices (according to the World Bank's natural gas index) increased in Q2 and Q3 due to unplanned outages in Europe and increased demand for power generation in the US (Chart V.3c).

Base metal prices peaked in May, fuelled by economic stimulus undertaken by China, the largest consumer of base metals, but corrected later over a muted demand outlook. Overall, the prices of most base metals firmed up in Q2 and continued to rise in Q3 as positive sentiments from Chinese stimulus measures overwhelmed negative sentiments emanating from muted demand outlook. Gold prices (q-o-q) rallied in Q2 and Q3 by 5.5 per cent and 13.9 per cent, respectively, with prices surpassing their record highs in every successive month. Yellow metal prices surged in April over a potential escalation in geopolitical tensions that triggered safe-haven demand. Prices moderated briefly as tensions eased but firmed up again in May above April levels due to weakening US dollar and softening treasury yields. Prices corrected in late May and June over weak seasonal demand and a stronger US dollar, but rebounded in Q3 to touch

record highs buoyed by improved odds of the US Fed's rate cut, renewed weakening of the US dollar and safe haven flight (Chart V.3d).

Consumer Price Inflation

Consumer price inflation grudgingly eased further as sticky services prices posed a drag on the pace of disinflation. Nonetheless, inflation is already close to pre-pandemic levels for the median EMDEs owing to declining energy prices.⁶ Stronger nominal wage growth in some countries and escalating

Table V.3: Consumer Price Inflation

(Y-o-y, Per cent)

Country	Inflation Target	Q3: 2023	Q4: 2023	Q1: 2024	Q2: 2024	Jul-24	Aug-24	Sep-24
Advanced Economies								
Canada	2.0 ± 1.0	3.7	3.2	2.9	2.8	2.5	2.0	
Euro area	2.0	4.9	2.7	2.6	2.5	2.6	2.2	1.8
Japan	2.0	3.0	2.6	2.5	2.4	2.7	2.8	
South Korea	2.0	3.2	3.4	3.0	2.7	2.6	2.0	1.6
UK	2.0	6.7	4.2	3.5	2.1	2.2	2.2	
US		3.5	3.2	3.3	3.2	2.9	2.5	
	(2.0)	(3.4)	(2.8)	(2.7)	(2.6)	(2.5)	(2.2)	

Emerging Market Economies

Brazil	3.0 ± 1.5	4.6	4.7	4.3	4.0	4.5	4.2	
Russia	4.0	5.2	7.2	7.6	8.2	9.1	9.1	
India	4.0 ± 2.0	6.4	5.4	5.0	4.9	3.6	3.7	
China		-0.1	-0.3	0.0	0.3	0.5	0.6	
South Africa	3.0-6.0	5.0	5.5	5.4	5.2	4.6	4.4	
Mexico	3.0 ± 1.0	4.6	4.4	4.6	4.8	5.6	5.0	
Indonesia	2.5 ± 1.0	3.0	2.7	2.8	2.8	2.1	2.1	1.8
Philippines	3.0 ± 1.0	5.4	4.3	3.3	3.8	4.4	3.3	1.9
Thailand	1.0-3.0	0.5	-0.5	-0.8	0.8	0.8	0.4	0.6
Turkey	5.0 ± 2.0	56.1	62.7	66.8	72.3	61.8	52.0	49.4

Memo:

	2022	2023	2024(P)	2025(P)
World consumer price inflation		8.7	6.7	5.9

P: Projection.

- Notes:**
1. Japan's inflation pertains to CPI inflation in all items less fresh food - the Bank of Japan's target measure.
 2. Figures in the parentheses for US are year-on-year change in personal consumption expenditure (PCE) price index.
 3. Brazil's inflation target for 2024 is 3.0 ± 1.5 per cent and was 3.25 ± 1.5 per cent for 2023.
 4. Indonesia's inflation target for 2024 is 2.5 ± 1.5 per cent and was 3.0 ± 1.5 per cent for 2023.

Sources: Central bank websites; IMF; and Bloomberg.

⁵ Voluntary cuts, representing 2.2 million barrels per day, introduced in January, and scheduled to end in June were extended till September. The same were announced to be unwound gradually over the following 12 months beginning in October. However, besides unwinding of these "voluntary" cuts, OPEC+ also announced extension of deep cuts in oil production to support prices till the end of 2025.

⁶ As per IMF's WEO Update released on July 16, 2024.

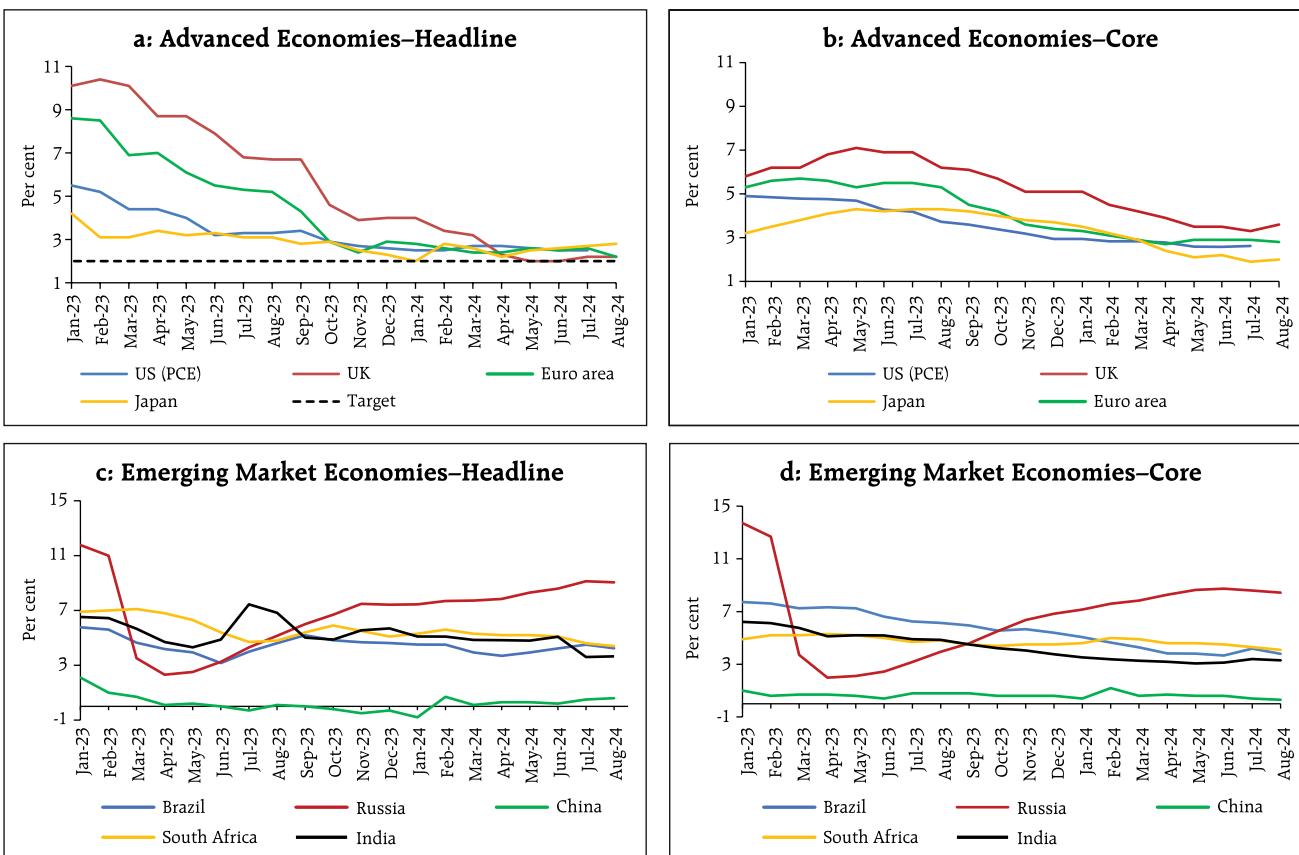
trade tensions pose upside risks to the disinflation momentum, causing monetary policy to remain restrictive. Notwithstanding the decline, inflation still ranges above the target in some inflation-targeting economies. According to the IMF's WEO Update, July 2024, global inflation is projected to fall from 6.7 per cent in 2023 to 5.9 per cent in 2024 and further to 4.4 per cent in 2025 (Table V.3).

In the US, headline and core CPI inflation (y-o-y) decelerated from 3.5 per cent and 3.8 per cent, respectively, in March 2024 to 2.5 per cent and 3.2 per cent, respectively, in August. Inflation, in terms of the personal consumption expenditure (PCE) price index – the Fed's preferred measure – softened at a tardy pace from 2.8 per cent in March to 2.2 per cent in August (Chart V.4a), while core PCE inflation eased

from 3.0 per cent to 2.7 per cent over the same period (Chart V.4b).

In the Euro area, CPI inflation moderated from 2.4 per cent in April to 1.8 per cent in September. Core inflation (inflation excluding energy, food, alcohol, and tobacco) remained stable at 2.7 per cent in September (same as in April), with a mild uptick during May-August. In the UK, CPI headline inflation decelerated sharply by 100 bps from 3.2 per cent in March to 2.2 per cent in August, with core inflation declining from 4.2 per cent to 3.6 per cent. In Japan, CPI inflation (all items less fresh food), the Bank of Japan (BoJ)'s inflation target metric, eased briefly during March and April but started firming up since May. In August, inflation at 2.8 per cent was well above the BoJ's target of 2 per cent. Core inflation (inflation excluding both

Chart V.4: CPI Inflation (y-o-y) – Select Economies



Notes: 1. For India, core CPI, i.e., CPI excluding food and fuel is worked out by eliminating the groups 'food and beverages' and 'fuel and light' from the headline CPI.
2. Japan's data in Chart V.4a refers to CPI inflation in all items less fresh food – the Bank of Japan's target measure, while data in Chart V.4b refers to CPI inflation in all items less fresh food and energy.

Sources: Official statistical agencies; Bloomberg; and RBI staff estimates.

fresh food and energy), however, declined to 2.0 per cent in August from 2.4 per cent in April.

Amongst major EMEs, CPI inflation edged up in Brazil to 4.2 per cent in August from 3.9 per cent in March 2024 (Chart V.4c). In Russia, it accelerated from 7.7 per cent to 9.1 per cent over the same period due to western sanctions and an overheating economy. In South Africa, however, CPI inflation receded to 4.4 per cent in August from 5.3 per cent in March. China recorded positive inflation during March (0.1 per cent) to August (0.6 per cent) after it exited deflation in February. Similar to AEs, core inflation is also receding, albeit grudgingly in EMEs (Chart V.4d).

V.3 Monetary Policy Stance

Following the most aggressive and highly synchronised monetary policy tightening to counter multi-decadal high inflation in 2022-23, the strength and credibility of central bank policies were tested as they tried to curb inflation without hampering growth, necessitating a revamp of the monetary policy operating frameworks of some countries in the context of changing dynamics of policy trade-offs (Box V.1). In 2024, particularly during Q2 and Q3, monetary policy cycles diverged as central banks across AEs and EMEs responded to their own evolving growth-inflation dynamics. While continuing to emphasise on caution

Box V.1: Recent Changes in Global Monetary Policy Operating Frameworks: Response to Evolving Macro-Economic Developments

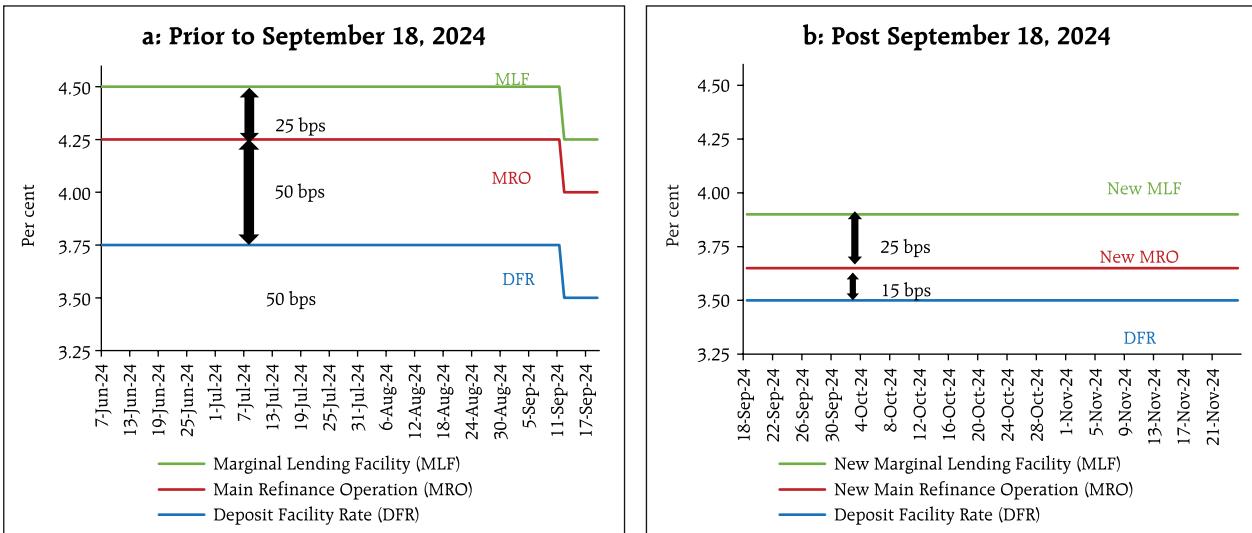
While successfully navigating through the two black swan events of the COVID-19 pandemic and the conflict in Europe, central banks worldwide had to quickly change gears from providing large-scale stimulus that resuscitated economic activity to battling decadal-high inflation to restore price stability. This prompted central banks to undertake synchronised and aggressive interest rate hikes in decades accompanied by ultra-hawkish stances even as they started to taper their bloated balance sheets.

Monetary policy operating frameworks underwent significant refinements in two major systemic countries – the European Central Bank (ECB) and the Reserve Bank of Australia (RBA). The ECB, faced with mounting post-pandemic inflation pressures, recognised the imperative of moving from abundant excess liquidity to one of less ample liquidity. In response, it announced a new operational framework effective September 2024, wherein the main refinancing operations (MRO) rate is adjusted and anchored at 15 bps (as opposed to 50 bps earlier) above the deposit facility rate (DFR) while the rate on marginal lending facility (MLF) remains at 25 bps above the MRO rate (EP, 2024). This adjustment would retain the asymmetric corridor but narrow the corridor width to 40 bps from 75 bps, which would deter upward deviations and contain volatility as rate gets anchored closer to the DFR (Chart V.1.1) (ECB, 2024).⁷ Analogous

to the ECB, the RBA also planned to shift from a system of excess to ample reserves in April 2024 (Kent, 2024). According to the RBA, the move towards ample reserves, that lies somewhere between the current 'floor' system with excess reserves and the pre-pandemic 'corridor' system with scarce reserves, eliminates (i) the need for precise estimation of demand for reserves; (ii) minimises risk of volatile money markets; and (iii) is more resilient to future balance sheet expansions during periods of financial stress.

There are also instances of countries shifting to simpler mandates for monetary policy for better management of trade-offs. In February 2024, the RBA announced a switch towards a dual mandate of price stability and full employment with the clarification that, in practice, the dual mandate is not a substantial departure from the *status quo* (PoA, 2024). In this regard, the deleted 'third goal' of contributing to Australian people's economic prosperity and welfare will henceforth be an "overarching objective", rather than a policy objective for monetary policy. On a similar but more focussed move, the Reserve Bank of New Zealand (RBNZ) highlighted the necessity for a more precise and focused monetary policy target in June 2023. Recognising that the shift to a dual mandate in 2018 was a mistake, it recommended a shift back to the single mandate in order to remain focussed on price stability
(Contd.)

⁷ Additionally, two new instruments – a structural portfolio of assets and long-term refinancing operations – will be introduced going forward for ECB.

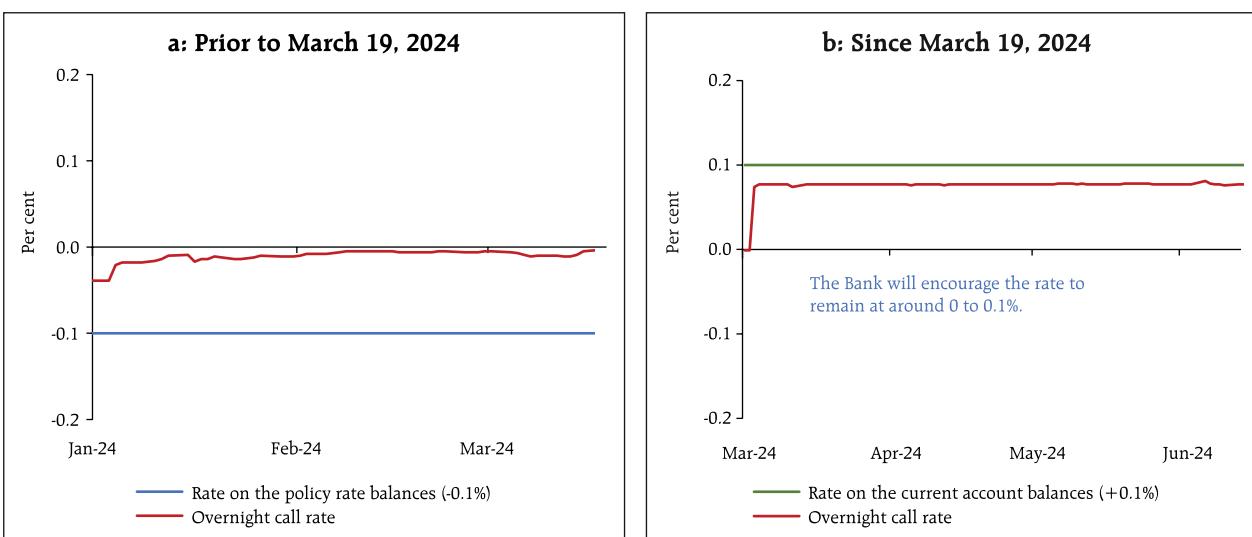
Chart V.1.1: ECB's Operating Framework

Source: European Central Bank.

and enhance its policy credibility. The RBNZ amended the Remit for the Monetary Policy Committee (MPC) in December 2023, recommending that the MPC remain solely focussed on achieving an inflation target of 1-3 per cent over the medium-term, with added emphasis on the 2 per cent mid-point (RBNZ, 2023).

In the case of Japan, the pandemic served as a catalyst to emerge from the deflationary environment of several

decades, despite undertaking large scale monetary stimulus through Quantitative and Qualitative Monetary Easing (QQE) along with Yield Curve Control (YCC). The surge in inflation led to a rise in inflation expectations and, therefore, the BoJ made a pivotal decision to exit its negative interest rate policy in March 2024, discontinuing QQE with YCC (Chart V.1.2) (Kazuo, 2024). It removed the long-standing target of controlling the 10-year Japanese

Chart V.1.2: Japan's Operating Framework

Source: Bank of Japan.

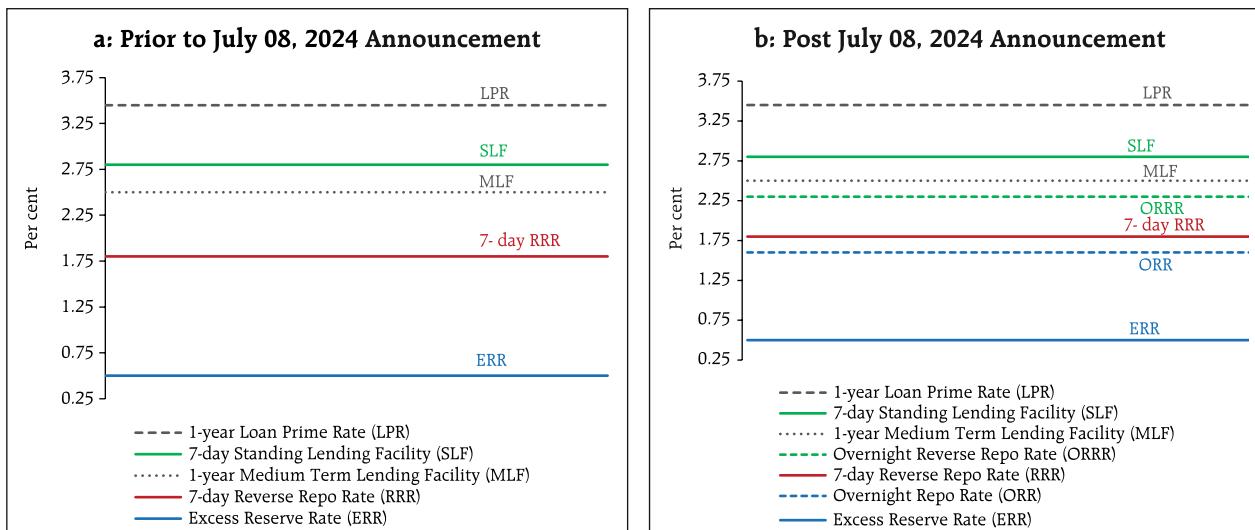
(Contd.)

Government Bonds (JGBs) rate and started targeting the uncollateralised overnight call rate. It also embarked on tapering of the bond buying programme in a predictable manner.

As countries prioritise inflation control, the role of central bank credibility and transparent communication gains prominence. With a view towards enhancing transparency and ensuring effective policy communication, the People's Bank of China (PBoC) announced changes in its monetary policy operating framework in June 2024 and placed greater emphasis on price-based regulatory measures involving interest rates (Gongsheng, 2024). The PBoC indicated that the seven-day reverse repo rate will be the central bank's main short-term operational rate

and consequentially, the roles of other rates on monetary policy instruments with different tenures may soften. It also pointed out that the existing corridor of the standing lending facility (SLF) acting as the ceiling and the rate on excess reserves (ERR) being the floor is relatively wide and may be narrowed, going forward. PBOC announced a new cash management tool of temporary overnight repo (ORR) and reverse repo operations (ORRR), with the interest rates fixed at the seven-day repo rate *minus* 20 bps and *plus* 50 bps, respectively (Chart V.1.3). The PBoC also intends to expand its policy toolkit by including the purchase and sale of China government bonds in the secondary market. Going ahead, the changes in the framework will be tested and reviewed in response to evolving macro-economic developments.

Chart V.1.3: China's Operating Framework



Source: The People's Bank of China.

References:

- European Central Bank (2024), Statement by the Governing Council, March 13.
- European Parliament (2024), Briefing, A new operational framework for the European Central Bank, May 22.
- Gongsheng, P., (2024), "China's current monetary policy stance and evolution of monetary policy framework in the future", Lujiazui Forum.
- Kazuo, U., (2024), "On the Recent Changes in the Bank of Japan's Monetary Policy Framework", Peterson Institute for International Economics.
- Kent, C., (2024). "The future system for monetary policy implementation", Bloomberg Australia Briefing.
- Parliament of Australia (2024), Treasury Laws Amendment (Reserve Bank Reforms) Bill 2023, February 12.
- Reserve Bank of New Zealand (2023), Monetary Policy Remit amended, December 13.

and data dependence for future decisions, central banks of major systemic AEs embarked on policy pivots even as some others have paused. Given their pre-emptive tightening at the onset of the inflation surge, some EME central banks continued with policy normalisation while few others continued with the restrictive stance.

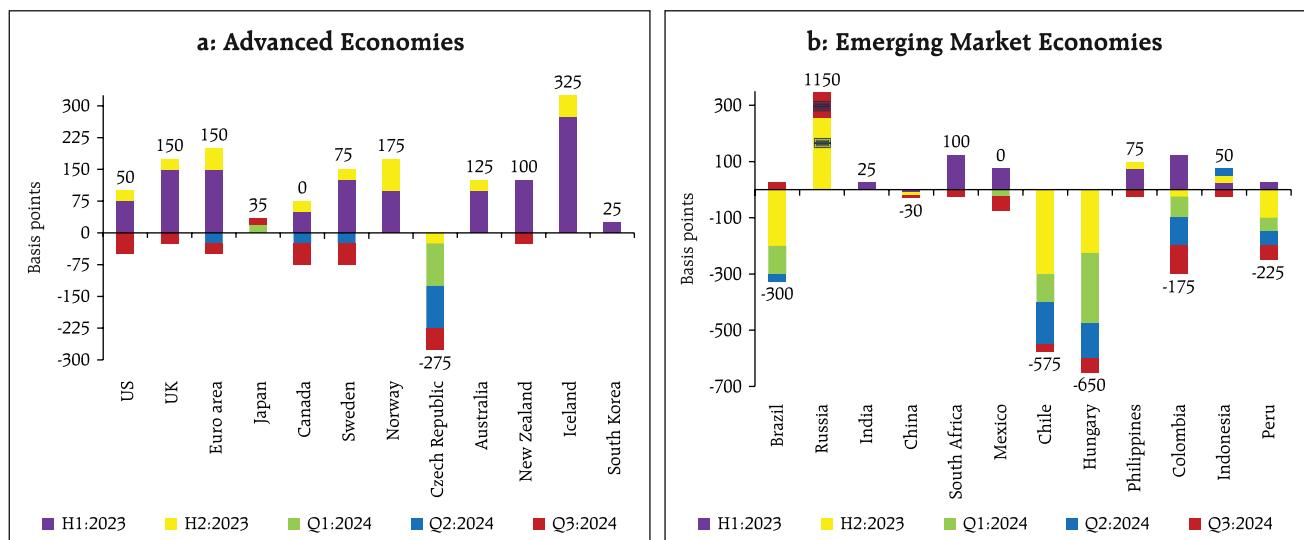
The US Fed initiated a pause in policy tightening in September 2023 and continued to maintain the target range for the federal funds rate at 5.25-5.50 per cent in all its subsequent meetings. In September 2024, however, it lowered the target range for the federal funds rate by 50 bps to 4.75-5.00 per cent (Chart V.5a). As per the Summary of Economic Projections released in the September meeting, the Federal Open Market Committee (FOMC) participants expected the target range for the federal fund rates to be at 4.25-4.50 per cent by end 2024 and at 3.25-3.50 per cent by end 2025, indicating a further 50 bps rate cut in the remaining part of 2024 and 100 bps rate cut in 2025. The Fed also continued with its balance sheet normalisation policy.

After continuing with the pause that ECB initiated in October 2023, it lowered its three key interest rates

by 25 bps in June 2024, marking its first cut in the current easing cycle. It again announced a cut in its deposit facility rate (DFR) by 25 bps in September after keeping it unchanged in July. It reiterated that it would continue to remain data-dependant to determine the appropriate level and duration of restriction. Besides, the Asset Purchase Programme (APP) portfolio continues to shrink as principal payments from maturing securities are no longer reinvested. The Pandemic Emergency Purchase Programme (PEPP) portfolio is also set to decline by €7.5 billion per month, on average, with reinvestments ceasing entirely by the end of 2024. The Bank of England (BoE) continued with its *status quo* stance initiated in September 2023, followed by first cut of 25 bps in August as inflation risks abated, but paused in its September meeting. The BoE indicated that a gradual approach in removing policy restraint is warranted, emphasising that monetary policy will need to remain restrictive for sufficiently long until the risks for inflation to return sustainably to the 2 per cent target dissipate further.

Amongst other major AEs, the RBA, the Central Bank of Iceland⁸, the Bank of Israel, the Norges Bank, and

Chart V.5: Policy Rate Changes – Select Major Economies



Source: Bloomberg.

⁸ The Bank of Iceland cut its policy rate by 25 bps on October 02, 2024.

the Bank of Korea maintained *status quo* in all their meetings during Q2 and Q3 of 2024. After keeping its policy rate unchanged since September 2023, the Bank of Canada reduced it by 25 bps each in all its meetings starting June 2024. The RBNZ cut its official cash rate by 25 bps in August 2024, following a pause since July 2023. The *Sveriges Riksbank* slashed its policy rate by 25 bps each in May, August and September 2024 meetings, with a pause in the month of June. The Swiss National Bank also lowered its policy rate by 25 bps in its June and September meetings. The Czech National Bank reduced its key rate by 50 bps each in both May and June meetings and by 25 bps in its August and September meetings. In contrast, the BoJ raised its key rate by 15 bps in July, following a period of *status quo* in April and June. Moreover, the BoJ announced its plan to taper its outright purchase of JGBs at a predictable pace of 400 billion yen each quarter, reaching around 3 trillion yen by January-March 2026. The BoJ, however, maintained *status quo* in its September meeting.

In the BRICS economies, the *Banco Central do Brasil*, continued to maintain its accommodative stance that started in August 2023 by cutting its Selic rate by 25 bps in May 2024, but paused thereafter in the months of June and July. In September, however, it pivoted by raising the Selic rate by 25 bps due to emerging upside risks to inflation. The South African Reserve Bank cut its repo rate by 25 bps in September 2024 for the first time after keeping it unchanged in May and July meetings. The People's Bank of China (PBoC) reduced the one-year Loan Prime Rate (LPR) by 10 bps in July after keeping it unchanged in Q2:2024. It reduced the one-year Medium-term Lending Facility (MLF) rate by 20 bps in July and 30 bps in September. In September, it also announced a slew of stimulus measures to support the economy, recoup the housing sector and restore market confidence including reduction in

reserve requirement ratio by 50 bps and seven-day reverse repo rate by 20 bps to 1.5 per cent. The Bank of Russia (BoR) maintained *status quo* in Q2:2024 but increased its policy rate by 200 bps and 100 bps in July and September, respectively, of 2024 as inflation remained elevated much above the target.

Among Asian EMEs, the Bank of Thailand kept its benchmark rate unchanged in Q2 and Q3 of 2024. The Bank Indonesia cut its key rate by 25 bps in September 2024 following a hike in April while pausing in intermittent meetings, while the central bank of Philippines cut its policy rate by 25 bps in August 2024 after maintaining *status quo* in Q2. In Latin America, the central bank of Mexico maintained the policy rate in Q2 but announced two consecutive rate cuts of 25 bps each in August and September after the first rate cut in March 2024. The central bank of Colombia continued with monetary policy easing by paring its benchmark rate by 50 bps in each of its April, June, July and September meetings. Chile cumulatively lowered its policy rate by 175 bps to 5.50 per cent during April-September 2024 with an intermittent pause in July. Peru cut its reference rate by 25 bps each in April, May, August and September meetings but maintained *status quo* in its June and July meetings. Among European EMEs, Hungary lowered its policy rate by 50 bps each in its April and May meetings and by 25 bps in June, July and September while maintaining a pause in August. Poland maintained a pause in Q2 and Q3 of 2024 (Chart V.5b).

V.4 Global Financial Markets

Global financial markets remained in a state of flux during Q2 and Q3, responding somewhat unexpectedly to changing perceptions on the monetary policy trajectory and data releases.⁹ Markets turned buoyant during May-September 2024 as expectation of rate

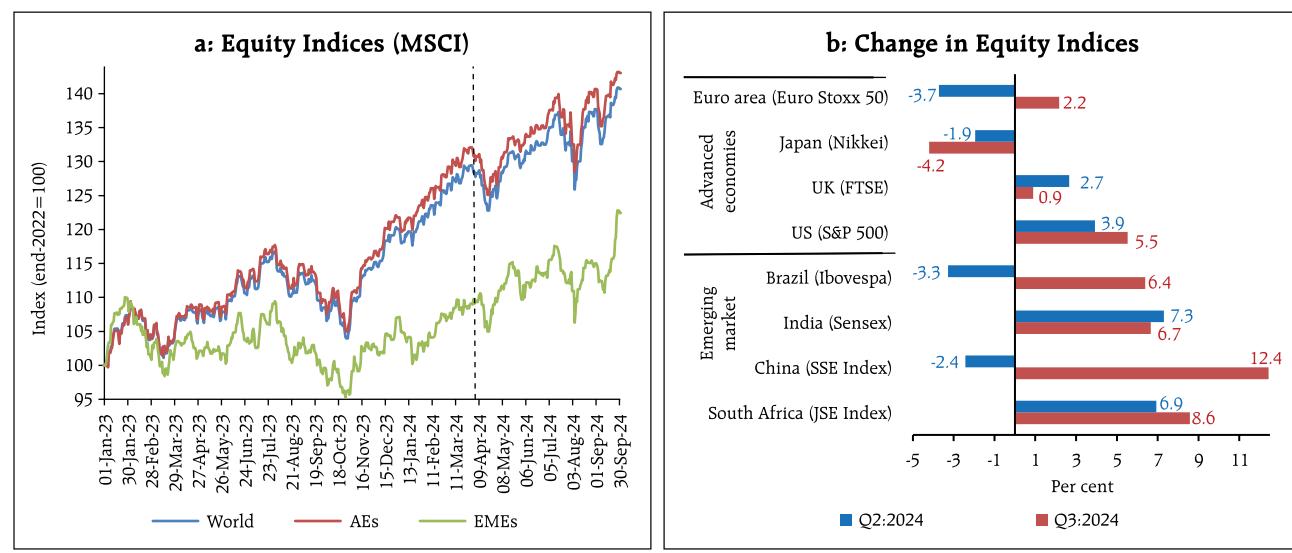
⁹ Bauer, M.D., C.E. Pflueger, and A. Sundaram (2024), "Changing Perceptions and Post-Pandemic Monetary Policy," unpublished manuscript, FRBKC Jackson Hole conference.

cuts gained momentum. Notwithstanding the gains, equity markets retreated intermittently since the last MPR – in April over continued restrictive monetary policy; in the beginning of August over a confluence of factors, including underwhelming data releases for the US and landmark rate hike by Japan; and in early September over increased risk-off sentiment amidst data releases. Overall, bond yields have moderated since the last MPR while the US dollar has pared gains. Consequently, EME currencies broadly appreciated in Q3:2024.

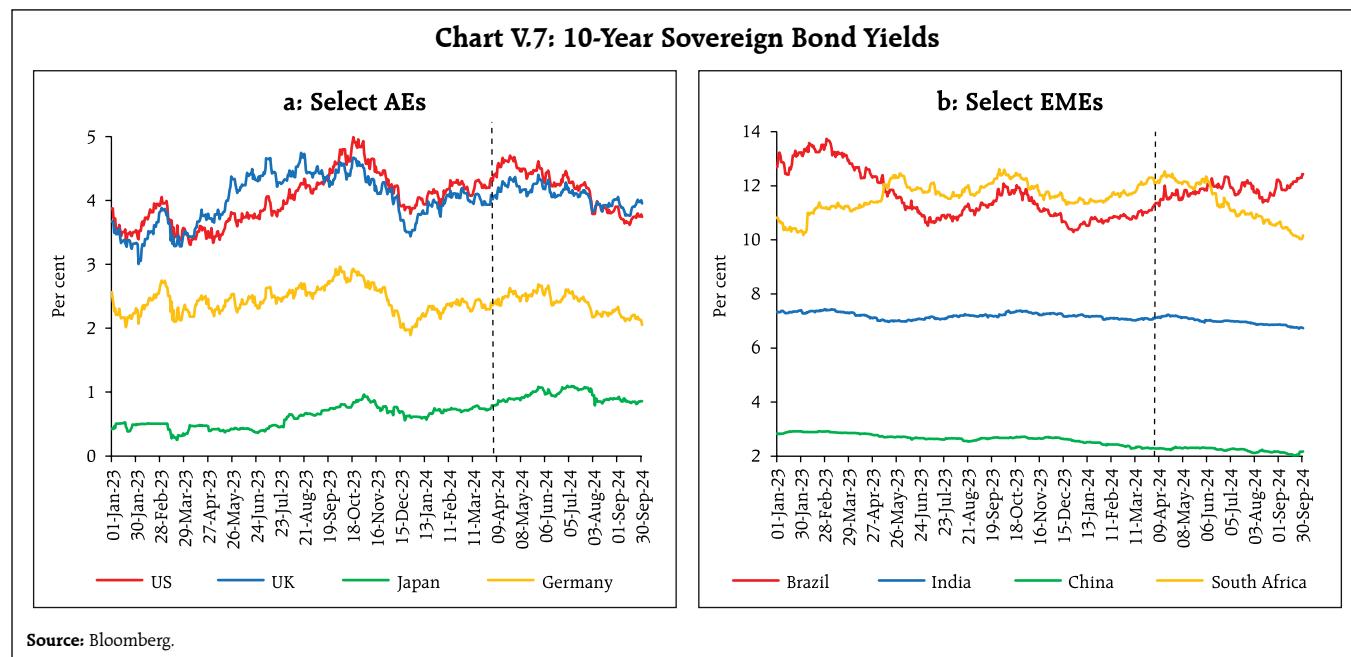
Equity markets, in terms of the Morgan Stanley Capital International (MSCI) world index, gained 8.7 per cent since end-March, reflecting gains in both AEs and EMEs, with recurrent episodes of volatility (Chart V.6a). Among AEs, the US S&P 500 shed gains in April as strong consumer demand and high PCE inflation rekindled concerns about 'higher for longer' interest rates. It, however, rallied starting end-April till mid-July amidst easing geopolitical tensions and increased expectations of a rate cut over moderating inflation prints. Thereafter, market sentiment turned sour with incoming data sparking recessionary fears in the US on top of disorderly unwinding of yen carry trade

consequent to the BoJ's rate hike. After undergoing a sharp dip in late July and early August, US stock markets rebounded in August as investors moved back to riskier assets on dovish guidance from the BoJ and abatement of recessionary fears. In the first week of September, however, market underwent another correction upon the release of below expectations PMI data and labour market indicators but soon rallied overhauling the previous loss. Overall, the US S&P index rose by 9.7 per cent during April-September 2024. European stocks underperformed as bullish sentiments in other markets attracted investors interest. The UK's stock indices modestly tracked the US markets in Q2, performing well following the Labour party's landslide electoral performance but relatively underperformed in Q3. The Japanese market reflected domestic factors exhibiting a sharp correction post the BoJ's rate hike causing yen appreciation and raising risks on exporters' earnings' outlook. EME equities gained since end-March, tracking global cues and lower domestic inflation prints (Chart V.6b). Chinese stocks, that were losing ground amidst flagging economic activity and the persistent downturn in real estate, rebounded sharply

Chart V.6: Equity Markets



Sources: Bloomberg; and RBI staff estimates.

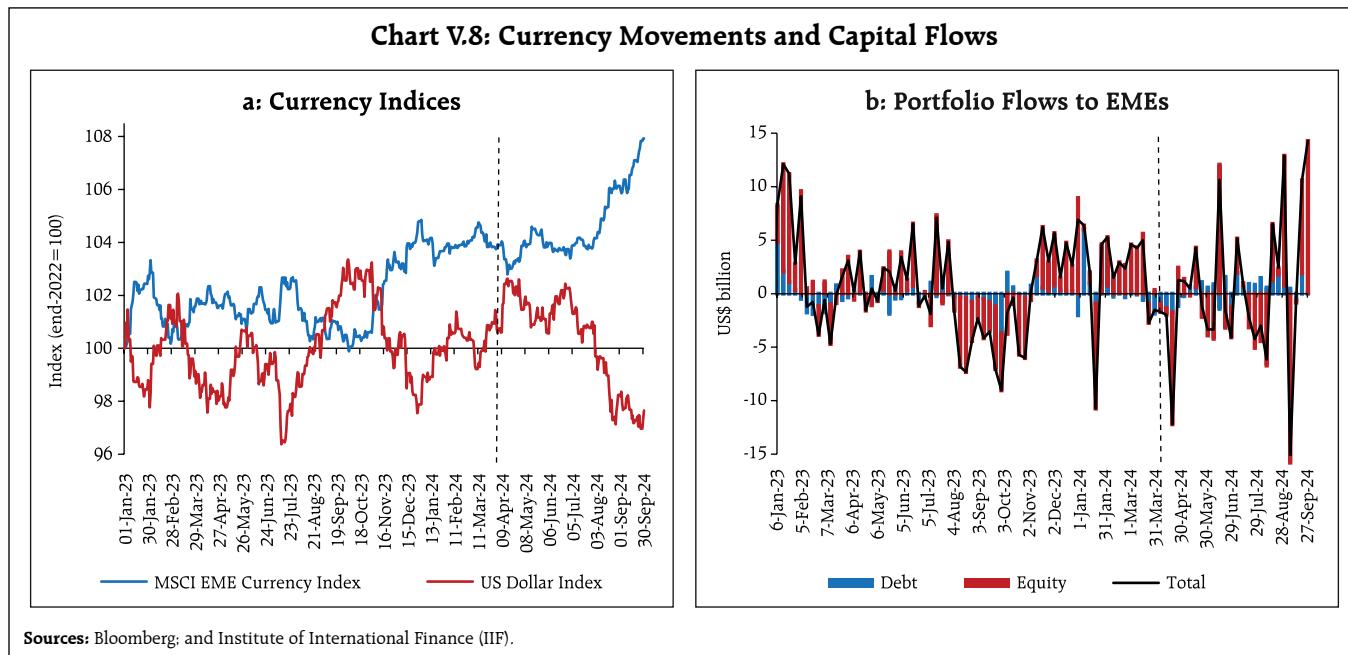


post the stimulus announcement on September 24, 2024.

In tandem with Q1:2024, sovereign bond yields across major AEs continued to harden in April in response to expectations of a firmer future path of interest rates, sensitivity to rising fiscal risks and tight liquidity conditions. Beginning May, however, yields softened as incoming data signaled an improving inflation outlook for the US, raising the odds for an imminent rate cut. Illustratively, the US 10-year treasury yield rose by 48 bps in April but shed 78 bps between May-August over evolving perceptions of rate cuts. Subsequently, yields fell precipitously in August and early September, remaining below the 4 per cent mark in response to the release of underwhelming high-frequency indicators. Since mid-September, however, yields hardened as market expectations of the Federal Reserve rate cut for November shifted from 50 bps to 25 bps. Also, the yield curve inversion *i.e.* negative 10- minus 2-year spread that had persisted since July 2022, has reversed to become positive in September 2024. The UK 10-year bond yield broadly tracked the US market while the German 10-year yield softened in response to the ECB's rate cut actions and forward guidance. Yield on 10-year JGBs rose by 33 bps

between April and July, pushed up by the BoJ's policy rate hike, including tapering of their bond purchase programme, but softened by 20 bps since August on a dovish stance (Chart V.7a). Bond yields in several EMEs exhibited a softening bias, driven by easing of domestic financial conditions as well as global cues (Chart V.7b). Bond yields in Brazil, however, hardened till July as investors trimmed their portfolios but remained volatile thereafter.

In the currency markets, the US dollar remained range bound in Q2:2024, with an upward bias over changing bouts of optimism about policy easing and intermittent escalation of geopolitical and electoral risks increasing safe haven demand. Cooling labour market conditions, easing inflation and flagging high-frequency indicators of economic growth, however, led to a policy pivot by the Fed, causing a depreciation of the US dollar in Q3:2024 (Chart V.8a). However, in late September the dollar index, changed its course upon the release of better-than-expected labour market data. These movements were mirrored in the EME currencies, exacerbated by swings in capital flows (Chart V.8b). The MSCI Emerging Market Currency Index remained rangebound in Q2:2024 but rose by 4.0 per cent in Q3:2024.



V.5 Conclusion

Global growth remains resilient though flaring geopolitical tensions, flagging recovery in China, and extreme weather events pose downside risks to the outlook. Inflation remains vulnerable to weak progress in services disinflation, easing financial conditions, high public debt, strong wage growth, potential escalation of trade tensions and geo-economic fragmentation. Even as most nations

tread the path of policy normalisation, they remain cautious on rate cuts and the level of restrictiveness. Greater uncertainty about the evolving policy path is reflected in financial markets, which are buoyant yet volatile, reacting sharply to policy changes and economic data releases. Although prospects for EMEs are improving, they remain susceptible to external geopolitical risks and evolving financial conditions in advanced economies.

SPEECHES

Central Banking at Crossroads

Shri Shaktikanta Das

Central Banking in the 21st Century: Changing Paradigm

Shri Shaktikanta Das

Assessing Inflation Targeting

Michael Debabrata Patra

Central Banks and Financial Stability

Shri Swaminathan J.

Governance in SFBs - Driving Sustainable Growth and Stability

Shri Swaminathan J.

Reaching the Unreached – Ensuring Last Mile Connectivity of Banking Services

Shri Swaminathan J.

*Central Banking at Crossroads**

Shri Shaktikanta Das

I feel highly privileged to be here at this High Level Conference on 'Central Banking at Crossroads' and share some of my thoughts. When the definitive history of our times is written, the turn of the current decade will, in all probability, be regarded as a watershed in the evolution of central banking. In the aftermath of the COVID-19 pandemic and the persistent geopolitical strife thereafter, central banks are treading in the uncharted terrain of a twilight zone. Today, like never before in the five centuries of their existence, central banks are confronted with a future where their mandates, their functions and their performances are all up for unforgiving scrutiny.

Around them, the environment in which central banks have been operating is undergoing tectonic transformations. Structural changes are underway that have the power to fundamentally alter the context of central banking with headwinds from geo-economic fragmentation; muscular industrial, trade and financial policies that are already reshaping supply chains and the availability of critical minerals, intermediates, resources and services; new technologies; and climate change. In this rapidly evolving environment, central banks are required to navigate not just known unknowns but unknown unknowns too.

Yet, even at these exceptional intersections, central banks are exploring new pathways and striving to reinvent their remit and functioning as the guardians of financial stability. Their effort is to stay ahead of these developments by strengthening guardrails and leveraging on technological innovations.

For the Reserve Bank of India (RBI), as we commemorate its 90th year, it has been an eventful journey since its establishment in 1935. In many significant ways, the Reserve Bank embodies the developmental aspirations of India. The landmarks of its journey are equally milestones in the progress of India. At the current juncture and looking ahead, developments around the world are impacting India on a continuous basis and challenging us as practitioners of central banking.

Today's conference gives us an opportunity to introspect on the journey of central banking so far and how we want to visualise and shape our role in the future. In my remarks today, I propose to briefly focus on three areas where central banking is likely to be redefined in the future: monetary policy; financial stability; and new technologies. In fact, these are among the themes of specific sessions in today's conference. My observations would be mainly in the context of central banking across countries.

Monetary Policy

The three decades of restrained volatility of business cycles and the co-existence of price stability and uninterrupted growth that preceded the global financial crisis (GFC), perhaps lulled central banks into the belief that inflation expectations are enduringly anchored. The beast of inflation of the 1970s and early 1980s seemed completely behind our times. Conditioned by that experience, central banks shed their role of 'lender of the last resort' and became lender of the first resort to defend their financial systems when they responded to the GFC. They continued from their GFC moment and once again rushed to the frontline as warriors of the first resort to protect and preserve lives and livelihood when the COVID-19 pandemic hit the world. They took interest rates to all-time lows, undertook unconventional policy measures to reach out to interest rates across

* Keynote Address by Shri Shaktikanta Das, Governor, Reserve Bank of India At the RBI@90 High-Level Conference organised by the Reserve Bank of India, October 14, 2024 at New Delhi.

the spectrum, including at the longer end, and gave assurances about low for longer interest rates. This was an uncharacteristic departure from the monetary mysticism that had prevailed up to the 1990s. Clearly, central banking has evolved in line with the developments of the 21st century.

While the pandemic time measures provided the much needed support to the economies, in the aftermath of the pandemic the limits and downsides of easy monetary policy in protecting economic activity in a crisis period became evident. Today, rightly or wrongly, the central banks are accused of distributional consequences of their actions. The negative equity that weighs in the balance sheets of certain central banks is seen as compromising their independence in the conduct of monetary policy. The story in India was, however, different as most of our liquidity measures were calibrated and carried end dates at the time of their announcement itself.

Another challenge staring at central banks today emanates from soaring public debt caused, in a considerable measure, by the pandemic-related fiscal stimuli and the subsequent efforts for fiscal consolidation not gaining adequate traction. Such a situation is becoming a binding constraint on monetary policy in several countries. Global public debt has surged post the pandemic to 93.2 per cent of GDP in 2023 and is likely to increase to 100 per cent of GDP by 2029¹. In major economies, debt-GDP ratios are on an upward trajectory, raising concerns about their sustainability and their negative spillovers for the broader global economy. In several other countries, central banks are willy-nilly expected to facilitate financing of such huge public debts. In fact, the debt overhang is simmering underneath the radar of central banks, threatening to un-anchor inflation expectations and undermine macroeconomic stability.

For emerging market economy (EME) central banks, the international dimensions of monetary policy continues to be a testing challenge. For them, the trilemma is real. Today the global economy is more financially integrated than ever before. Monetary policy actions in systemic economies produce large fluctuations in capital flows and exchange rates, which can then feed into domestic liquidity, inflation and eventually affect the real economy. While monetary policies in the systemic economies are determined by their domestic inflation-growth considerations, they have large spillovers to the emerging and developing economies and even to other advanced economies. These spillovers can be expected to accentuate as capital flows dwarf trade flows. Quite naturally, emerging economies are having to strengthen their policy frameworks and buffers to manage this external flux and mitigate its adverse consequences.

Financial Stability

Financial stability is the essential reason why central banks exist. Price stability as a central bank objective is of more recent vintage. There is a growing opinion today that 'low for long' policies practiced during the GFC and again during the pandemic, apart from providing support to the real economy, also produced exuberant financial asset prices that have come back to haunt central banks in their role as guardians of financial stability. Amidst ultra-low interest rates and super abundant liquidity, leveraging and risk-taking were celebrated as if there is no tomorrow. Consequently, when central banks were confronted with inflation surges in 2022 in the shadow of the war in Ukraine, they reacted with one of the most aggressive and synchronised tightening of monetary policies in history. This resulted in risks to financial stability, especially when these risks morphed into banking crises in certain countries in March 2023 and sell-offs in financial markets in August and September 2024. These developments

¹ IMF Fiscal Monitor, April 2024.

have once again brought to fore the role of central banks in securing and preserving financial stability. Specifically, how should they account for financial stability considerations in their pursuit of price stability?

Let me now address some of the emerging risks to financial stability. First, the divergence in global monetary policies – monetary easing in some economies, tightening in a few, and pause in several other economies – can be expected to lead to volatility in capital flows and exchange rates, which may disrupt financial stability. We saw a glimpse of this with the sharp appreciation of the Japanese Yen in early August which led to disruptive reversals in the Yen carry trade and rattled financial markets across the globe.

Second, private credit markets have expanded rapidly with limited regulation. They pose significant risks to financial stability, particularly since they have not been stress-tested in a downturn.

Third, higher interest rates, aimed at curtailing inflationary pressures, have led to increase in debt servicing costs, financial market volatility, and risks to asset quality. Stretched asset valuations in some jurisdictions could trigger contagion across financial markets, creating further instability. The correction in commercial real estate (CRE) prices in some jurisdictions can put small and medium-sized banks under stress, given their large exposures to this sector. The interconnectedness between CRE, non-bank financial institutions (NBFIs), and the broader banking system amplifies these risks.

New Technologies

In recent years, the technology-driven digitalisation wave in the payments sphere has been revolutionary. While most of the innovations have been at the national level focusing on retail payments, the market for cross-border payments has also expanded substantially. The significant volume of cross-border

worker remittances, the growing size of gross flows of capital, and the increasing importance of cross-border e-commerce have acted as catalysts to this growth.²³ Remittances are the starting point for many emerging and developing economies, including India, to explore cross-border peer-to-peer (P2P) payments. We believe there is immense scope to significantly reduce the cost and time for such remittances.

India is one of the few large economies with a 24×7 real time gross settlement (RTGS) system. The feasibility of expanding RTGS to settle transactions in major trade currencies such as USD, EUR and GBP can be explored through bilateral or multilateral arrangements. India and a few other economies have already commenced efforts to expand linkage of cross-border fast payment systems both in the bilateral and multilateral modes.⁴

India has developed a world-class digital public infrastructure (DPI), which has facilitated the development of high-quality digital financial products with enormous potential for cross-border payments. India is now home to the world's third most vibrant startup ecosystem, with over 140,000 recognised startups, more than a hundred unicorns, and over US\$150 billion in funding raised. India's experience in DPI can be leveraged by other countries to improve and usher in a global digital revolution.

Central bank digital currencies (CBDCs) is another area which has the potential to facilitate efficient cross-border payments. India is one of the

² The value of global cross-border payments is estimated to surpass US\$ 250 trillion by 2027 (Cross-border payments | Bank of England)

³ The global cross-border B2C e-commerce market which was valued at US\$ 889 billion in 2022 is estimated to grow by more than six times to US\$ 5.6 trillion in revenue by 2030 (Cross-border B2C E-commerce Market Size Report, 2030)

⁴ These include Project Nexus, a multilateral international initiative to enable instant cross-border retail payments by interlinking domestic Instant Payment Systems (IPSs) of four ASEAN countries (Malaysia, Philippines, Singapore, and Thailand) and India. Under bilateral arrangements, cross-border payment linkages have already been established by India with Singapore, UAE, Mauritius, Sri Lanka, Nepal, etc.

few countries that have launched both wholesale and retail CBDCs. Programmability, interoperability with the UPI retail fast payment system and development of offline solutions for remote areas and underserved segments of the population, are some of the value added services which we are now experimenting as part of our CBDC pilot.

Going forward, harmonisation of standards and interoperability would be important for CBDCs for cross-border payments and to overcome the serious financial stability concerns associated with cryptocurrencies. A key challenge could be the fact that countries may prefer to design their own systems as per their domestic considerations. I feel we can overcome this challenge by developing a plug-and-play system that allows replicability of India's experience while also maintaining the sovereignty of respective countries.

It is well recognised that growing digitalisation of financial services has enhanced the efficiency of the financial sector across the globe. At the same time, it has brought in several challenges which central banks have to deal with. For instance, in the modern world with deep social media presence and vast access to online banking with money transfer happening in seconds, rumours and misinformation can spread very quickly and can cause liquidity stress. Banks have to remain alert in the social media space and also strengthen their liquidity buffers.

Latest technological advancements such as artificial intelligence (AI) and machine learning (ML) have opened new avenues of business and profit expansion for financial institutions. At the same time, these technologies also pose financial stability risks. The heavy reliance on AI can lead to

concentration risks, especially when a small number of tech providers dominate the market. This could amplify systemic risks, as failures or disruptions in these systems may cascade across the entire financial sector. Moreover, the growing use of AI introduces new vulnerabilities, such as increased susceptibility to cyberattacks and data breaches. Additionally, AI's opacity makes it difficult to audit or interpret the algorithms which drive decisions. This could potentially lead to unpredictable consequences in the markets. Banks and other financial institutions must put in place adequate risk mitigation measures against all these risks. In the ultimate analysis, banks have to ride on the advantages of AI and Bigtech and not allow the latter to ride on them.

Conclusion

Despite the difficult trials and trade-offs, central banking in the current decade is a success story. In the realm of monetary policy, central banks have been successful in bringing inflation closer to targets. Major financial collapses or recessions, seen during earlier episodes of crisis, have been averted. Central banks are now at the forefront of technological innovations and are driving them through sandboxes, innovation hubs and hackathons.

As we navigate the high intensity tail events and black swans of the current decade, the lessons imbibed can well form the basis of our deliberations today to chart out a course for the future. Central banks must remain vigilant, adaptable, continuously assess risks and build resilience. They should remain prepared to navigate complex challenges, support sustainable growth, maintain price stability and promote sound and vibrant financial systems.

Thank you.

*Central Banking in the 21st Century: Changing Paradigm**

Shri Shaktikanta Das

I am delighted to have been invited by the Nepal Rastra Bank (NRB) to deliver the inaugural Himalaya Shumsher Memorial Lecture. I deem it as a privilege. I place on record my appreciation of the Nepal Rastra Bank for initiating this lecture series in honour of Shri Himalaya Shumsher Rana, the first governor of NRB from 1956 to 1961. He contributed immensely to the development of Nepalese monetary and financial systems. His efforts laid the foundation for many of Nepal's key financial institutions and contributed significantly to the country's economic development. Nepal and India have enjoyed a long standing relationship that goes back into history. It is not just a relationship between the two countries, it is also a close people to people relationship. The Nepal Rastra Bank and the Reserve Bank of India also share a close relationship based on mutual co-operation.

Central banks have traditionally functioned as the guardians of macroeconomic and financial stability. In recent years, central banks were at the forefront protecting their economies and financial systems from the onslaught of multiple global shocks. They were put to ultimate test in this extraordinary period of global turbulence and uncertainties. They had to change gear to revive their COVID-19 pandemic-ravaged economies to waging an all-out war against inflation in quick succession. Many standard central banking theories and practices were debated; and while some survived, others had to adapt to the new realities. As we still transit through this challenging period which is now dominated by geopolitical conflicts and global geoeconomic fragmentation, it would be appropriate

to examine how central banking has evolved over the years, draw lessons from the past crises, and prepare for the challenges that lie ahead in the 21st century. Today, therefore, I have chosen to speak on "Central Banking in the 21st Century: Changing Paradigm".

I have structured my talk in the following manner. First, I propose to speak on the established paradigm of central banking at the turn of the last century. Thereafter, I would like to describe how this paradigm has evolved, learning from the crisis experiences of the 21st century, followed by brief remarks on the Reserve Bank's approach to policymaking that has helped the Indian economy emerge stronger in the last few years. Finally, I shall attempt to outline some of the challenges that central banks will confront in the 21st century.

The Established Paradigm at the Turn of Last Century

By the end of the 20th century, the theory and practice of central banking had converged to certain core principles. The first of these core principles was that price stability would be the primary responsibility of a central bank. This principle had its origin in the Great Inflation of the 1970s. Subsequently, inflation targeting as a monetary policy framework gained prominence from the early 1990s, both in advanced and emerging market economies (EMEs). The second core principle had its roots in the famous 'rules versus discretion' debate in macroeconomics¹ of the 1970s and 1980s, following which a consensus emerged in favour of rules or constrained discretion in policy making. This was followed by institutional reforms under which inflation targeting got embedded in rule-based policy making with some flexibility. The third core principle was about central bank independence which was considered as critical for achieving the goals of price and economic stability. While the target was given to the central bank by elected representatives, the central

* First Himalaya Shumsher Memorial Lecture by Shri Shaktikanta Das, Governor, Reserve Bank of India - September 24, 2024 - Nepal Rastra Bank, Kathmandu, Nepal.

¹ Kydland, F.E. and Prescott, E.C. (1977). "Rules Rather Than Discretion: The Inconsistency of Optimal Plans," *Journal of Political Economy*, 85 (June), 473–92.

bank was free to deploy instruments at its disposal to achieve the given target.² Central bank independence went hand in hand with increased accountability and transparency of the monetary policy decision making process.

Evolving Paradigm of the 21st Century

In the 21st century, the global economy has gone through a global financial crisis (GFC), a global pandemic, a global surge in inflation and geopolitical conflicts with global ramifications. Not too long ago, central banks were fighting deflationary tendencies in the aftermath of GFC by cutting their policy rates to the zero lower bound and implementing a heavy dose of quantitative easing. After the onset of the war in Ukraine, they had to fight against inflation by raising policy rates to historically high levels.

In fact, the eventful first quarter of the 21st century has provided important lessons for central banks, as it brings about quite a few changes in the established paradigm of the 20th century. First, there is now a better recognition of the interconnections between price stability and financial stability. A key lesson from recent experience is the need to avoid looking at price and financial stability in isolation. The linkage from price to financial stability operates in two ways. First, extended periods of low and stable inflation could lull central banks into complacency with regard to regulation and supervision of the financial system as witnessed during the Great Moderation era of 1990s and early 2000s, germinating the seeds of financial instability. Second, periods of high inflation that are addressed by strong monetary policy tightening can jeopardise financial stability if interest rate risks are not adequately factored in. We saw this in March 2023 when a few banks in some advanced economies faced sudden stress situations.

² A whole host of literature developed establishing that macroeconomic performance was superior in countries with more independent central banks (Alesina and Summers, 1993; Cukierman, 1993).

It is evident that measures for promoting financial stability can complement or constrain monetary policy depending upon its usage. Financial stability measures aimed at effective regulation and supervision of banks, non-banking financial companies (NBFCs) and markets can enhance monetary transmission and help price stability. On the other hand, financial stability measures *via* extraordinary monetary expansion, if not corrected in time, can risk price stability. It is, therefore, evident that the relationship between price stability and financial stability runs in both directions and the impact depends upon the policy choices we make.³

Second, the 20th century orthodoxy of central banking was in terms of single objective (price stability) and single instrument (short-term interest rate). Today, central banks have a broader mandate of overall macroeconomic stability which includes price stability, sustained growth and financial stability. Sometimes, the pursuit of price stability could be in conflict with financial stability as experienced recently by some advanced economies when tighter monetary policy raised concerns about the banking system stability. The trade-off between price stability and growth emerges when the pursuit of price stability entails large growth sacrifice. It is, therefore, important, that central banks employ their multiple instruments, viz., monetary policy, macroprudential regulation and micro-prudential supervision in an optimal manner to reduce such trade-offs and achieve better outcomes for the economy.

To best serve all these objectives, central banks have greatly enhanced their toolbox. In addition to conventional policy tools, central banks have an enlarged toolbox of unconventional policy instruments. These include negative interest rates,

³ Das Shaktikanta (2023), 'Price and Financial Stability: Managing Complementarities and Trade-Offs', Plenary Address at the Kautilya Economic Conclave Organised by the Institute of Economic Growth and Ministry of Finance, Government of India, New Delhi; October 20, 2023.

term lending facilities, asset purchase programmes and forward guidance. Central banks also rely on proactive macro-prudential measures to promote systemic stability.

Third, central bank communication has gained prominence as an important policy tool in the 21st century. In older days, central bankers believed that their communication should be "shrouded in mystery", "say as little as possible" and "say cryptically".⁴ Those times are gone. Now, managing expectations through effective communication is a vital instrument in the monetary policy toolkit. Forward guidance or the absence of it on the future path of policy interest rates, both state and time based, has evolved as a new feature to deal with expectations. Central banks have learnt to build trust and confidence through social media, official speeches, press releases and public interactions.⁵ Clear and effective communication and transparency have played an important role in the success of the inflation targeting framework.

Fourth, recent experience has underscored the importance of monetary-fiscal coordination for better economic outcomes. During the pandemic, central banks worked in close coordination with governments to deal with the unprecedented crisis. Later, when central banks were battling against multi-decade high inflation, governments took measures on the supply side to ease inflationary pressures. Consequently, the output sacrifice needed to bring down inflation was minimised.

Fifth, the emerging market economies (EMEs) have exhibited greater resilience unlike previous episodes. Notably, all traditional drivers of EME crises of the 20th century were present in the last few

⁴ Shaktikanta Das (2023), "The Art of Monetary Policy Making: The Indian Context" Speech by Governor, Reserve Bank of India at Delhi School of Economics (DSE) Diamond Jubilee Distinguished Lecture, September 5, 2023.

⁵ Central Banking in the 21st Century – A crisis of accountability? European journal of political Economy, 74, 2022.

years,⁶ but the EMEs have probably learnt from their past experience and played it well this time. While the resilience of EMEs will be tested in the face of new challenges cropping up frequently, some lessons can be drawn as central banks prepare for rest of the 21st century. The foremost lesson is that strengthening one's fundamentals is the best buffer against global spill overs in today's uncertain world. Fundamentals would include commitment to an inflation target, maintaining buffers in the form of reserves, and following a prudent and forward looking approach in financial sector policies. This approach, together with prudence in fiscal management, will go a long way in enhancing the resilience of EMEs.

The Indian Context

Let me now turn to the Indian context. I wish to highlight some aspects of the Reserve Bank's approach that have worked well for us. We have not only managed to shield the Indian economy from multiple shocks in the last few years but have also enabled it to emerge stronger from the crisis. The Indian economy today demonstrates vastly improved macroeconomic fundamentals and buffers.

Unlike many central banks which are narrowly focused on price stability using monetary policy, the Reserve Bank has a wider canvas of functions. It is not just responsible for maintaining price stability, but also has the larger responsibility of maintaining financial stability as the regulator and supervisor of banks and other financial sector entities, financial markets and payment systems.⁷ This helps us to take a holistic view of the economy, appreciate the synergy

⁶ Some of these drivers include global slowdown, high inflation and concomitant high interest rates in AEs, strong dollar, bank failures in AEs and associated contagion risk, high commodity prices, tapering of quantitative easing and associated capital outflows from EMEs.

⁷ The preamble to the RBI Act 1934 describes RBI's main functions as: "...to regulate the issue of Bank notes and keeping of reserves with a view to securing monetary stability in India and generally to operate the currency and credit system of the country to its advantage; to have a modern monetary policy framework to meet the challenge of an increasingly complex economy, to maintain price stability while keeping in mind the objective of growth."

and trade-offs involved in various objectives, and act appropriately using multiple instruments at our disposal.

The Flexible Inflation Targeting (FIT) framework which got embedded into the law in 2016, established the primacy of price stability among the objectives of monetary policy, but not unconditionally. It defined the objective as maintaining price stability, while keeping in mind the objective of growth. The FIT framework retained the essence of the earlier multiple indicator approach without any ambiguity about the hierarchy of objectives. FIT provides flexibility to support growth if the situation so demands. Financial stability which is a pre-condition for price stability and sustained growth is thus implicitly embedded as part of the broader mandate of the Reserve Bank. It is this approach which has helped us to effectively deal with the multiple challenges in the recent period and address issues of anchoring price stability, supporting growth and maintaining financial stability. Details of the specific measures undertaken by the Reserve Bank are given in a footnote⁸.

⁸ When the COVID-19 pandemic struck, the Reserve Bank reduced the policy rate sizeably by 115 bps in a span of two months (March-May 2020); however, we refrained from being ultra-accommodative by not reducing the policy repo rate below our inflation target of 4 per cent. In tandem, financial conditions were eased substantially through liquidity augmenting measures amounting to ₹17.2 lakh crore (equivalent to 8.7 per cent of GDP of 2021-22). All these measures were nuanced, against good collaterals, with banks as counterparties and preferably with sunset clauses, keeping in mind the price and financial stability challenges that may arise in future. During 2021, surplus liquidity was gradually migrated from the short end to the longer horizon, which lifted short-term rates from ultra-low levels, thereby obviating financial stability challenges. The pandemic measures exemplified how the Reserve Bank could effectively balance different objectives – maintaining price stability within the flexibility provided by the FIT framework, while also addressing financial stability considerations simultaneously. Even during the COVID-19 pandemic when we eased policy rates significantly and in the subsequent inflation upsurge when policy was tightened sharply, we gave banks greater flexibility by adjusting the proportion of securities they could hold under the held to maturity (HTM) category to avoid marked to market (MTM) losses that triggered the banking crisis of March 2023. Besides, we adopted a prudent approach and have taken several initiatives to revamp regulation and supervision of banks, NBFCs and other financial entities by developing an integrated and harmonized architecture. As a result, our banking system remains resilient and healthy, as reflected in sustained growth in bank credit backed by improved asset quality, adequate capital and liquidity buffers and robust earnings growth. Thus, through our financial stability measures that strengthened market functioning, we facilitated price stability by ensuring smoother policy transmission.

New Challenges for Central Banks in the 21st Century

Let me now reflect upon some of the challenges that could significantly impact the central banking landscape in the 21st century. First and foremost, climate change is emerging as a huge challenge. It can become a systemic risk, if not addressed in time. Severe climate or weather related events which are becoming more frequent and intense can impact central bank's core mandates of price and financial stability by causing sudden price pressures, damage to infrastructure, loss of economic activity and stress on fiscal balances. They can also impact the balance sheet of banks and other lenders. In recent years, there has been a growing role of regulatory policies in the climate policy toolkit.⁹ More work needs to be done in this front while recognising that central banks can supplement the efforts of governments and other authorities who will be at the forefront of climate related initiatives.

Second, continuing geopolitical disturbances and geoeconomic fragmentations will pose daunting challenges to the central banks. Experience of the past few years shows that the journey ahead may be marked by dynamic shifts in geopolitics, with frequent incidences of supply chain disruptions and greater barriers in trade, technology and capital flows. These will be the new sources of shocks, often not well captured in existing macroeconomic models. It has become important for central banks to remain vigilant and respond in a nimble, timely and calibrated manner while navigating such turbulences.

Third, technology has permeated through every aspect of human life. It is bringing about transformational shifts in the financial services sector. The traditional banking system has undergone an unprecedented technological transformation over the last decade. In times of crisis, as during the

⁹ (RBI, 2023) Report on Currency and Finance 2022-23, "Towards a Greener Cleaner India".

COVID-19 pandemic, India and a few other countries were able to leverage digital financial infrastructure (DFI) for targeted transfer payments. Technology has enabled India to achieve, in less than a decade, levels of financial inclusion that would have otherwise taken several decades or more.¹⁰ DFI, thus, offers great potential for the future.

Fourth, fintech innovations are also opening up new possibilities. The challenge for central banks in this journey will be to steer digital innovation towards a more efficient, prudent and stable financial system, reaping the benefits of DFI while further building on their track record as trusted safekeepers of price and financial stability.¹¹ Central banks will also have to deal with issues of regulation and supervision of digital lenders; observance of fair practices code by the stakeholders; data security and privacy; and third party service providers, etc.

The fifth challenge relates to the advent of artificial intelligence and machine learning (AI/ML) tools in financial services. While its application and usage in central banking and financial services has tremendous scope, it also poses challenges of data privacy, algorithmic bias and discrimination, cyber security and ethical issues.¹² Central Banks and other players in the financial services ecosystem have to enhance their own capacities to deal with these challenges.

To sum up, central banks in the 21st century will have to gear up for all these challenges. While climate change and geopolitics may work as supply shocks to fuel inflationary pressures and slowdown global growth and trade; innovation and artificial intelligence,

if well supervised and properly channelised, can help in enhancing productivity and reducing costs. The net effect will depend, to a great extent, upon central banks' own capabilities in harnessing the potential while managing the transition. This in turn will determine the financial landscape of the 21st century.

Concluding Observations

Every crisis brings with it new lessons and ideas. The frontier of knowledge and ideas in economics have advanced with each crisis in the past. For example, the Great Depression of the 1930s underlined the importance of fiscal and demand management policies; the Great Inflation of the 1970s brought to focus the need for credibility and consistency in policy frameworks; the global financial crisis of 2008 underscored that financial stability can not be separated from overall macroeconomic stability; and now the sequence of unprecedented shocks since the pandemic have driven home the need for policymakers to be agile, proactive, innovative and prudent in their policy responses, without being constrained by orthodoxies or dogmas. Thus, economic theory and policies have evolved over the years with experience gained and lessons learnt from each crisis. In fact, this has indeed been the story of central banks over the years.

With several crisis of global proportion occurring in quick succession in the last few years, central banking theory and practice are undergoing subtle and sometimes significant changes. At the Reserve Bank of India, our effort has been to pursue proactive and prudent policies so that the Indian economy evolves along a sustainable growth path. I am glad that our efforts have yielded positive outcomes. The Indian economy has rebounded strongly from the pandemic and is contributing more than 18 per cent to the global growth. Inflation is on a declining trajectory. External sector remains resilient with strong buffers. The health of banking and corporate sectors remains strong. Fiscal consolidation is under way.

¹⁰ Das Shaktikanta (2024), "Digital Public Infrastructure and Emerging Technologies". Inaugural address at the RBI@90 Global Conference on August 26, 2024, Bengaluru

¹¹ Silva L.A.P. (2023). "Central Banks at the Crossroads" BIS speech, August.

¹² 12 Acemoglu, Daron (2024). "Harms of AI". In: The Oxford Handbook of AI Governance. Ed. by Justin B. Bullock, Yu-Che Chen, Johannes Himmelreich, Valerie M. Hudson, Anton Korinek, Matthew M. Young, and Baobao Zhang. Oxford University Press.

As preeminent macro-financial policy institutions, central banks have to keep reinventing themselves in tune with the times. They have to anticipate future risks and undertake suitable pre-emptive measures to avert or mitigate potential risks, if any. I am confident,

the central banks will rise to the occasion and lead from the front to safeguard their financial systems and economies from the emerging challenges of the 21st century.

Thank you. Namaskar.

*Assessing Inflation Targeting**

Michael Debabrata Patra

The Context

Over the past three and a half decades since the formal adoption of inflation targeting (IT), it has proliferated across continents, regardless of the position of host jurisdictions in the developmental ladder. By the turn of this century, it has been increasingly embraced by emerging market economies (EMEs) so much so that they now outnumber advanced economies (AEs) as practitioners. A unique feature of IT is its operationalisation even before the development of a formal theory¹. The journey of IT has been tumultuous, navigating as it has the Great Moderation and 'once in a century' shocks such as the global financial crisis (GFC), the COVID-19 pandemic, and persisting geopolitical conflicts that have had a direct bearing on both inflation's evolution and on financial conditions. Yet, there is no evidence of any major country abandoning it². On the other hand, central banks have drawn lessons from these humungous challenges and innovated and refined their policy frameworks. The endogenous evolution of IT has rendered it the longest surviving monetary policy framework in modern times.

Three pillars of the framework – flexibility; transparency and, therefore, accountability; and credibility – have enabled IT to stand the test of time. Empirical evidence suggests that the post-pandemic

price shocks have actually had relatively short-lived effects in comparison with the persistence of the price shocks of the 1970s on the wider acceptance that monetary policy will do whatever it takes³. The effectiveness of inflation targeting is also found to be underpinned by its institutional quality,⁴ reinforcing pre-pandemic evidence pointing to IT being a better absorber of shocks than other regimes.⁵ The taming of the post-pandemic surge in inflation down to its last lap provides further validation of the framework. Everywhere, long-term inflation expectations remain broadly anchored⁶ in spite of heightened uncertainty.⁷

II. What the Reviews Revealed

Unlike other monetary policy regimes, periodic reviews have been an integral part of the IT framework, and have, in fact, been hard coded into legislative mandates. While there have been notable operational similarities in target setting, policy communication and performance assessment within subtle adaptations to country specific requirements, there is variation in the way IT frameworks are reviewed.⁸ The latest reviews of IT frameworks in several countries provide interesting insights about the future of IT.

The key motivations for these framework reviews were (i) the decline in the neutral interest rate and the higher risk of hitting the zero lower bound;

³ Bernanke, B. S. and Blanchard, O. (2024). An Analysis of Pandemic-Era Inflation in 11 Economies. Hutchins Center Working Paper #91, May.

⁴ Milas, C., Dergiades, T., Panagiotidis, T., and Papapanagiotou, G. (2024). An Assessment of Inflation Targeting. Quarterly Review of Economics and Finance 97, 101897.

⁵ Fratzscher, M., Grosse-Steffen, C. and Rieth, M. (2020). Inflation Targeting as a Shock Absorber. Journal of International Economics 123, 103308.

⁶ Schnabel, I. (2024). The Future of Inflation (Forecast) Targeting. Keynote speech at the thirteenth conference organised by the International Research Forum on Monetary Policy, "Monetary Policy Challenges during Uncertain Times", at the Federal Reserve Board, Washington, D.C. April 17.

⁷ Lagarde, C. (2022). Monetary Policy in an Uncertain World. Speech delivered at "The ECB and Its Watchers XXII" conference, Frankfurt am Main, March 17.

⁸ Wadsworth, A. (2017). An International Comparison of Inflation Targeting Frameworks. Reserve Bank of New Zealand Bulletin, Vol.80, No.8, August.

* Address delivered by Michael Debabrata Patra, Deputy Governor, Reserve Bank of India (RBI) at the High Level Conference "Central Banking at Crossroads" organised by the Reserve Bank of India as a part of commemoration of its 90th year on October 14, 2024 at New Delhi, India. Valuable comments received from Binod B Bhoi, Indranil Bhattacharya, Soumasree Tiwari, and editorial help from Vineet Kumar Srivastava and Samir Ranjan Behera are gratefully acknowledged.

¹ King, Mervyn A. (2024). Inflation Targets: Practice Ahead of Theory. NBER Working Paper No. 32594, June.

² Argentina moved out of IT in 2018, and it is under an IMF program currently with an ambitious stabilization plan.

(ii) the lowering of inflation expectations which further constrained policy space; and (iii) the flattening of the Phillips Curve giving recoveries 'more room to run'.⁹

Overall, the reviews have reaffirmed faith in the broad framework of IT, but with some refinements. Common outcomes include (i) specification of the target range in terms of headline inflation with a focus on mid-points; (ii) re-emphasising accountability criteria for meeting the target over a period rather than at every point in time; (iii) specifying the periodicity of reviews; and (iv) assessing other measures of inflation - including core - for policy deliberations but not for specifying the target.

Distinctive outcomes include (i) the US Federal Open Market Committee (FOMC) defining the target in terms of average inflation of 2 per cent over time; (ii) the ECB changing the target from "below but close to 2 per cent" to " 2 per cent" as a reference point to ensure that the medium-term inflation rate neither exceeded nor remained below this symmetric threshold¹⁰; (iii) New Zealand including maximum sustainable employment as an additional objective effective from 2019 but reverting to solely targeting price stability in December 2023; (iv) Japan exiting its negative interest rate policy and discontinuing quantitative and qualitative monetary easing (QQE) along with yield curve control (YCC) in March 2024¹¹; and (vi) Thailand, Brazil and Indonesia lowering targets/target ranges.

What the reviews did not reveal is also interesting because of more recent developments. For instance, even while formal IT frameworks enabled central

banks to forcefully respond to both high and low inflation, there is no clear assessment of the manner and extent to which financial stability considerations should be accounted for in the pursuit of price stability. In the event, the excesses of 'too low for too long' and also of 'higher for longer' have been exposed and the absence of a settled position makes policy responses vulnerable to banking crises of the March 2023 type, the unwinding of carry trade as in August 2024 and recession fears on a single data release on September 3, 2024 which left data dependent IT practising central banks awash in an ocean of uncertainty due to sudden large revisions in market expectations. Second, the reviews are silent on the effects of putting central bank balance sheets on the line in the conduct of unconventional monetary policy. Consequently, the difficulties encountered in too prolonged a normalisation and in the incurring of financial losses by central banks will stare at the credibility of the independent conduct of IT-based monetary policy. Third, communication – a much feted aspect of IT – has run into asymmetry complications underneath the radar of the reviews. What seemed fashionable and comforting in the context of easing monetary policy appears confusing and even blasé on the way up.

III. Innovations

The post-pandemic experience has been similar in some respects across inflation targeting AEs and EMEs. The fight against the deep contraction and financial stability risks brought on by the pandemic triggered unprecedentedly forceful responses from both. Interest rates were taken down to historical lows. Balance sheets of central banks were expanded to distended dimensions; and communication was reimaged in an effort to restore petrified confidence. Likewise, the global outbreak of inflation following the war in Ukraine drew forth from both among the most aggressive tightening of monetary policy in the history of each once it was realised that the inflation

⁹ Adrian, T. (2021). Review of Monetary Policy Frameworks. Remarks at Central Banking Magazine's, Reserve Management Americas Workshop, March 16.

¹⁰ Benigno P., Canofari, P., Dibartolomeo, G. and Messori, M. (2021). The Implementation and Rationale of the ECB's New Inflation Target. Monetary Dialogue Papers, European Parliament, November.

¹¹ Kazuo, U. (2024). On the Recent Changes in the Bank of Japan's Monetary Policy Framework. Remarks at the Peterson Institute for International Economics, April 19.

was pernicious and there to stay. The mornings after were, however, somewhat different - while AEs faced banking and sovereign debt problems, EMEs had to deal with spillovers from AEs and wild swings in financial asset prices, especially exchange rates. These discrete experiences have brought forth innovations in the practice of inflation targeting that have been conditioned by distinct and different realities.

In the case of AEs, an attractive innovation is the concept of averaging inflation targets propounded by the US Fed. Scarred by the severe constriction of policy space at the zero interest rate bound or going even lower, its new make-up strategy allows the Fed to let inflation run moderately above target following a period when it has persistently fallen below the target. The promise of higher inflation in the future lowers real interest rates even when the policy rate is pinned at zero, thus boosting output and inflation today.

In the case of EMEs, the adoption of IT has undoubtedly strengthened their monetary policy frameworks as evident in the greater external and financial stability they now enjoy than in past decades in spite of amplified spillovers from AEs and larger destabilising effects. This bonus has largely accrued from following assignment rules committing monetary policy to price stability, while dealing with capital flows and exchange rate volatility with foreign exchange (FX) interventions and macroprudential measures. FX Interventions, supported by accumulation of foreign exchange reserves, have squelched volatility by leaning against the tsunamis unleashed by AE monetary policies. In a world in which a global financial safety net is non-existent or inadequate, spillovers are global but financial stability is national. In this environment, the benefits of this risk minimisation strategy overwhelmingly outweigh costs of holding large reserves.

Macro prudential policies are designed to address side effects and fallouts that slip through the cracks of FX interventions. If they are not fully sterilised, fluctuations in capital flows and exchange rates can cause overheated credit expansions, rising leverage and amplified financial cycles. Macro prudential measures temper the build-up of these financial imbalances, enhance resilience in the face of rising stress, dampen oscillations of financial cycles and reduce the likelihood of financial crises.

Both FX interventions and macro prudential policies are intended as complementary tools that expand the room for manoeuvre for inflation targeting monetary policy. The experience of EMEs illustrates how forex interventions and the deployment of macroprudential tools can help improve the trade-off between price and financial stability¹². In the context of AE and EME inflation targeters, therefore, different strokes for different folks.

IV. IT – The Indian Experience

India was a relatively late entrant to the IT club¹³; this enabled cherry picking the best of country experiences. India's flexible inflation targeting (FIT) framework is centred around an inflation target set at 4 per cent with a tolerance band of +/- 2 per cent around it. The target is medium-term in nature, initially set for a five-year period (2016-21) and renewed by the government for another five years (2021-26). The 'F' in India's FIT consists of (i) a mandate that accords primacy to price stability while being cognisant of growth; (ii) an inflation target defined in averages rather than as a point; (iii) achievement of the target over a period of time rather than continuously; (iv) a tolerance band to accommodate measurement issues, forecast errors and supply shocks; and (v) failure to

¹² BIS (2024). Monetary Policy in the 21st Century: Lessons Learned and Challenges Ahead. Annual Economic Report, June 30.

¹³ The framework was formally adopted in 2016, but the pre-conditions and glidepath were put in place from February 2015.

achieve the target being defined as three consecutive quarters of deviation of inflation from the tolerance band, rather than every deviation from the target¹⁴.

During the pre-pandemic period upto end-2019, inflation was low and stable, averaging around 4 per cent. With the outbreak of the pandemic and associated lockdowns, inflation breached the upper tolerance band in many months during 2020–21 and 2021-22. Following the Russia-Ukraine conflict, inflation again veered away from its target under the impact of multiple and overlapping food and energy shocks. By April 2022, it reached a peak of 7.8 per cent. The monetary policy response was front-loaded with a cumulative hike of 250 bps during May 2022–February 2023. In July and August 2024, inflation has fallen below the target. It is projected to average 4.5 per cent in 2024-25 before aligning with the target on a durable basis in 2025-26.

The Indian experience is unique in view of the incidence of repetitive shocks to food and fuel prices, which challenged the conduct of monetary policy. In India, price stability is a shared responsibility under which the government sets the target, and the central bank achieves it. This allows monetary-fiscal coordination without posing risks to financial stability, fiscal consolidation or growth¹⁵ - perhaps a template for countries vulnerable to inflationary pressures emanating from supply shocks.

V. New Vistas

In the years ahead, the conduct of IT-based monetary policy may face even greater challenges. Central banks face an existential threat to their central mandates from climate change through supply shocks such as food and energy shortages and through

a decline in productive capacity which can translate to inflation volatility. Demand shocks can also arise due to the loss of wealth of firms and households on account of frequent natural disasters. Physical and transition risks can affect the balance sheets of financial institutions and banks, limiting the flow of credit to the real economy. Climate induced uncertainty can make households save more for precautionary purposes, bringing down the real equilibrium interest rate. There are also several channels through which climate change can affect monetary transmission. For instance, depreciation pressures on currencies of countries frequently affected by climate disasters can cause financial instability, higher import costs as well as negative terms of trade all of which have implications for the mandate of inflation targeting central banks. Already, several central banks, including the RBI, have started taking steps to put in place guardrails, including incentives for bank lending for green energy sources; measuring and managing climate-related risks, including through stress testing; developing appropriate ecosystems for green bonds, collateral policies and green deposits; funds-supplying operations to support financing for climate change responses; and differentiated reserve requirements. The consensus is hence coalescing to the position that central banks are uniquely placed to address climate change. The challenge is to incorporate it into inflation targeting frameworks.

Innovations in payment systems, fintech, and central bank digital currencies can also change the nature of policy trade-offs facing IT in the future.¹⁶ Digitalisation can directly lower inflation rates through a decline in the prices of information and communication technology (ICT)-related goods. Digital technologies can also influence inflation indirectly through changes in firms' price-setting

¹⁴ Patra, M. D. (2021). "Monetary Policy: Trial by Pandemic," RBI Bulletin, October.

¹⁵ Patra, M.D., and Bhoi, B. B (2024). Quelling the Post-pandemic Inflation Surge: The Indian Experience. Chapter 10 in the book Monetary Policy Responses to the Post-Pandemic Inflation edited by Bill English, Kristin Forbes and Ángel Ubide, Centre for Economic and Policy Research (CEPR), February.

¹⁶ Allen, F., Kim, J. H. and Walther, A. (2024). Inflation Targeting and Financial Stability. Paper presented at the conference on "The Quest for Nominal Stability: Lessons from Three Decades with Inflation Targeting" held at the Sveriges Riksbank, May 23-24.

behaviour and market dynamics, with competition enabled by e-commerce. Dynamic pricing of goods and services becomes possible, making prices more responsive to economic changes by reducing menu costs, improving access to information and enhancing price update flexibility¹⁷. By reducing price stickiness, these developments can potentially make the Phillips curve steeper, enhancing the efficacy of monetary policy in securing price stability¹⁸. On the other hand, algorithmic pricing strategies in the digital realm may result in prices settling above competitive levels. Additionally, the large initial investment in digital technologies, coupled with lower scaling costs, can lead to a higher level of market concentration, higher mark-ups and profit margins, and consequent inflation pressures.

Digitalisation can improve access to financial services and enhance financial inclusion, thereby improving the transmission of interest rate-based monetary policy¹⁹. Financial digitalisation tends to amplify the effects of monetary policy by loosening credit constraints. On the other hand, monetary policy

transmission could be dampened if digitalisation leads to shifting of credit supply from banks to less-regulated/unregulated nonbanks²⁰ or by offsetting reductions in bank deposits.²¹

To conclude,

While formulating monetary policy, it is considered good housekeeping to evaluate the balance of risks. From this perspective, IT policy frameworks of the future need to be more robust, realistic and nimble, while exploiting synergies with prudential, fiscal and structural policies²² and leveraging on technological transformations. Adaptability and flexibility built into the framework would ensure that the central bank would be able to nudge the economy towards desirable societal outcomes. The so-called Darwinian principle of 'Natural Selection' is not Darwinian at all. It is actually attributable to Herbert Spencer. In my view, Herbert Spencer best describes the future of IT – the survival of the fittest.

Thank you

¹⁷ Glocker, C., and Piribauer, P. (2021). Digitalization, Retail Trade and Monetary Policy. *Journal of International Money and Finance*, 112, 102340.

¹⁸ Ari, M. A., Garcia-Macia, M. D., and Mishra, S. (2023). Has the Phillips Curve Become Steeper? IMF Working Paper No. 2023/100; Friedrich, C., and Selcuk, P. (2022). The Impact of Globalization and Digitalization on the Phillips Curve. Bank of Canada Staff Working Paper No. 2022-7.

¹⁹ Patra, M.D. (2021). Financial Inclusion Empowers Monetary Policy. Address Delivered in the Project on Financial Inclusion, a Joint Initiative by the IIMA, IRMA and CIIE organised by the IIM, Ahmedabad, December 24.

²⁰ Buchak, G., Matvos, G., Piskorski, T., and Seru, A. (2018). FinTech, Regulatory Arbitrage, and the Rise of Shadow Banks. *Journal of Financial Economics*, 130(3), 453-483; Elliott, D., Meisenzahl, R., Peydró, J.L., and Turner, B. C. (2022). Nonbanks, Banks, and Monetary Policy: US Loan-Level Evidence since the 1990s. Federal Reserve Bank of Chicago Working Paper, No. WP 2022-27, June; Chen, K., Ren, J., and Zha, T. (2018). The Nexus of Monetary Policy and Shadow Banking in China. *American Economic Review*, 108(12):3891–3936.

²¹ Xiao, K. (2020). Monetary Transmission Through Shadow Banks. *The Review of Financial Studies*, 33(6):2379–2420.

²² BIS (2024), op. cit.

*Central Banks and Financial Stability**

Shri Swaminathan J.

Distinguished panellists - Prof. Randall S. Kroszner, Professor, University of Chicago and Former Governor, Federal Reserve Board; Ms. Emmanuelle Assouan, Director General, Financial Stability and Operations, Banque de France; Ms. Sarah Breeden, Deputy Governor for Financial Stability, Bank of England; Dr. Sajid Chinoy, Managing Director and Chief Economist India, JP Morgan; esteemed delegates and colleagues from the Reserve Bank. A very good afternoon to all of you.

It is an honour to open this discussion on this very important and pertinent topic in today's financial world - "Central Banks and Financial Stability: Assessing Risks and Building Resilience."

The financial sector is the backbone of the economy, enabling efficient allocation of resources, managing risks through various instruments, and ensuring smooth payments and settlements. It performs crucial functions that support investments and drives economic growth. Therefore, the financial sector becomes the cornerstone of a well-functioning economy.

The financial sector is vulnerable to risks—especially systemic ones that, which if left unchecked, can have far-reaching consequences. As you are aware these systemic risks manifest across two dimensions: time and interconnectedness. On the one hand, financial risks can build up over time, especially in periods of economic euphoria. On the other, the growing interconnections between financial institutions, markets, and the broader economy make the system more open to shocks.

In today's world, challenges are more complex and unpredictable than ever. Traditional risks, like credit and liquidity risks, now have new and faster drivers. For example, bank runs that once unfolded over days, giving regulators time to respond, can now occur within hours due to the speed of internet and mobile banking. The increasing reliance on technology also introduces vulnerabilities, such as dependence on third-party service providers and heightened cybersecurity threats, all while customers expect uninterrupted services. Additionally, we face emerging risks, such as climate risk.

In this increasingly volatile environment, building resilience is crucial to maintaining financial stability. However, resilience is a balancing act—too much emphasis on safeguarding can stifle innovation and growth, while too little can expose the system to significant vulnerabilities. Finding that right balance so that we can have a robust financial system that can weather crises without constraining economic progress is one of the key challenges that we face today.

Indeed, central banks are much like wicketkeepers in cricket or goalkeepers in football—often unnoticed in success but always in the spotlight during failure. When everything works seamlessly, their efforts remain behind the scenes, often taken for granted. However, when a crisis occurs, they are asked as to how they could allow the ball to slip through their fingers! In addition, Central Bankers are also tasked with preventing further damage and restoring stability quickly.

Let me offer an analogy: imagine a person teetering on the edge of a cliff, seemingly about to fall, only to be pulled back just in time by a watchful observer. When central banks intervene in such a manner to prevent a potential crisis, those they protect may claim they didn't need saving at all. This highlights a common paradox—while regulators work tirelessly to maintain

* Address by Shri Swaminathan J. Deputy Governor, Reserve Bank of India at the RBI@90 High Level Conference on "Central banking at Cross Roads" in New Delhi on October 14, 2024

stability and avert disasters, their successes often go unnoticed, and their actions are sometimes viewed as unnecessary, intrusive or excessive by those unaware of the risks. Yet it is precisely this proactive oversight that ensures the safety and soundness of the financial system, allowing it to function smoothly even in times of uncertainty.

Over the years, the role of central banks has significantly evolved. Initially seen as the lender of last resort, today, central banks are equipped with a broad range of tools—regulatory, supervisory, and monetary—to ensure the stability of the financial system. In some countries, central banks do not have supervisory roles, with the supervision being carried out by a separate agency, but a coordinated approach is essential. Governments, central banks, financial regulators, and the industry must all work together to ensure appropriate and timely action is taken to safeguard financial stability.

In India, the Financial Stability and Development Council (FSDC), chaired by the Union Finance Minister, along with its sub-committee led by the Governor of the Reserve Bank, has been effectively facilitating discussions and enhanced understanding of risks across the financial sector. Biannually, Reserve Bank publishes Financial Stability Reports that deliver a thorough risk assessment of India's financial landscape. These reports utilise macro stress tests, sensitivity analyses, network and contagion assessments, and systemic risk surveys to provide valuable insights into potential vulnerabilities that affect the financial sector. Apart from inter-regulatory coordination, RBI also actively engages with the

industry through regular engagements/ interactions including conferences with the Boards of supervised entities, periodic meetings with the MDs & CEOs, Heads of Assurance functions as well as interactions with auditors.

Having discussed the importance of domestic coordination, I would also like to emphasise the significance of global supervisory cooperation. Historically, crises have acted as catalysts for bringing supervisors together to address shared challenges. For instance, the Basel Committee on Banking Supervision was formed in the aftermath of the Herstatt Bank failure, highlighting the necessity for a coordinated response to systemic risks. However, we should not wait for crises to play out before strengthening international collaboration. Greater engagement for proactive horizon scanning of potential risks and vulnerabilities, along with discussions on strategies to mitigate and address these challenges, can enhance our collective resilience and crisis preparedness.

Indeed, as a part of our agenda for the next decade, RBI@100, the Reserve Bank intends to engage more with the central banks of the global south. The Reserve Bank also aims to establish a global model of risk-focused supervision by fostering a strong risk discovery and compliance culture, building a "through-the-cycle" risk assessment framework. Reserve Bank is working to create a comprehensive data analytics ecosystem to support its supervisory functions.

With these thoughts in mind, I look forward to a rich and insightful panel discussion on how central banks can continue to enhance financial stability and build a resilient global financial system. Thank you!

Governance in SFBs - Driving Sustainable Growth and Stability*

Shri Swaminathan J.

Chairpersons and Directors of the Boards of Small Finance Banks; Chief Executive Officers of SFBs; Executive Directors, Chief General Managers and colleagues from the Reserve Bank of India; ladies and gentlemen. A very good morning to all of you.

It is an honour to address this distinguished gathering in the inaugural conference of Board of Directors of Small Finance Banks organised by the RBI. As has been mentioned, this conference is in continuation of the Reserve Bank's efforts to reach out to its supervised entities through a direct dialogue with their Boards and Top Management. Our objective is to reaffirm the importance of good governance for maintaining financial stability and fostering sustainable growth.

In his address¹ to the Directors of Public and Private Sector Banks last year, the Governor outlined a comprehensive 10-point charter that addressed key aspects such as the role of the Board, its independence, the importance of setting the tone from the top, etc. His speech serves as an excellent blueprint for regulatory expectations from the Boards of Directors, and I encourage you to review it if you haven't already.

Today, I would like to discuss three key issues with you: (i) the vital role of Small Finance Banks in promoting financial inclusion, (ii) the necessity of strengthening governance and assurance functions for

sustainable growth, and (iii) important considerations regarding business models and risks that Boards should be mindful of.

Important Financial Inclusion Objective of SFBs

As you are aware, the licensing of Small Finance Banks was introduced a decade ago, in 2014, with the primary objective of advancing financial inclusion. Beyond serving as a vehicle to mobilise savings, SFBs were also envisioned to extend affordable credit to underserved and unorganised sectors, such as small and marginal farmers as well as small business units, by leveraging technology to reduce costs and improve accessibility.

India, today, stands at a pivotal moment in her development trajectory. In the last 75 years, we have transformed ourselves from an agrarian economy into one driven by industry and services. However, translating our GDP into higher per capita Gross National Income comparable to developed economies will require a comprehensive approach towards inclusive and sustainable economic growth. This will inter-alia entail education, skill development, employment generation, and more pertinently further deepening of financial inclusion. Thus, the goal for small finance banks is not 'small'. On the contrary, it is very significant, as SFBs play a crucial role in extending financial services to the underserved, fostering entrepreneurship, and driving inclusive growth that will be essential for India's progress towards becoming a high-income economy.

In a developing country like India, it is imperative for the financial sector, including small finance banks to strike a balance between profitability and social objectives. This can be achieved through a strategic focus on sectors that deliver high social impact, ensuring that financial growth is aligned with the broader goal of inclusive development. It is therefore essential for SFBs to actively participate in extending credit under various Government Sponsored Schemes

* Keynote Address by Shri Swaminathan J. Deputy Governor Reserve Bank of India at the Conference of Directors of Small Finance Banks in Bengaluru on September 27, 2024.

¹ 'Governance in Banks: Driving Sustainable Growth and Stability'. Inaugural Address by Shri Shaktikanta Das, Governor at the Conference of Directors of Banks organised by the Reserve Bank of India for Public Sector Banks on May 22, 2023 in New Delhi and Private Sector Banks on May 29, 2023 in Mumbai. https://www.rbi.org.in/Scripts/BS_SpeechesView.aspx?Id=1364

to promote greater accessibility of affordable credit, especially among the vulnerable sections of the society.

As the target group of such lending is mostly the marginalised and underserved sections of the society, it is essential for the SFBs to adopt responsible lending practices. It is disheartening to come across egregious practices by some SFBs, such as charging excessive interest rates, collecting instalments in advance as well as not adjusting such advance collections against loan outstanding, levying of usurious fees, etc. It is also observed that grievance redressal mechanism is far from adequate in most SFBs.

I therefore feel that periodically reviewing how your bank is fulfilling its financial inclusion objectives is an area that Boards should give much deeper consideration to. It is not just about meeting regulatory requirements such as priority sector lending but also about assessing the true impact of your efforts on underserved communities. Boards can reflect on whether the bank is genuinely reaching marginalised groups, such as low-income households, small businesses, and rural populations, and how effectively it is using technology and innovative products to bridge financial gaps, as these were the objectives of having a differentiated licensing for SFBs.

Strengthening Governance

An effective governance framework is the foundation of resilient and well managed institutions, especially in the context of banks. There needs to be a clear division of responsibilities between the Board and the management to ensure smooth functioning of the bank. While the Board is responsible for setting the overall strategic direction, establishing policies, and ensuring that the bank adheres to regulatory frameworks and ethical standards, the management is responsible for the execution of the Board's strategy and operations. It is the Board's role to provide oversight, asking the right questions and holding the

management accountable for executing the bank's strategy within the agreed risk appetite.

In this context, it is imperative that the views of the Board are clearly articulated and documented in the minutes of the meetings of the Board and its various sub-committees. It is said that the '*palest ink is better than the best memory*'. Proper documentation serves as a vital record of the Board's deliberations, decisions, and rationale behind those decisions, ensuring transparency and accountability in governance. Clear minutes not only provide a historical account of the Board's discussions but also serve as a reference for future decision-making, helping to maintain continuity and clarity in governance practices.

Boards should prioritise proper succession planning for top management. Having just one Whole Time Director (WTD) can create potential vulnerabilities, especially in times of transition or unforeseen circumstances. Without a well-thought-out succession plan, the bank may face leadership gaps that could disrupt operations and affect strategic decision-making. A broader pool of experienced leaders also contributes to better governance and more resilient management structures. We observe that while the SFBs are strengthening their Boards by bringing in new directors, some SFBs are yet to ensure the presence of at least two Whole Time Directors. I would request these banks to expeditiously consider appointing more WTDs.

Empowering Assurance Functions

Boards should accord due importance to assurance functions, namely, risk management, compliance and internal audit. These functions play a critical role in identifying and mitigating risks, ensuring compliance with laws and regulations as well as safeguarding the organisation's integrity.

Boards should ensure that heads of assurance functions are positioned appropriately within the organisational hierarchy and granted direct access

to the Board. Dual-hatting, or combining assurance responsibilities with operational or management duties, undermines the independence and objectivity of assurance functions by creating conflicts of interest. Therefore, any dual hatting of assurance functions, should be avoided.

Key Risks to Reflect Upon

Small Finance Banks have demonstrated strong growth since their inception, now accounting for 1.18 percent of total banking assets (as of March 2024). This is a substantial rise from 0.44 percent in March 2018. The deposit base has grown at a 32 per cent compounded annual growth rate (CAGR) over the last five years whereas net advances recorded a CAGR of 26 per cent. While the business growth in Small Finance Banks is indeed impressive, it is imperative that Boards remain vigilant for hidden and emerging risks that could jeopardise their long-term success.

In this context, I would like to highlight a few areas that Boards could keep in mind.

Business Model

Firstly, I would urge Boards to consider the sustainability of their growth strategies and business models by conducting a thorough review of both the liability and asset sides of the balance sheet. Specifically, they should assess whether there is an overdependence on high-cost term deposits or bulk deposits from a limited number of institutions. Additionally, they should evaluate any substantial asset exposures that could adversely impact the bank if they were to sour. These are essential aspects that the Board and its Risk Management Committee must scrutinise to ensure long-term stability and resilience.

Credit Risks

Secondly, I would like to emphasise proper credit risk underwriting. While many banks have expanded into unsecured retail lending, hoping to leverage the diversification benefits it offers, there

is an underlying correlation risk that becomes more pronounced during economic downturns. In such scenarios, the credit profile of a large segment of borrowers can be significantly impacted, leading to higher default rates. This highlights the importance of rigorous underwriting processes that carefully assess the creditworthiness of borrowers, rather than relying solely on automated systems or algorithms. Effective underwriting should consider a comprehensive range of factors, including income stability, credit history, and the overall economic environment, to ensure that loans are made judiciously.

Further, while digital lending solutions have streamlined the process and made access to credit easier, on-the-ground presence for collections remains crucial. Resorting to coercive recovery practices as a means of mitigating risk is not a sustainable solution. Such practices not only harm the bank's reputation but can also lead to legal and regulatory repercussions. A better approach is to implement collection strategies that prioritise communication and collaboration with borrowers. This includes strictly adhering to fair practices code and adopting an empathetic approach while dealing with stressed loan book.

Cyber-security Risk and Third-party Dependencies

Thirdly, I would like to address the issue of cyber security and IT vulnerabilities. Being relatively new entities, SFBs have used technology to enhance their product offerings and customer service. However, with their increasing digital footprint, these banks face significant operational risks from growing cyber threats, digital frauds, and possible data breaches.

The cyber security landscape is evolving rapidly, and SFBs must stay ahead of emerging threats to protect their customers' data and maintain operational resilience. The SFBs should adopt robust business continuity plans and effective IT outsourcing strategies. There is also a need to ensure rigorous change management processes, comprehensive

data protection measures, vigilant transaction monitoring, stringent access controls and network security protocols. These measures will help SFBs to significantly enhance their IT resilience against possible disruptions.

Operational Risk

Fourthly, while I have covered cybersecurity threats, I would also like boards of SFBs to be mindful of the larger issue of operational risks. During periods of rapid growth, the focus on increasing market share, launching new products, and acquiring customers can lead to a neglect of essential risk management practices. For example, hastily onboarding new customers without thorough KYC due diligence or rushing the deployment of technology solutions without adequate testing can increase the likelihood of frauds, errors and service disruptions. Growth is important for the success of Small Finance Banks. However, it must not come by overlooking operational controls.

Another significant area of concern for operational risk is the high attrition rate among staff in Small Finance Banks. While the branch network and employee headcounts are expanding, the sector faces a very high attrition rate of nearly 40 per cent, particularly among frontline staff and junior management. Such elevated turnover, though mostly at the entry and junior management levels, poses substantial operational risks, as it can lead to a loss of institutional knowledge, disruption in service delivery, and increased training costs for new hires. To mitigate these risks, Board-level efforts are essential to focus on employee retention strategies at

all levels. Further, the absence of succession planning for critical managerial positions is a common issue across SFBs, which requires immediate attention from Boards to ensure a smooth transition of leadership and maintain operational effectiveness.

Conclusion

In conclusion, SFBs with their outreach to rural and semi-urban areas, are intended to be one of the key enablers in credit offerings to individuals, weaker sections, entrepreneurs, SHGs/JLGs and MSMEs. They have a large role to play in achieving our aspirational goal of becoming a developed nation by 2047.

As RBI celebrates 90 years of its foundation this year, we have set deepening financial inclusion as one of our cherished objectives for RBI@100. RBI, with its continued commitment towards a financially inclusive India, has taken several measures to support these segments ranging from Priority Sector Lending targets to the introduction of TReDS for MSMEs. A new chapter in this book is the Unified Lending Interface (ULI) platform which aims at "enabling frictionless credit" with the 'new trinity' of JAM-UPI-ULI, further propelling India's growth story.

SFBs should strive to harness this opportunity and other such opportunities offered by latest technological innovations for efficient and cost-effective service delivery. Further, with robust governance and effective board oversight, SFBs can capitalise on their strengths while meeting growth and stability objectives.

With this, I wish you all the best for the coming sessions and hope that you find these sessions professionally enriching and stimulating. Thank you!

Reaching the Unreached – Ensuring Last Mile Connectivity of Banking Services*

Shri Swaminathan J.

Regional Director of RBI for Karnataka, Smt. Sonali Sen Gupta; Chief General Manager, NABARD, Shri KVSSLV Prasada Rao; Chief General Manager, Canara Bank and Convenor, SLBC Karnataka, Shri K.J. Shrikanth; Area Heads of Union Bank of India and Bank of Baroda, senior executives from banks; Lead District Managers (LDMs); District Development Managers (DDMs); LDOs and other officers of RBI, present here. Ellarigu Namaskara and a very good morning to all.

Let me begin by complimenting Bengaluru Regional Office of the Reserve Bank of India for organising this conference with an apt theme - Reaching the Unreached – Ensuring Last Mile Connectivity of Banking Services. The theme reminds us that financial inclusion is an ongoing journey. While significant progress has been made in this journey, there is still some distance to be traversed. I must also thank the Bengaluru Regional Office for selecting this place, Hubballi, for this conference, a place where I served as a young officer of State Bank of India, some thirty years ago – which brings back lots of nostalgic memories of the basic banking that we used to do over three decades ago.

India's journey towards inclusive development after independence has been marked by several initiatives aimed at reducing poverty and improving living standards. Measures like expanding access to essential services such as education, healthcare and sanitation, and creating productive employment opportunities for all sections of the population have

seen tremendous progress. Ensuring that the benefits of economic growth are shared by all segments of society, including marginalised groups has been the cornerstone of these initiatives. It has been a multifaceted journey with significant achievements in terms of economic growth, poverty alleviation, improvements in education and health care, etc.

In the relatively early days of this journey, the Lead Bank Scheme was institutionalised in 1969 and since then the Scheme has served as an important tool in enhancing credit flow to the sectors that have been identified as national priority and to the underserved population of the country, boosting economic growth at all levels, e.g., block level, district level and state level.

Over more than half a century since its inception, the Scheme has evolved in line with the development agenda for the country. The Lead Bank Scheme relies on a co-ordinated approach at all levels amongst banks, financial institutions and the government machinery for effective delivery of banking services to all sections of the economy. This co-ordinated approach has yielded significant results in terms of expanding banking access and improvement in the flow of priority sector credit.

More recently it has also led to the expansion of digital payments with SLBCs taking the lead role in the objective of making every district in the country digitally enabled. I am happy to note that 354 districts are now digitally enabled. Ten states including Karnataka and six Union Territories have achieved 100 per cent coverage of districts under this initiative.

Indeed, the Lead Bank Scheme can be a powerful tool to bring about transformative change. As LDMs, DDMs and LDOs, you are the very pillars on which this scheme rests, playing a crucial role in driving financial inclusion at grassroots level. Your efforts in extending banking services and credit access to underserved regions would undoubtedly bring immense satisfaction to all involved. Having served

* Keynote Address by Shri Swaminathan J. Deputy Governor Reserve Bank of India at the Conference of Lead District Managers and District Development Managers in Hubballi on September 20, 2024.

as the Convenor for the SLBC in Telangana, I can personally attest to the deep fulfilment that comes from making a tangible difference in people's lives through the LBS fora.

A common question we face is, are we doing enough? How much more remains to be done? In 2021, the Reserve Bank introduced the Financial Inclusion Index (FI-Index), which tracks progress across 97 indicators in three key dimensions: (i) Access (ii) Usage (iii) Quality. The Index which was at 53.9 in March 2021 now stands at 64.2 for March 2024 as a testimony to the efforts that has been put in by all of you.

India has made significant strides in enhancing 'access' to banking and financial services, reaching even the most remote areas. However, there is still considerable ground to cover in deepening financial inclusion. This requires greater focus on promoting 'usage' and improving the 'quality' of services. In both these critical areas, the role of Lead District Managers from the banks and District Development Managers from NABARD is indispensable.

In this context, I would like to outline a few key expectations.

Know Your District Well

Firstly, it is imperative that you cultivate a deep understanding of your respective districts—so, you should truly 'Know Your Districts' well. This knowledge will form a solid foundation for comprehensive district profiles, covering a wide range of critical data. Such profiles could include detailed demographic information, agricultural trends, banking penetration and activities, industrial profiles, and the various performance metrics under the Annual Credit Plans (ACP).

Knowing your districts well, you can leverage upon data analytics and field surveys to gain insights into economic activities, local credit needs, and barriers to credit access. A holistic understanding of your district will enable you to identify gaps in financial

inclusion, assess the credit needs of different sectors, and design targeted strategies for intervention. It will also help you to identify the root causes of the various issues observed in your districts. By staying attuned to your districts, you can provide invaluable feedback to the SLBCs, enabling the formulation of targeted and effective credit plans, and foster sustainable economic growth and development.

Formulation of Targeted and Effective Credit Plans, a Bottom Up Approach

Secondly, building upon your strong understanding of your district, the formulation, monitoring, and implementation of Credit Plans must follow a granular bottom-up approach.

The principal phase of credit planning is done by DDMs by preparing the Potential Linked Credit Plans (PLPs) for all the districts in the State by mapping credit potential under Priority Sector Lending (PSL). The preparation of PLPs involves assessment of block-wise and sector-wise potential. LDMs conceptualise the block credit plans at the grassroots level which aggregate into district credit plans, ultimately converging to shape the comprehensive state-level Annual Credit Plan. While doing so, target setting for credit disbursement needs to be aspirational while being realistic. LDMs must take into account the scope for lending indicated in the Potential Linked Plan as well as the past record of achievement in credit disbursement while formalising the credit plans for the blocks and districts under their charge.

Address the Gaps

Thirdly, we need to address the remaining gaps. Although credit delivery to priority sectors has progressed over time, there is still significant work to be done especially with regard to Micro, Small and Medium Enterprises. Similarly, nearly half of Self-Help Groups (SHGs) are yet to be linked to formal credit, and a large proportion of small and marginal farmers still lack access to bank financing. Therefore, we must factor in the credit requirements of these

segments in PLPs as well as in block and district-level credit strategies.

MSMEs are crucial to India realising her demographic dividend. One of the key requirements in this regard is increasing the female labour participation rate. Various studies¹ have shown that businesses with at least one women founder have a more inclusive work culture, employ more women than men and generate more revenue. However, less than 20 per cent of MSMEs are owned by women. Women entrepreneurs often encounter major hurdles, such as limited access to funding, societal barriers, and challenges in obtaining affordable finance.

It is therefore crucial to bridge the gender gap. At the district level, this can be addressed by offering support to women-led enterprises through government-sponsored programmes and tailored banking schemes for women-owned businesses. Additionally, efforts must be made to raise awareness among potential women entrepreneurs about these opportunities and provide them with necessary guidance and support.

Financial Literacy

Fourthly, we need to bolster financial literacy. Strengthening the supply-side is crucial, but holistic financial inclusion also necessitates demand-side initiatives. Financial literacy stands as a fundamental building block. It is not just about access, it is about empowering individuals to make informed choices. Financial literacy is the ability of people to understand and effectively use various financial skills, including personal financial management, budgeting, and investing.

Members of public should be made aware of various financial products available to them, be it social security products such as insurance and pension

schemes, which will cover their risks or loan products with significant subsidies that will enable them to undertake productive economic activities. A special focus needs to be given to Digital Financial Literacy for improving public confidence in undertaking digital transactions. This will enable banks to explore avenues for wider adoption of fintech, to provide seamless and frictionless credit.

At the block level, financial literacy is being promoted through Centres for Financial Literacy (CFLs), established by NGOs with funding support from the RBI, NABARD, and banks. The reach of CFLs has expanded significantly, with 2,421 CFLs now operating across almost every block in the country. In Karnataka alone, 79 CFLs and 177 Financial Literacy Centres (FLCs) are spreading awareness of financial products at the grassroots level. LDMs must play a crucial role in ensuring that FLCs perform their functions effectively, supporting CFLs, participating in CFL camps, and facilitating the linkage of financial services while overseeing the proper conduct of these camps.

In conclusion, I encourage you to give your best, set exemplary standards, and become pioneers in developmental activities, ensuring continued progress of your districts and the State of Karnataka.

As you may be aware, the Reserve Bank of India is celebrating 90 years of its foundation this year. Looking ahead to the next decade, our journey towards RBI@100, we have formulated strategies aimed at positioning the Reserve Bank as a model central bank of the Global South. One of our key objectives is to deepen financial inclusion by enhancing the Accessibility, Availability, and Quality of financial services for all segments of society. I urge each of you to actively support us in realizing this vision by contributing to inclusive growth, ensuring that no one is left behind in accessing essential financial services, and fostering economic empowerment at the grassroots level.

¹ Jaitly, S., Thangalappally, L. S., & MicroSave. (2022). Decoding Government support to women entrepreneurs in India. In NITI Aayog, www.microsave.net [Report]. <https://www.niti.gov.in/sites/default/files/2023-03/Decoding-Government-Support-to-Women-Entrepreneurs-in-India.pdf> (last accessed on September 16, 2024)

I would like to leave you with a quote from Rashtrakavi Kuvempu (an extract from his epic work "Malegalalli madumagalu"):

ಇಲ್ಲಾಯಾರೂ ಮುಖೀಯರಲ್ಲ

Illi yaaroo mukhyaralla

No one is precious here

ಯಾರೂ ಅಮುಖೀಯರಲ್ಲ

Yaroo amukhyaralla

No one is unimportant here

ಇಲ್ಲಾ ಎಲ್ಲಕ್ಕೂ ಇದ್ದಿ ಆರ್ಥ

Illi ellakkoo ide artha

Everything has significance here

ಯಾವಾದೂ ಅಲ್ಲಲ ವಾಯರ್ಥ

Yavudoo alla vyartha

Nothing is useless

ನೋರೆಲ್ಲಾಲಮೂ ತೋರ್ಥ!

Neerellevoo theertha!

All the water is holy!

In the context of today's gathering, it would mean: All groups of people are equally important and should be financially included; every effort taken for financial inclusion is meaningful and nothing goes wasted.

With this I would like to end with my best wishes to each one of you.

Thank you!

ARTICLES

State of the Economy

Monetary Policy Transmission in India: The Recent Experience

Nowcasting Food Inflation in India: Leveraging Price and Non-Price Signals through Machine Learning

How Indian Banks are Adopting Artificial Intelligence?

COVID-19 and Performance of MSME Clusters in India

Cash Usage Indicator for India

New Digital Economy and the Paradox of Productivity

*State of the Economy**

The global economy remained resilient in H1:2024, with declining inflation supporting household spending. Stable growth momentum amidst monetary policy easing is becoming the prevailing theme across most economies. In spite of geopolitical tensions, India's growth outlook is supported by robust domestic engines. Some high frequency indicators have, however, shown a slackening of momentum in the second quarter of 2024-25 partly attributable to idiosyncratic factors like unusually heavy rains in August and September. Looking ahead, private investment is showing some encouraging signs in terms of lead indicators while consumption spending is shaping up for a festival season revival. After remaining below target for two consecutive months, inflation surged in September, as an adverse statistical base effect was compounded by a resurgence in food price momentum.

Introduction

As they approached October – a month of symphony of permanence and change¹ – central banks in systemically important economies assumed the driver's seat to steer the global economy with shock and awe. Their specific actions are set out in Section II. As regards the unusually aggressive start of the rate-cutting cycle by the US Federal Open Market Committee (FOMC), speculations on the motive range widely: the economy is "in a good place" with "growing confidence that the strength in the labour market can be maintained"²; mission

accomplished in the fight against inflation; guarding against adverse spillovers from Europe and China; exceptionally high real interest rates at the starting point; and insurance with which to navigate the reality of a highly uncertain landscape³, especially as monetary policy is transmitted with long and variable lags. The conjecturing is understandable. Large opening rate cuts are distress signal to markets, warning that the economy is in dire shape. The FOMC's action took place, however, against the backdrop of a robust economy as evident in revisions in estimates of GDP for the second quarter of 2024 and also for the preceding quarter. Many believe that the FOMC is singed by criticism about its delayed rate hikes and, therefore, wants to be ahead of the curve in this phase of rate actions. The US rate move provides a cue for other central banks among advanced economies (AEs), including the holdouts, and especially those that have succeeded in bringing inflation to target and hence have the elbow room to support their weak economies. Yet, even as monetary easing is becoming the prevailing theme, some countries are likely to see tightening instead – Japan; Brazil; and Russia.

On the other side of the world, China gave up its drip-feeding support to its economy and unleashed a fusillade of stimulus measures to put a floor underneath its ailing economy, including property and stock markets. The response followed a torrent of warning signs: shrinking tax revenue; falling prices of homes and industrial goods; slowing retail sales; depressed consumer confidence; and weak industrial output and investment. The measures electrified financial markets. Equity prices fell across the world as the stock markets in Shanghai and Hong Kong notched up their biggest gains in four years. Across Asia, currencies tumbled and the yuan rose as capital flows rotated and surged into China. It remains to be seen how much further the Chinese

* This article has been prepared by Michael Debabrata Patra, G. V. Nadhanel, Arpita Agarwal, Rajni Dahiya, Garima Wahi, Yamini Jham, Harendra Behera, K M Neelima, Vrinda Gupta, Sakshi Chauhan, Madhuresh Kumar, Aayushi Khandelwal, Debapriya Saha, Ragini, Suganthi D, Pratibha Kedia, Ayan Paul, Agamani Saha, Ayushi Agarwal, Dilpreet Sharma, Khushi Sinha, Avnish Kumar, Nikhil Prakash Kose, Supriyo Mondal, Yuvraj Kashyap, Sakshi Awasthy, Asish Thomas George, Samir Ranjan Behera, Vineet Kumar Srivastava, and Rekha Misra. Views expressed in this article are those of the authors and do not represent the views of the Reserve Bank of India.

¹ Bonaro W. Overstreet, American author, poet, psychologist and columnist in the Washington Post.

² "Economic Outlook". Speech by Jerome Powell, Chair of the Federal Reserve of the United States, September 30, 2024.

³ Mohamed El-Erian, The Fed Takes out an Insurance Policy on Rates, Financial Times, October 1, 2024.

authorities will go to solve the long festering real estate crisis, the ageing and shrinking workforce, industrial overcapacity, trade tensions and severely strained local government finances.

In its latest economic outlook, the Organisation for Economic Cooperation and Development (OECD) assessed that the global economy remained resilient in the first half of 2024, with declining inflation supporting household spending. High frequency indicators suggest stable growth momentum across most economies. Business surveys point to stronger activity in services than in manufacturing. Surveys also indicate that subdued consumer confidence is improving in Europe as well as in several emerging market economies (EMEs). The recovery in global trade is strengthening, with trade volumes rising for both goods and services. Global container shipping has mostly adapted to disruptions in the Red Sea and Panama Canal routes, but journey times have lengthened and congestion has risen in key Asian ports. Shipping costs are estimated to have risen around 160 per cent than a year ago, which will eventually feed into inflation.

Global financial conditions are easing from restrictive levels, with financial markets continuing to front run central banks in their expectations of policy rate reductions. While long-term bond yields have declined, corporate bond issuances have picked up and equity markets reflect ebullience, heightened risk aversion has gripped market participants with the escalation of hostilities into war in the middle east. The outlook for global output growth has been slightly upgraded (details in Section II). An important point made by the OECD is about persistent dissatisfaction among consumers with economic performance – linked to the fact that food prices remain well above their pre-pandemic level: "for people who go to the super market, food prices

relative to wages are still higher".⁴ Key near term risks include persisting global and trade tensions; the possibility of a growth slowdown as labour market pressures fade; and potential disruptions in financial markets if disinflation stalls. Overall, the OECD is of the view that the global economy is 'turning the corner'.

The large interest rate cut in the US is likely to ease pressure on indebted EMEs and fire up demand for local currency bonds. Several of their central banks have lowered their own policy rates or provided dovish forward guidance, anticipating the reduction in US interest rates. The anticipated support to EME fixed income assets appears to be favouring the 'late cutters' among them. EME equities have generally rallied after the FOMC's decision, *albeit* interrupted by the recent sway towards China and the escalation of conflict between Iran and Israel. For the world's poorest countries, however, it has been a brutal decade⁵ - the number of people exiting extreme poverty has slowed, as has progress in fighting infectious diseases.

Amidst all these, gold prices have breached all-time highs on bullish market sentiment combined with geopolitical tensions. On the other hand, a strange stability characterises crude oil prices, despite the recent flaring up of West Asian hostilities. This reflects a more favourable balance between demand and supply. Sanctions have not acted as a squeeze on global supply. Output from non-OPEC countries like the US, Canada, Brazil and Gayana has surged. OPEC *plus* is a divided house, with cut backs in production running the risk of losing market share without revenue gains. There is also divergence in the assessment of demand – while the international energy agency (IEA) expects that an additional 9.00,000 barrels oil a day will be needed in 2024, the OPEC is far more bullish and expects an extra 2 million barrels will be required.

⁴ Alvaro Pereira, Chief Economist, Quoted in World Street Journal on September 25, 2024.

⁵ The Economist, End of the Road, September 21, 2024.

Recent updates by multilaterals and credit rating agencies indicate that India's medium-term prospects remain bright on the back of continuing reforms, infrastructure development, and sustainable technologies. Improving prospects for foreign direct investment (FDI) would support growth and investment, particularly in manufacturing.⁶

In spite of recent geopolitical tensions, India's growth outlook is supported by robust domestic engines. Some high frequency indicators have, however, shown a slackening of momentum in the second quarter of 2024-25, partly attributable to idiosyncratic factors like unusually heavy rains in August and September, and *Pitru Paksha*⁷ - goods and services tax (GST) collections; automobile sales; bank credit growth; merchandise exports; and the manufacturing purchasing managers' index (PMI). The slowing of speed is also reflected in our nowcast of real GDP growth given in Section III.

In parallel, there are other high frequency indicators which show steady growth. Consumption spending is shaping up for a festival season revival, especially in small towns and lower tier cities. Despite high prices tempering some of the enthusiasm, many buyers are prioritising discounts. Survey respondents are pointing to higher spending, driven by wardrobe updates, electronics, home décor and jewellery purchases. Packaged food companies are ramping up supply chains and offerings for the festival seasons in expectations of an uptick in demand in both urban and rural regions. Unique on-platform innovations on retail media are helping to drive their brands. Although initial e-commerce sales have been underwhelming, retailers are expecting a late season push. Consumer spending is expected to be about 25 per cent higher than during Dussehra-

Diwali last year.⁸ This is expected to be driven by off-line retail, followed by the online channel. Quick commerce (Q-COMM) platforms are bringing about a rapid change in the behaviour of on-line shoppers, with an increasing proportion relying on fast delivery options for grocery needs and ready-to-eat meals.⁹ Q-COMM is changing Indian consumers' behaviour: rather than reaching into the cupboard, they swipe an app; they prefer to make a trip to the front door than to a store. The mass end has remained soft while premiumisation is strong. With finance companies having expanded their reach, smaller towns and rural areas that are traditionally cash dominated are seeing a rise in credit-driven consumption, particularly two wheelers, electronics and smart phones. Q-COMM shoppers are becoming increasingly discerning, price conscious, and channel agnostic. At top private banks, there is a hiring spree underway, which is a positive for consumption.¹⁰ There are also expectations of a surge in hiring of gig workers for the festival season.¹¹

Private investment is showing some encouraging lead indicators, although the slack continues. Corporates results for the first quarter of 2024-25 had shown a deceleration in real gross value added by non-government non-finance companies.¹² Real investments in plants and machinery remained subdued while net fixed assets have slowed down. Apparently, the crowding in effect of government capex is lagged. Given the moderation in sales growth, corporates appear to be protecting margins by conserving spending on both raw materials and manpower while delaying an aggressive capex push.

⁸ Deloitte; Red Seer; Confederation of All India Traders, Financial Express, September 30, 2024.

⁹ NielsenIQ, September 24, 2024.

¹⁰ The Economic Times, "At Top Private Banks, Post-Covid Boom Fuels Hiring Spree", September 21, 2024.

¹¹ Financial Express, "Over Million Gig Workers set to be Hired this Festival Season", September 25, 2024.

¹² If nominal GVA is deflated with WPI manufacturing, the real GVA growth of listed private manufacturing companies during Q1:24-25 recorded a pick-up from the previous quarter.

⁶ Asian Development Bank, Asian Development Outlook – September 2024.

⁷ Pitru Paksha is a 16-lunar day period in the Hindu calendar when Hindus pay homage to their ancestors (Pitrs), especially through food offerings.

There is a view gaining ground that the time for private investment is now; delay risks loss of competitiveness. The stage is set for the private sector to deploy capital and invest in growth, build capacities, create employment and improve efficiencies. Corporate India needs to reinvest its profits to digitize the production value chain with the goal of designing, building and selling innovative products and services that cater to the needs of the increasingly differentiating Indian consumer. In conjunction with schemes announced in Union Budget 2024-25, it also needs to invest in an employable manufacturing workforce.

Among recent lead indicators, valuations are getting heft in the tech sector on earnings upgrades, based on an anticipated revival of demand in the US and Europe – indicative of new shoots of investments in this sector. Furthermore, greenfield hotel investments have returned to pre-pandemic levels. Project announcements have picked up speed following the election slump, led by manufacturing - electric vehicle manufacturing plants feature among the top project announcements. In the second quarter, the streak of contractions in new projects appears to have come to an end. The project pipeline is growing but completion remains a challenge.

Turning to financial markets which are discussed in greater detail in Section IV, the equities outlook is positive, with the broad medium-term uptrend remaining intact.¹³ Volatility have generally remained low, indicating reduced market risk in spite of stretched valuations. Abstracting from the China flavour in October so far, foreign portfolio investments (FPIs) in equities and debt have been buoyant through June to September 2024, drawn by pull factors in the form of India's growth story, a

¹³ <https://www.jpmorgan.com/insights/global-research/markets/india-stock-market-outlook>.

booming initial public offering (IPO) market and the increasing weight of India in global indices. In fact, India has led the global IPO market during 2024 so far, with both small and medium enterprises (SMEs) and the mainboard segment contributing to the surge. The stage appears set for mega IPOs¹⁴ to shine this Diwali.

Recent data suggest that credit card transactions volumes have slowed as lenders are adopting caution in view of risks flagged in unsecured loans. Incipient stress in the microfinance sector appears to have been driven by lenders' drive to disburse loans rather than borrowers' demand.¹⁵ The self-regulatory organisation – Microfinance Institutions Network (MFIN) - points to guardrails to mitigate asset quality challenges such as capping a borrower's loan repayment obligations at 50 per cent of household's income, limiting the number of microfinance lenders and capping total indebtedness.¹⁶ Credit bureau data indicate that retail credit growth has moderated as lenders have tightened personal loan supply.¹⁷ In the banking space, deposit rates are expected to stay elevated despite some slowing down of credit growth, although more recently, bulk deposit rates appear to have peaked. Banks are also launching innovative deposit schemes. Banks have also continued to rely on certificates of deposits (CDs) to mobilise funds. A sharp decline in default rates in the infrastructure sector has boosted investors' confidence, driving strong demand for infrastructure bond issuances by banks. non-banking financial companies (NBFCs) are also looking at raising finance through bond issuances going forward.

¹⁴ Business Standard, "Mega IPOs to shine this Diwali: Hyundai, Swiggy, NTPC Green set for launch", September 26, 2024.

¹⁵ Business Standard, "Microfinance Growth Driven more by Lenders' Loan Disbursement than Demand", September 29, 2024.

¹⁶ https://mfinindia.org/assets/upload_image/news/pdf/08_Jul_MFIN%20takes%20proactive%20steps%20for%20strengthening%20responsible%20lending.pdf.

¹⁷ TransUnion CIBIL, Credit Market Indicator - September 2024.

Globally, digital ecosystems in banking, finance and payments are expected to gain accelerated momentum, with countries exploring or launching instant payment solutions and central bank digital currencies (CBDCs). 134 countries, representing 98 per cent of the global economy, are developing digital fiat currencies.¹⁸ The Society for Worldwide Interbank Financial Telecommunication (SWIFT) plans to integrate traditional banking systems with CBDCs and digital assets to seamlessly handle a range of asset and currency types.¹⁹ On September 22, 2024 the Summit of the Future held in New York adopted a Pact for the Future that includes a Global Digital Compact with the key objectives of improving connectivity, promoting digital literacy, and ensuring equitable access to the digital economy while fostering a safe and inclusive digital space. It also advocates responsible data governance, privacy protection, and international cooperation in artificial intelligence (AI) governance, emphasising human rights and equitable participation.

In India, digitalisation is poised on a self-propelling growth path. India's FinTech ecosystem is thriving, with the number of registered FinTech startups surging from 2,100 in 2021 to 10,200 in 2024, a fivefold increase.²⁰ A bulk of the personal loans under ₹one lakh were sourced through FinTechs in 2023-24.²¹ In the first quarter of 2024-25, FinTech loan disbursals grew by 27 per cent year-on-year (y-o-y), underscoring robust customer demand for digital credit.²² The financial services sector

is also tapping into the growing potential of niche segments with variable income streams and limited credit histories.²³

After two consecutive monthly below target readings, inflation touched 5.5 per cent in September, as an adverse statistical base effect was compounded by a resurgence in food price momentum. The sharp pick-up was driven by the food group, but core inflation also registered an uptick along with a narrowing of the deflation in fuel prices. Food price pressures in respect of vegetables could turn out to be transitory with robust *kharif* harvest arrivals, although the surge in the price momentum of oils and fats can have second order effects impacting overall inflation through inputs costs of fast moving consumer goods (FMCGs). The typical easing of food prices in the winter aided by improving prospects for *rabi* crops should, however, lead to a recalibration of headline inflation to engender its alignment with the target from Q4:2024-25.

Set against this backdrop, the remainder of the article is structured into four sections. Section II covers the rapidly evolving developments in the global economy. An assessment of domestic macroeconomic conditions is set out in Section III. Section IV encapsulates financial conditions in India, while the last Section sets out concluding remarks.

II. Global Setting

The global economy has exhibited resilience in the midst of heightened geopolitical uncertainty. As inflation continued to ease towards targets in most AEs, several central banks have embarked on the path of policy easing. In its September 2024 Interim Economic Outlook, the OECD revised upwards its projection of global growth for 2024 by 10 basis points (bps) to 3.2 per cent (from their earlier projection in May 2024) due to stronger momentum witnessed in services sector activity (Chart II.1). The growth projection for 2025 was retained at 3.2 per cent.

¹⁸ Atlantic Council. CBDC Tracker. Accessed September 2024.

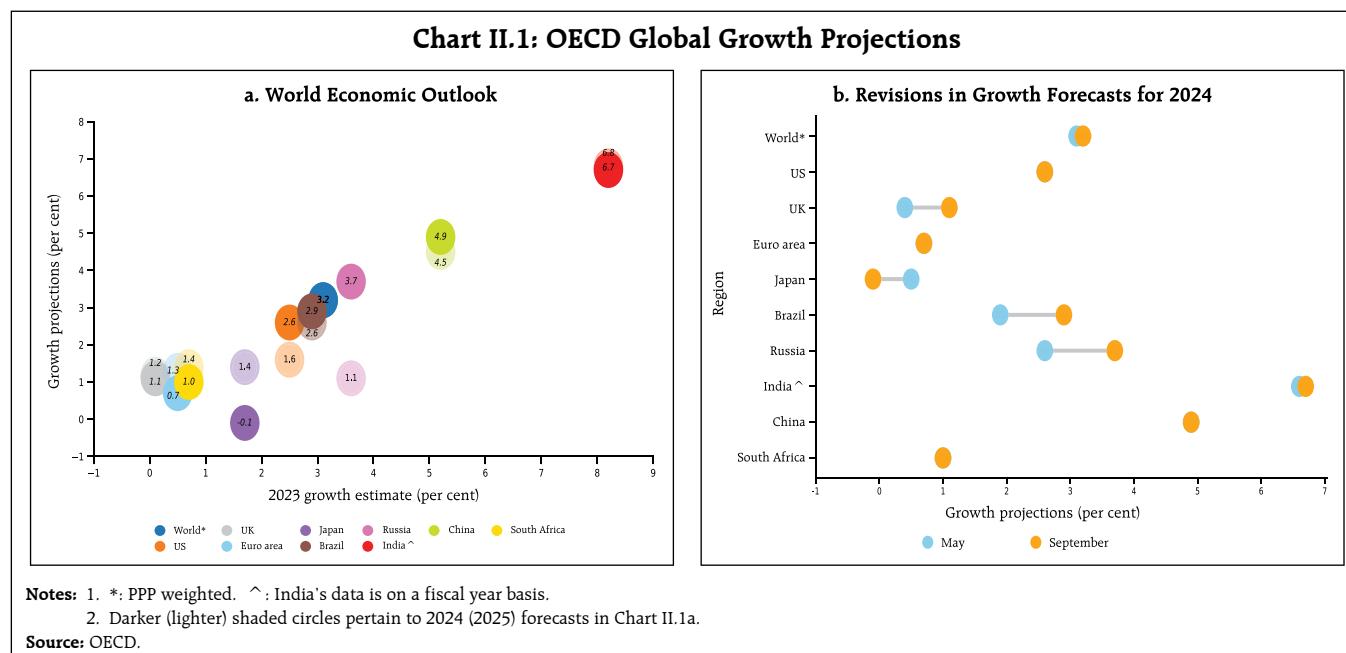
¹⁹ SWIFT Press Releases. October 3, 2024. Global banks to use Swift for trialling live digital asset transactions from 2025.

²⁰ Beams FinTech Fund & JM Financial. (2024). "Indian FinTech Journey From Evolution to Mega Public Listings".

²¹ Experian (2024). "Small is Big - How Fintechs are Revolutionising Lending Report."

²² FinTech Association for Consumer Empowerment (FACE). "Facets. Trends from FACE members on digital lending, Q1 FY 24-25, Issue 11".

²³ The Livemint, "Banks, fintechs roll out red carpet for creator economy.", September 28, 2024.



Our model-based nowcast points to a slowdown in global growth momentum in Q3:2024, weighed down by heightened geopolitical risks (Chart II.2).

The global supply chain pressures index (GSCPI) remained above its historical average levels although it eased marginally in September (Chart II.3a). Container shipping costs recorded some moderation from the peak levels recorded in July 2024 but their levels

remain high (Chart II.3b). The port workers strike along the East Coast and Gulf of Mexico drove up freight and shipping costs in September, leading to around 15 per cent increase in the Baltic Dry Index, which more than reversed in October as workers reached an agreement (Chart II.3c). Geopolitical risks remained elevated due to ongoing tensions in the Middle East, *albeit* with some moderation since July 2024 (Chart II.3d).

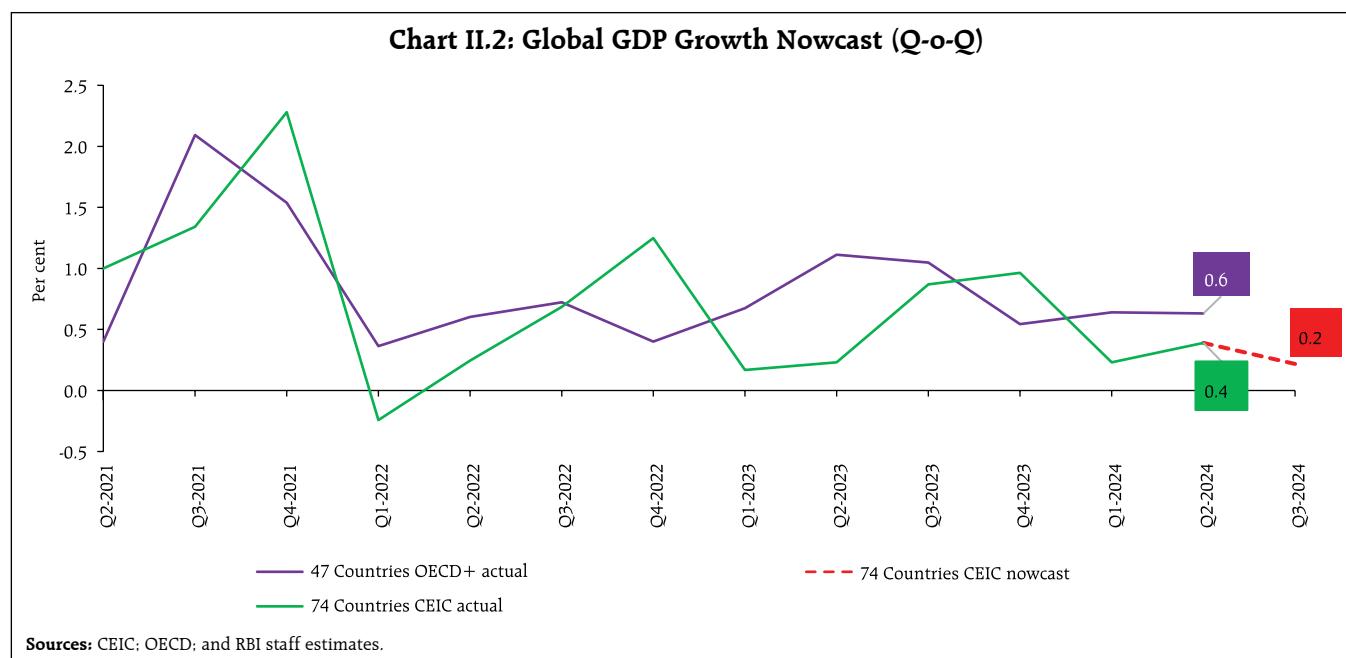
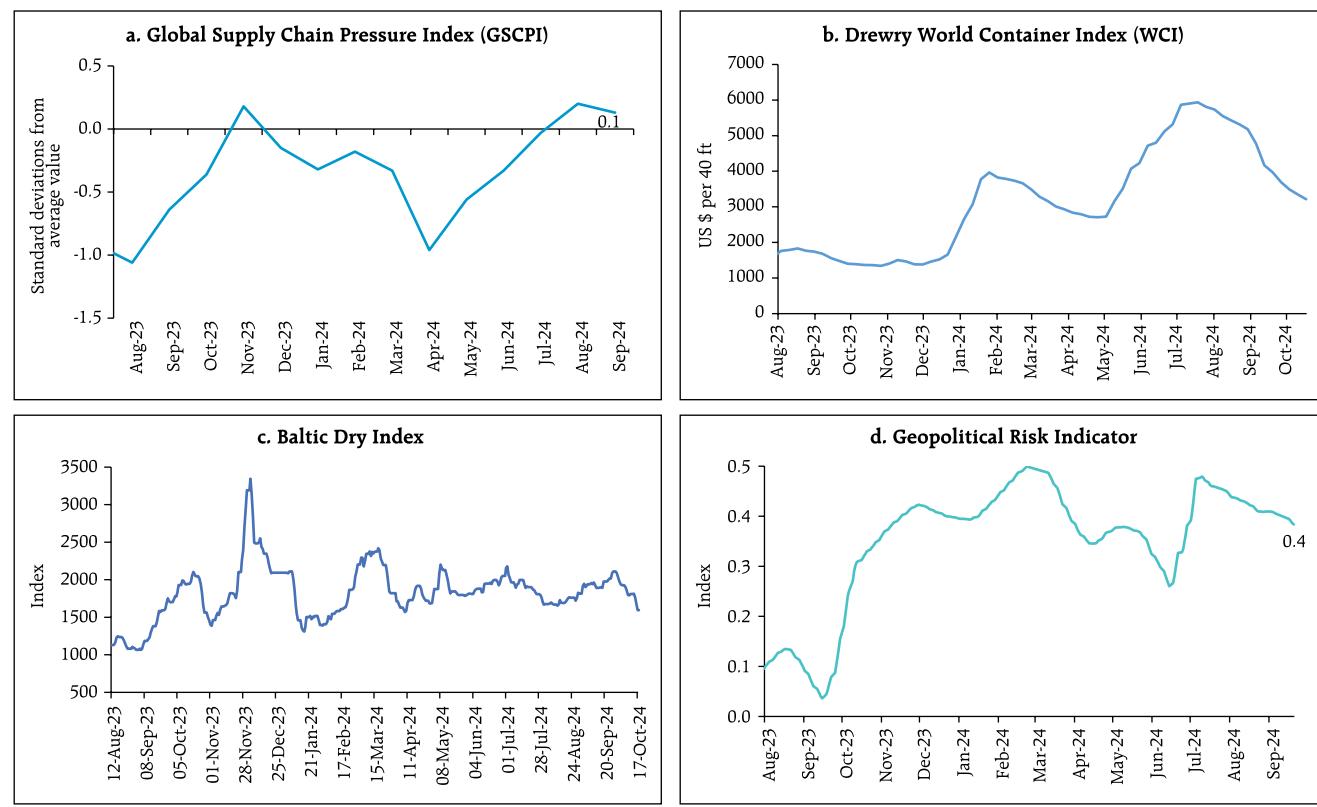


Chart II.3: Trends in Global Supply Chain Pressures and Geopolitical Risks



Notes: 1. GSCPI reflects data on transportation costs and manufacturing indicators.

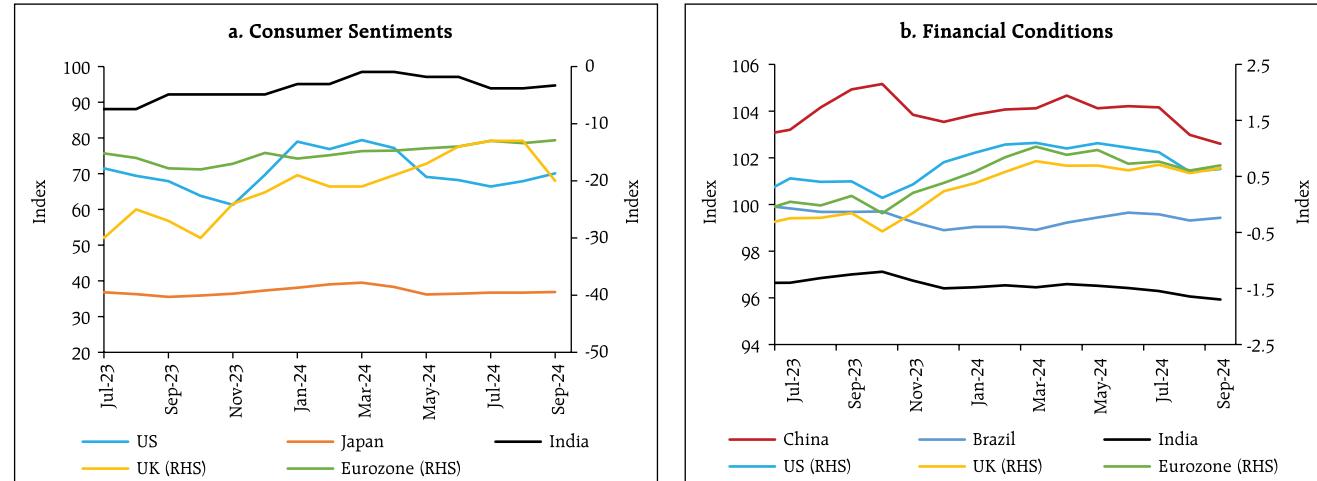
2. The WCI assessed weekly by Drewry reports actual spot container freight rates for major east west trade routes. The composite represents a weighted average of the 8 shipping routes by volume and is reported in USD per 40-foot container.

Sources: Federal Reserve Bank of New York; BlackRock Investment Institute, September 2024; and Bloomberg.

In September 2024, consumer confidence improved in the US, Euro area, India and Japan but

worsened in the UK (Chart II.4a). Financial conditions eased in major AEs and EMEs (Chart II.4b).

Chart II.4: Consumer Sentiment and Financial Conditions



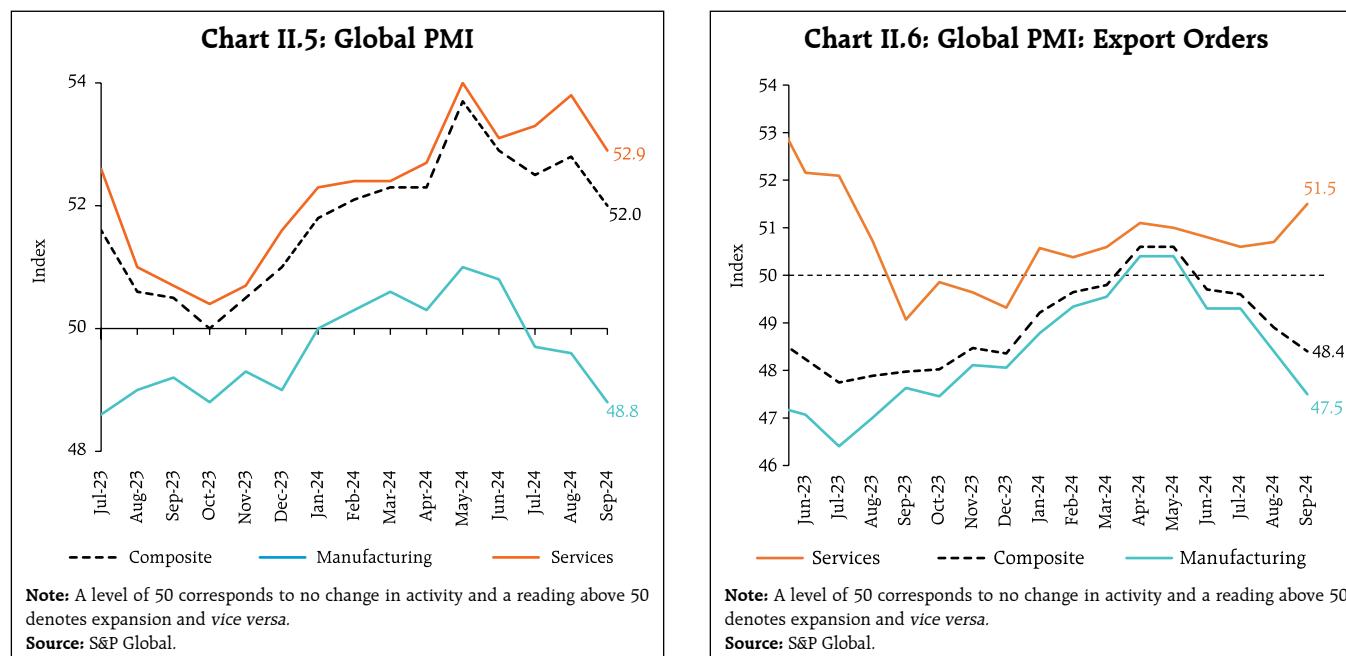
Notes: 1. Japan: A score above 50 indicates consumer optimism, below 50 shows lack of consumer confidence and 50 indicates neutrality.

2. Euro zone and UK: -100 indicate extreme lack of confidence, 0 denotes neutrality while 100 indicates extreme confidence.

3. India and US: Higher the index value, higher is the consumer confidence.

4. For financial condition index (pertaining to EMEs constructed by Goldman Sachs), a reading below 100 is accommodative and vice versa. As for the AEs, the index constructed by Bloomberg is a z-score where a positive value indicates accommodative/easy financial conditions and vice versa.

Sources: Bloomberg.

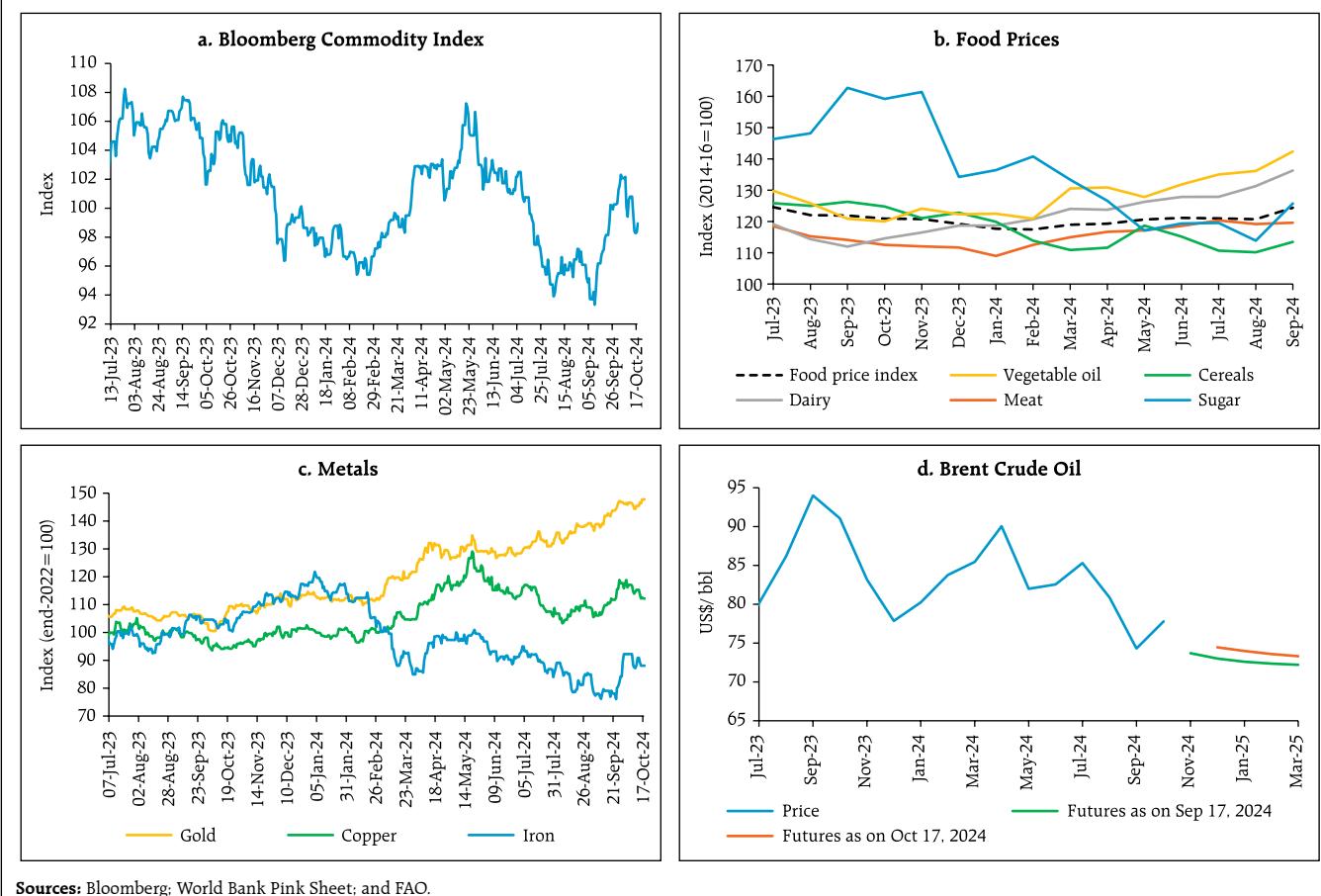


The global composite purchasing managers' index (PMI) slowed to an eight-month low in September, driven by a downturn in manufacturing which slipped to an eleven-month low due to contraction in output, new orders and employment growth. Services activity, however, expanded for the twentieth consecutive month, offsetting the weakness in manufacturing to keep the global composite PMI in the expansionary zone, *albeit* with a sequential moderation (Chart II.5).

The composite PMI for export orders declined in September as an increase in services export orders was more than offset by a decline in manufacturing export orders (Chart II.6).

Global commodity prices recorded a sharp uptick in September as the fall in energy prices was offset by gains in metal prices. The Bloomberg commodity index increased by 4.4 per cent (m-o-m) in September (Chart II.7a). It, however, partly reversed the gains in the first fortnight of October, as the index fell by around 2 per cent. The Food and Agriculture Organization's (FAO's) food price index registered an increase of 3 per cent (m-o-m) in September, marking the largest m-o-m increase

since March 2022. Price indices for all categories increased, with a notable uptick in sugar prices by 10.4 per cent during the month (Chart II.7b). Metal prices increased in September on an improved demand outlook after China, the largest consumer of base metals, announced a slew of stimulus measures to support its economy. The momentum, however, faded in October as metal prices partly reversed their September gains. Gold prices increased by 5.0 per cent (m-o-m) in September to scale record highs, buoyed by the US Fed's rate cuts and safe haven demand amidst escalating global geopolitical tensions (Chart II.7c). Brent crude oil prices, however, registered a sharp decline of 8.8 per cent (m-o-m) in September - from around \$81 per barrel in August to around \$74 per barrel in September - as improved supply outlook over Saudi Arabia's official announcement of unwinding of "voluntary cuts" starting December negated the headwinds emerging from geopolitical tensions and demand concerns. Following the escalation of geopolitical tensions in the Middle East in early October, however, oil prices rebounded, recording an increase of 1.8 per cent

Chart II.7: Commodity and Food Prices

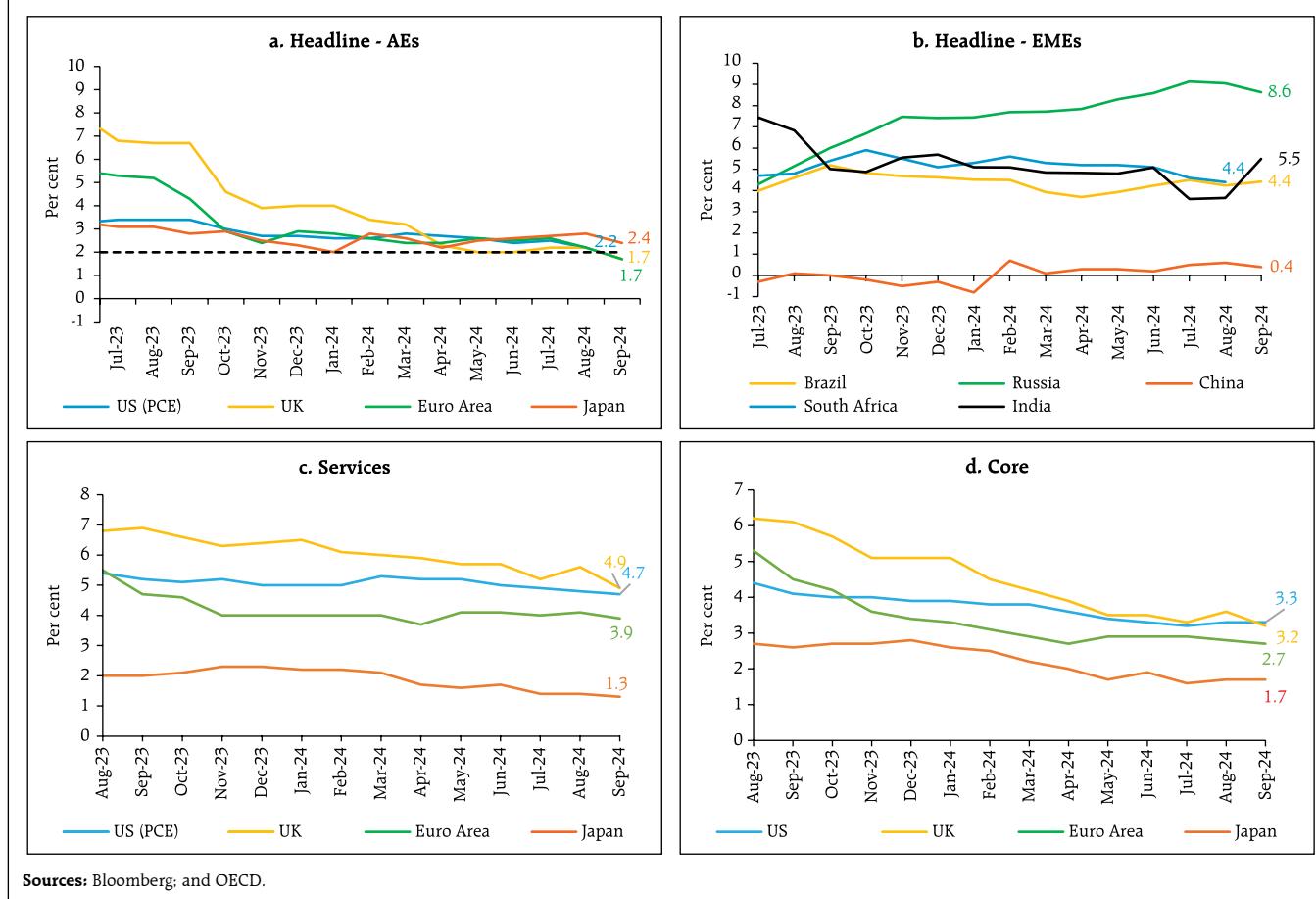
Sources: Bloomberg; World Bank Pink Sheet; and FAO.

from end-September levels to reach US\$ 74 per barrel as on October 17, 2024 (Chart II.7d).

Inflation continued to moderate across major economies, *albeit* unevenly. In the US, consumer price index (CPI) inflation eased to 2.4 per cent (y-o-y) in September from 2.5 per cent in August. Inflation in terms of the personal consumption expenditure (PCE) deflator softened to 2.2 per cent in August from 2.5 per cent in July. Headline inflation in the Euro area and the UK decelerated to 1.8 per cent and 1.7 per cent, respectively, in September. Inflation in Japan (CPI excluding fresh food) softened to 2.4 per cent in September (Chart II.8a). Among EMEs, inflation increased in Brazil in September but softened in Russia and China in September and South Africa in August (Chart II.8b). Core and services inflation trended

downwards in most AEs; however, it remained higher than the headline (Chart II.8c and 8d).

Global equity markets rebounded from the correction in the first week of September, buoyed by the decision of US Fed to reduce the policy rate by 50 bps. The Morgan Stanley Capital International (MSCI) world index recorded a 2.2 per cent (m-o-m) increase in September (Chart II.9a). The MSCI Emerging Markets Index surged by 6.4 per cent as equity markets in China recorded their best week since 2008, following the announcement of stimulus measures in the last week of September. Equity markets in China pared some of its gains in the second week of October amidst market disappointment on economic recovery and anticipated economic stimulus. The US government securities yields on both 10-year and 2-year bonds

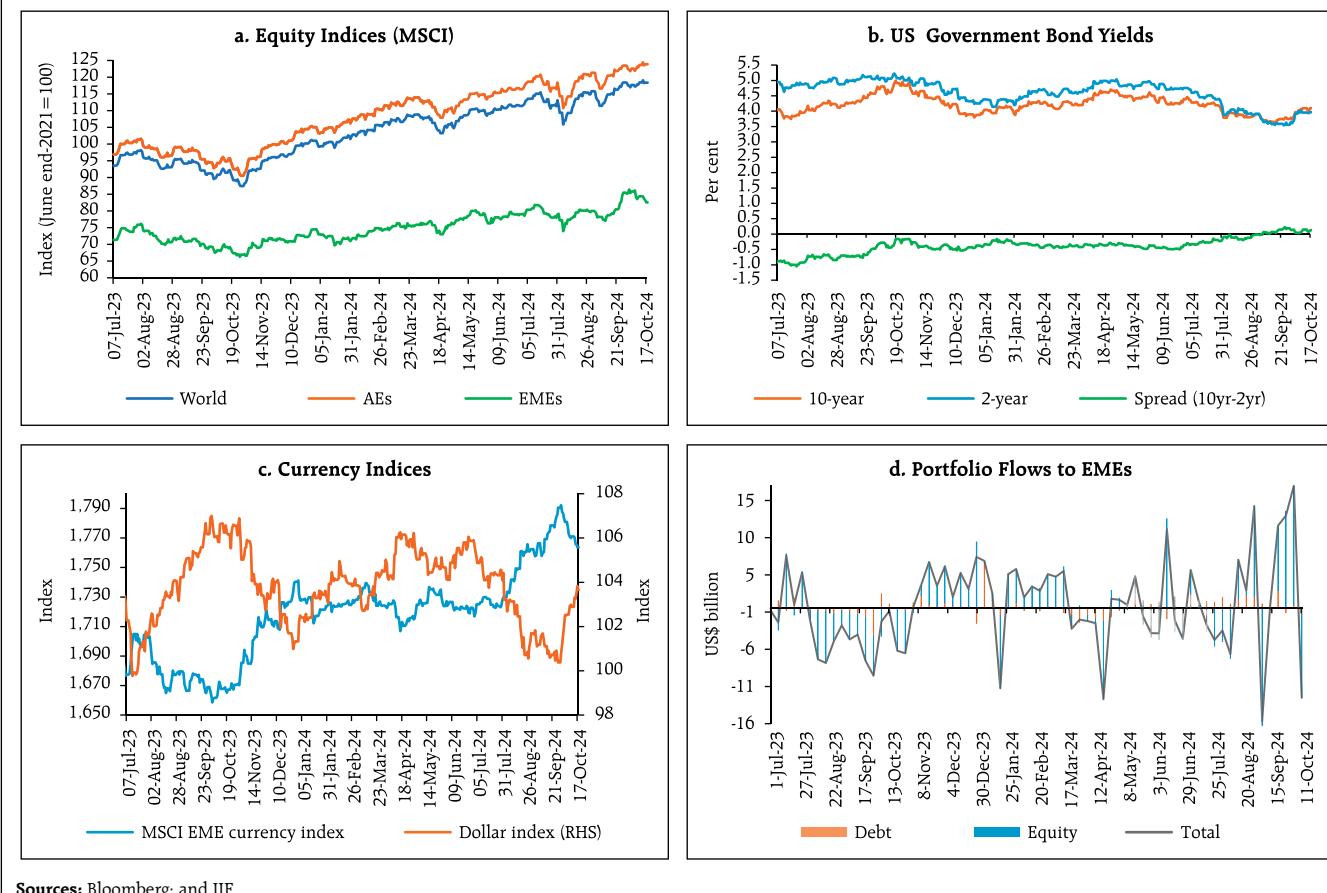
Chart II.8: Inflation - AEs and EMEs

softened by 12 bps and 28 bps, respectively, in September as markets priced in the Fed rate cut. As yields softened relatively more for 2-year securities, the spread (10-year minus 2-year) reversed and turned positive in September (Chart II.9b). The US 10-year bond yields, however, rebounded to above 4 per cent in early October for the first time since early August as stronger than expected job market data pared expectations of large policy rate cuts. In the currency markets, the US dollar continued to weaken, shedding 0.9 per cent (m-o-m) in September. Concomitantly, the MSCI currency index for EMEs increased by 1.7 per cent in September, mainly due to capital inflows in the equity segment (Chart II.9c and II.9d). In early October, however, the US dollar strengthened sharply on account of safe haven

demand over escalation of geopolitical tensions in the Middle East. Concomitantly, EME currencies depreciated in October so far (up to October 17, 2024)

Among AE central banks, Euro area, South Korea and Iceland cut their policy rates by 25 bps while New Zealand cut its benchmark rate by 50 bps in October. Sweden, Switzerland and Czech Republic lowered their benchmark rates by 25 bps each in their September meetings. Australia, however, continued to hold its policy rate unchanged in September (Chart II.10a). Among EME central banks, Thailand and Philippines cut their policy rates by 25 bps in October. In September, South Africa, Mexico and Hungary cut their key rates by 25 bps each, while Colombia reduced its policy rate by 50 bps (Chart II.10b). China announced a series of stimulus measures to resurrect

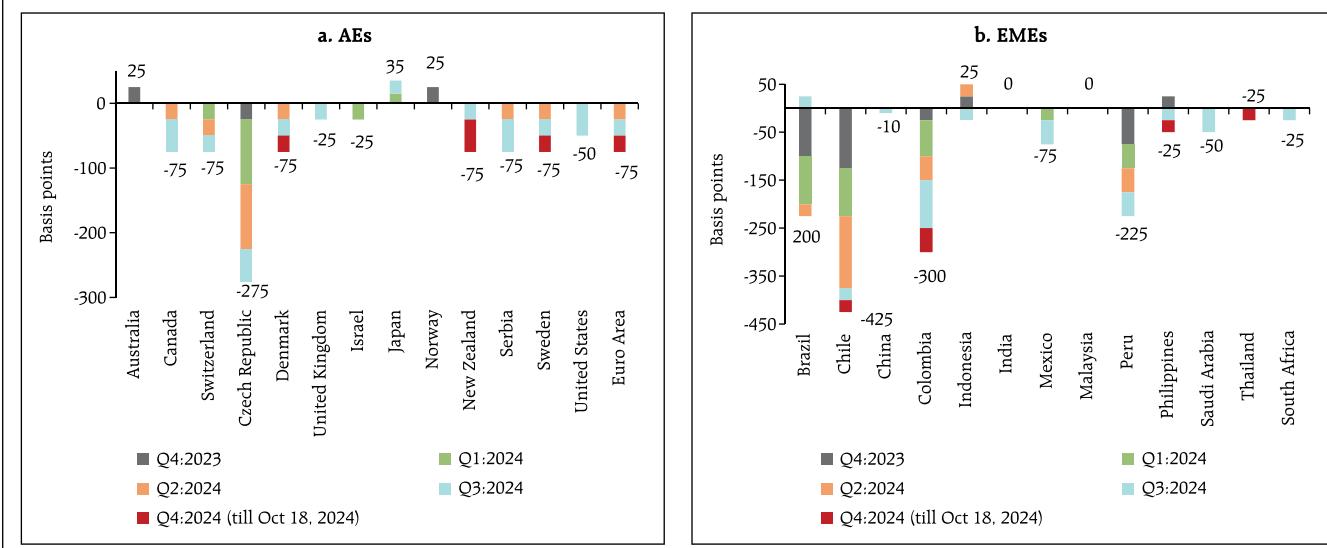
Chart II.9: Global Financial Markets



the flagging economy, including a 20 bps cut in the seven-day reverse repo rate, a 30 bps reduction in

the medium-term lending facility rate and a 50 bps cut in the reserve requirement ratio.

Chart II.10: Changes in Policy Rates



III. Domestic Developments

The Indian economy has exhibited marked resilience in spite of a sequential ebb in momentum in the second quarter of 2024-25 on account of a host of factors mentioned in the Introductory section. According to the latest round of the Reserve Bank's survey of households, consumer perceptions of

the current situation and their future expectations improved sequentially (Chart III.1a). Manufacturers also maintained a positive outlook on capacity utilisation (CU) in the ensuing quarters (Annex 1). Inputs from various industry stakeholders also point towards continued optimism towards future growth prospects in India (Box 1).

Box 1: Feedback from the Reserve Bank's Industry Monitoring Group (IMG)

The Reserve Bank conducts a semi-annual survey of representatives from industry associations, including several industry bodies, credit rating agencies and banks. The major highlights from the September 2024 round of the survey.

Consumption

- Consumption of non-durable goods showed buoyancy as growth in rural consumption outpaced urban consumption, particularly in the non-food category.
- Consumer durables registered double digit volume growth, with spending in small towns on premium/feature-rich segments recording a rise.
- The upcoming festival season is expected to boost demand for consumer products.

Investment

- The momentum in investment demand is being driven by infrastructure related sectors and certain manufacturing segments, *i.e.*, chemicals, electronics, semiconductors, automobiles, and green energy.
- With the manufacturing sector's capacity utilisation ranging between 70 to 80 per cent across industries, a majority of survey respondents expect an improvement in private investment in H2:2024-25.
- Investment has gained traction from the Production Linked Incentive (PLI) scheme and this is expected to extend further in the coming months.

- Global Capability Centers (GCCs) and hospitality are expected to attract more private investment in the services sector.

- The medium-term capital expenditure outlook (2024-2028) remains positive, partly backed by the government's infrastructure push and substantial investment intentions across critical sectors.

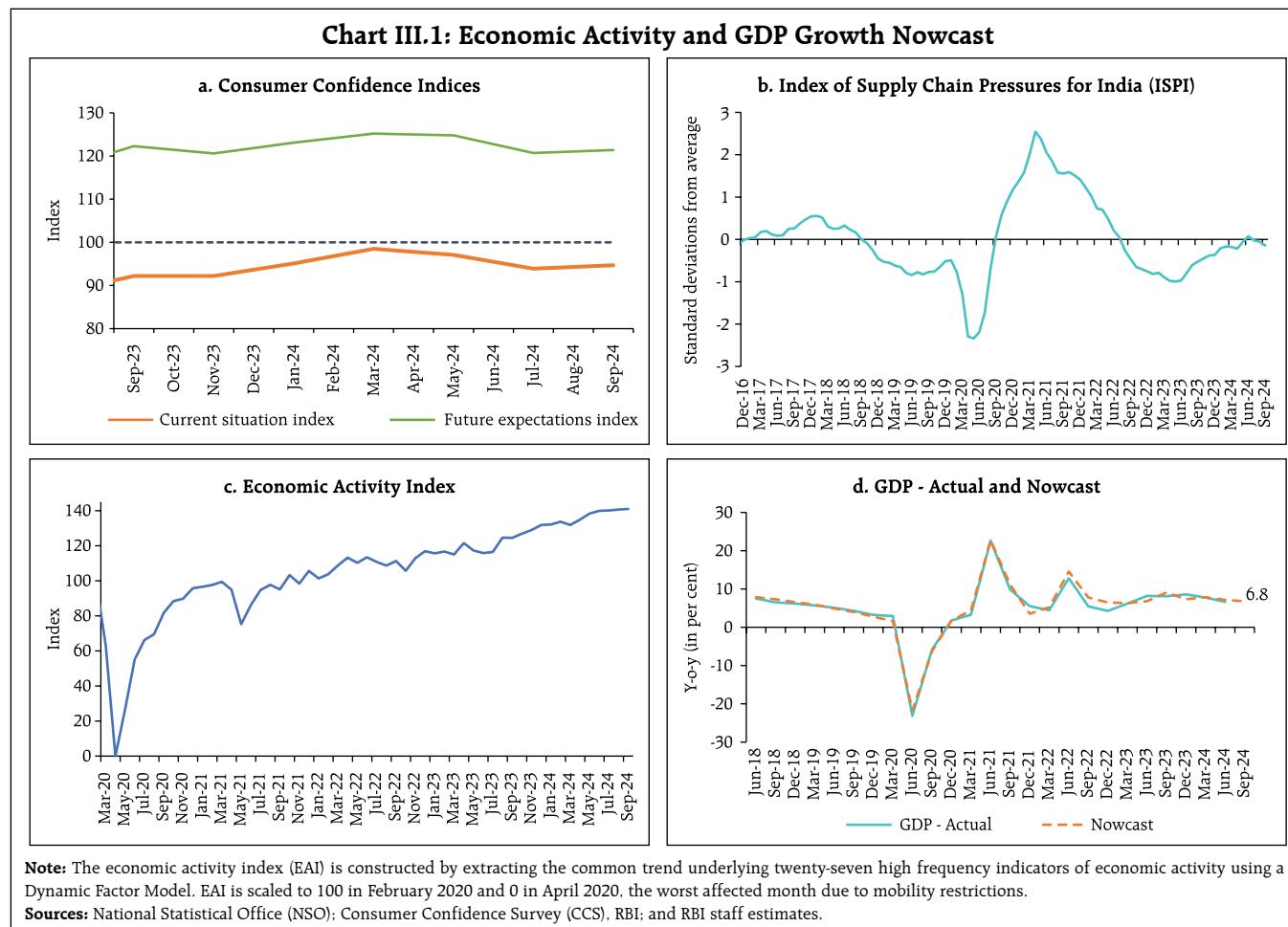
Other Growth Propellors

- Rating upgrades continued to outpace downgrades, with a credit ratio of 2.2²⁴. Power, real estate, and infrastructure sectors saw improved credit ratios, while auto components, exports, and services experienced moderation.
- Rising demand for emerging technologies, *i.e.*, artificial intelligence (AI); cloud transformation, data analytics; and internet of things (IoT) is expected to drive growth in the information technology segment, with more hiring and better margins.
- Revenue growth in micro, small, and medium enterprises (MSME) sector is expected to be driven by healthcare, consumption, agriculture linked sectors and export-oriented businesses such as textiles and seafood.

Credit delinquencies moderated consistently for MSMEs and overall retail segments over the past three years, notwithstanding a marginal rise in credit card and personal loan delinquencies in recent quarters²⁵.

²⁴ As per data provided by Investment Information and Credit Rating Agency (ICRA) Limited.

²⁵ Based on information received from TransUnion CIBIL Limited.



Supply chain pressures eased in September, falling below historical average levels, although they remain vulnerable to geopolitical risks which have escalated in October (Chart III.1b). Our economic activity index (EAI)²⁶, based on a range of high frequency indicators, projects GDP growth at 6.8 per cent in Q2:2024-25 (Charts III.1c and III.1d).

Aggregate Demand

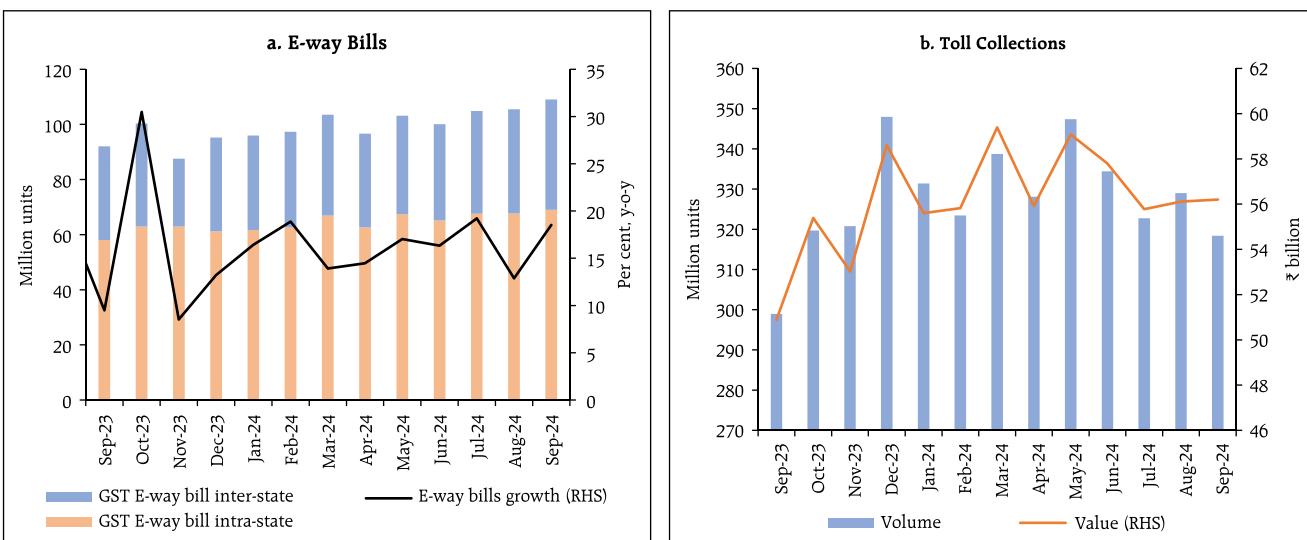
High-frequency indicators indicate that aggregate demand continued to grow, *albeit* with a slower momentum than in the preceding quarters. E-way bills continued to record double digit growth in

September 2024 (Chart III.2a). Toll collections grew by 6.5 per cent (y-o-y) in September as against 6.8 per cent (y-o-y) in the previous month (Chart III.2b).

Automobile sales recorded a growth of 13.1 per cent (y-o-y) in September 2024, supported by two-wheelers (Chart III.3a). Domestic tractor sales also expanded by 3.7 per cent (y-o-y) in September (Chart III.3b). Vehicle registrations contracted in September due to decline in both non-transport and transport vehicles segments (Chart III.3c). Average daily petroleum consumption contracted for the second consecutive month in September 2024, driven by a decline in diesel consumption (Chart III.3d).

As per the latest periodic labour force survey (PLFS) report for 2023-24 (July-June), the labour force

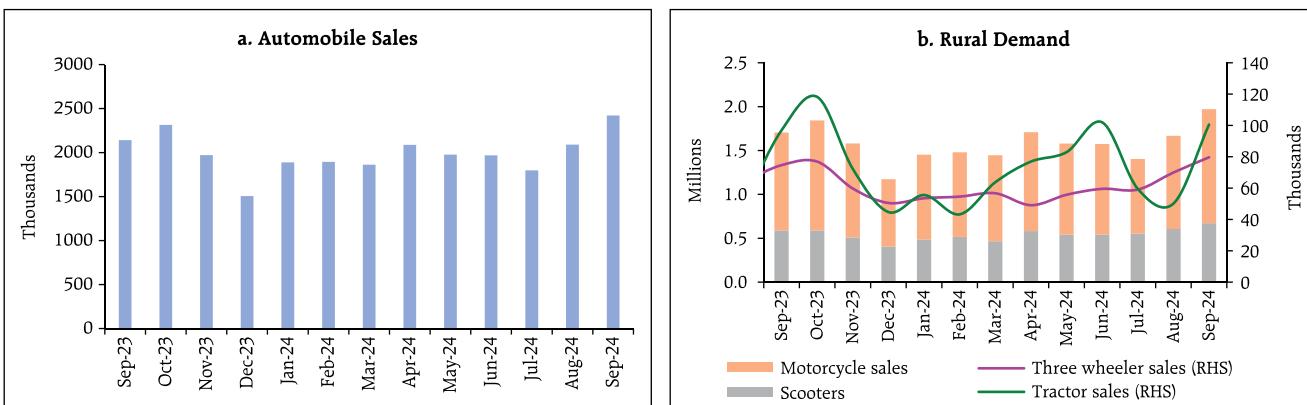
²⁶ The index extracts the dynamic common factor underlying 27 monthly indicators representing industry, services, global and miscellaneous activities.

Chart III.2: E-way Bills and Toll Collections

Sources: GSTN; and RBI.

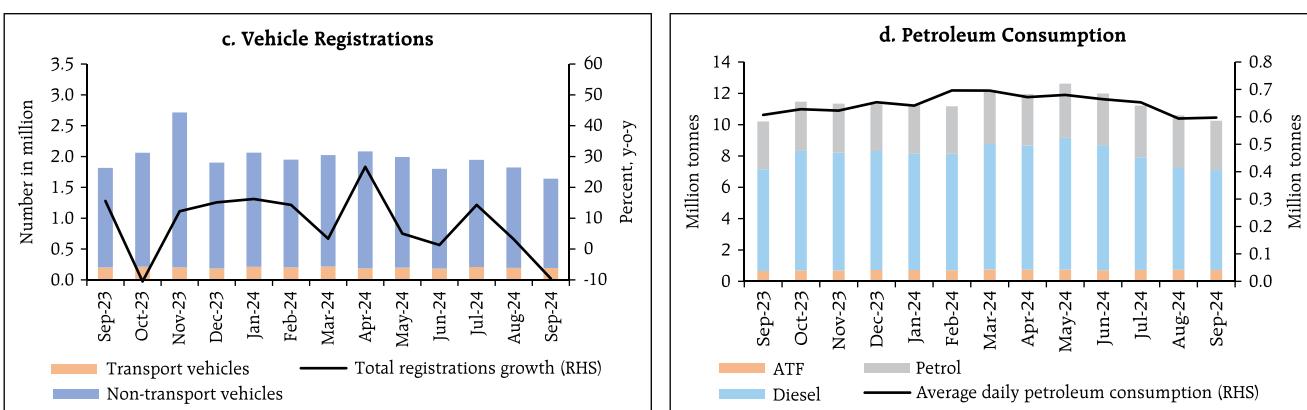
participation rates (LFPR) and worker population ratio (WPR) increased to 60.1 per cent and 58.2 per

cent, respectively, marking their highest levels since the inception of the survey. The unemployment rate

Chart III.3: Automobile Sector Indicators

Source: Society of Indian Automobile Manufacturers (SIAM).

Sources: SIAM; and Tractor and Mechanization Association (TMA).



Source: Ministry of Road Transport and Highways.

Source: Petroleum Planning and Analysis Cell.

remained unchanged at 3.2 per cent in 2023-24 from the previous year²⁷ (Chart III.4a). The overall LFPR increased in both rural and urban areas in 2023-24, driven by a rise in the female LFPR, which rose by 6.1 percentage points in rural areas and 2.6 percentage points in urban areas (Chart III.4b and III.4c). Similar patterns were witnessed in the case of WPR.

The share of regular salaried workers and helpers in household enterprises increased, while the share of casual workers declined (Chart III.5a). The share of employment in the tertiary sector increased (Chart III.5b).

As per the purchasing managers' (PMI) employment indices, organised manufacturing

employment recorded its seventh consecutive month of expansion in September 2024, *albeit* with some moderation. The rate of job creation in the services sector accelerated in September, recording one of the strongest growth in two years (Chart III.6).

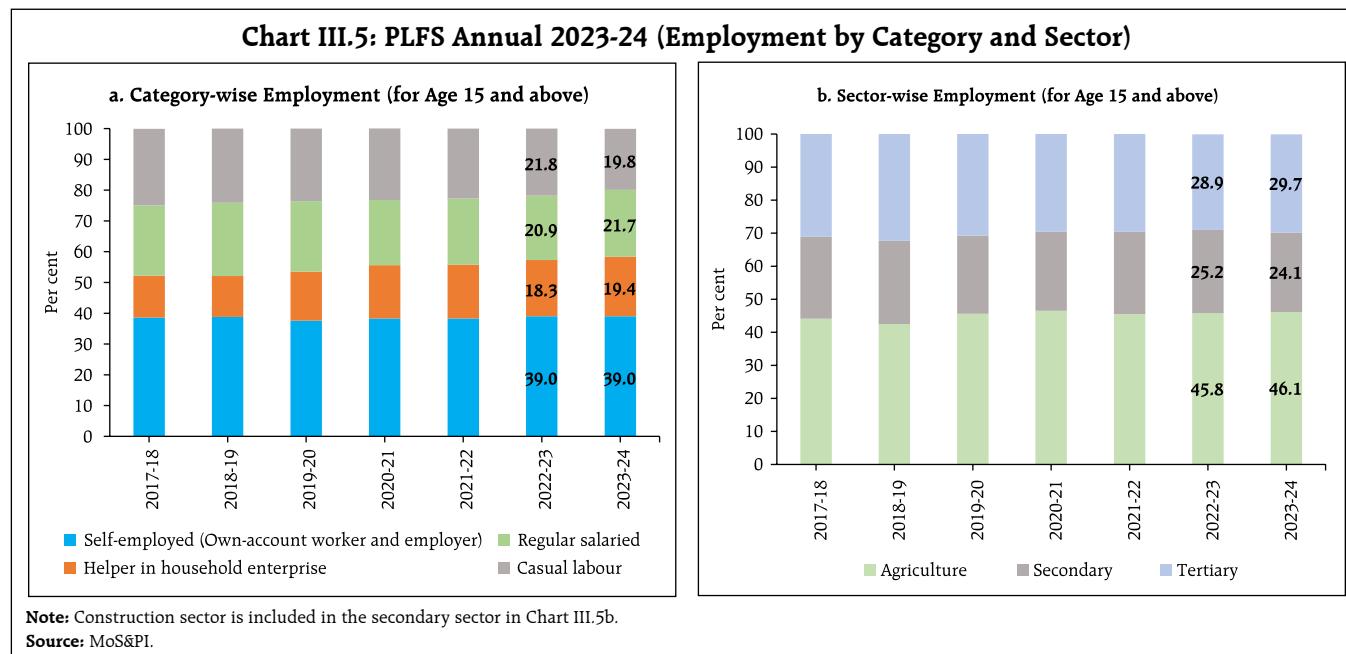
Households' demand for work under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) contracted for the fourth month in a row in September 2024, reflecting higher demand for agriculture labour during the *kharif* sowing season. On a y-o-y basis, it recorded a decline for the seventh consecutive month, pointing to increased availability of alternative employment opportunities (Chart III.7).

Chart III.4: PLFS Annual 2023-24 (Age 15 and above)



Source: Ministry of Statistics and Programme Implementation (MoS&PI).

²⁷ mospi.gov.in/sites/default/files/publication_reports/AnnualReport_PLFS2023-24L2.pdf.



India's merchandise exports at US\$ 34.6 billion grew by 0.5 per cent (y-o-y) in September 2024, supported by a favourable base effect (Chart III.8).

Exports of 23 out of 30 major commodities (accounting for 63 per cent of the export basket) expanded on a y-o-y basis in September. Engineering goods, organic and inorganic chemicals, plastic and linoleum, drugs and pharmaceuticals, and ready-

made garments (RMG) were the major drivers of exports, while petroleum products, gems and jewellery, iron ore, marine products, and ceramic products and glassware operated as drags (Chart III.9). During April-September 2024, India's merchandise exports expanded by 1.0 per cent (y-o-y) to US\$ 213.2 billion, primarily led by engineering goods, electronic goods, drugs and pharmaceuticals, organic

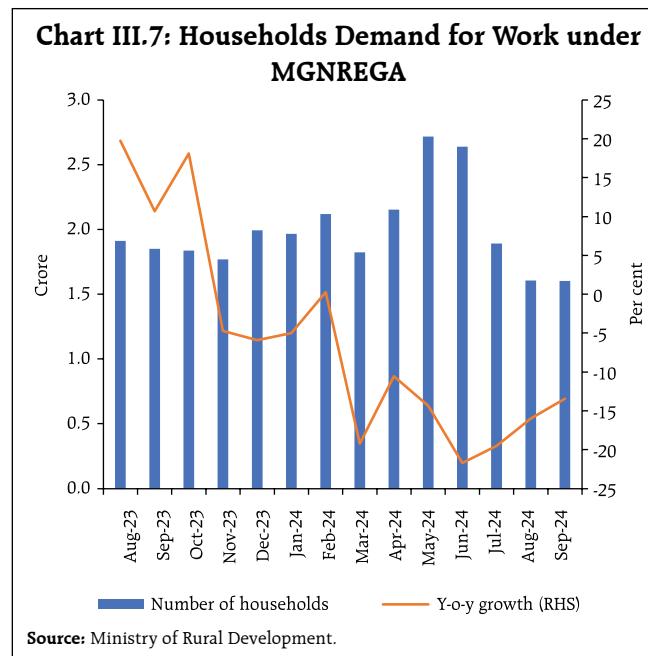
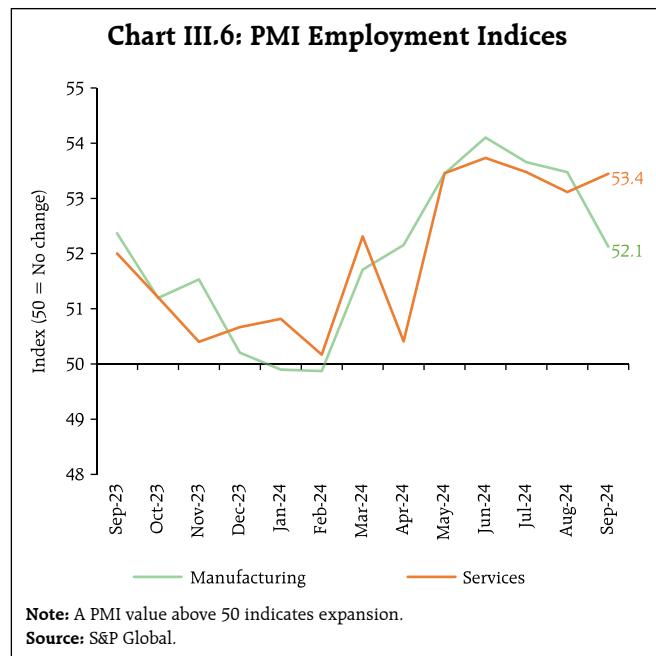
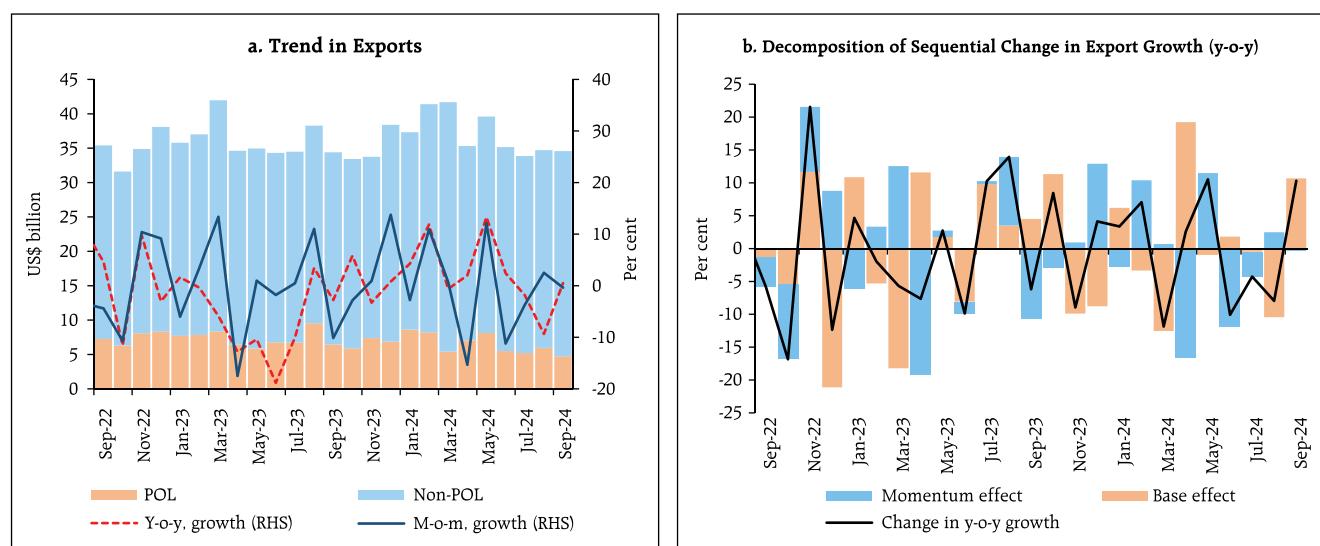


Chart III.8: India's Merchandise Exports

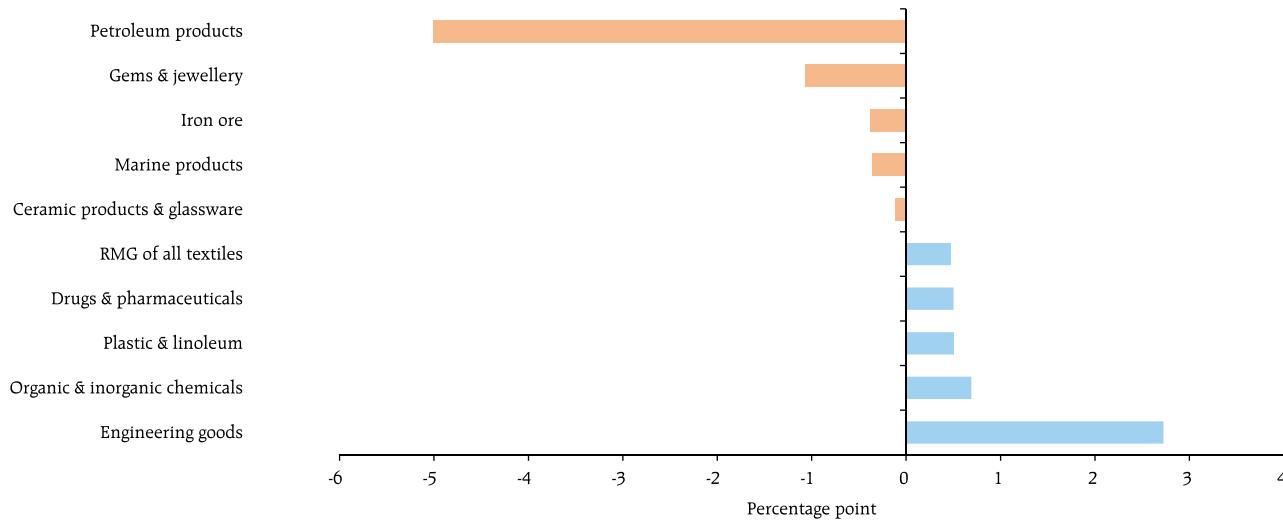
Sources: Press Information Bureau (PIB); DGCI&S; and RBI staff estimates.

and inorganic chemicals, and RMG, while petroleum products, gems and jewellery, marine products, iron ore, and other cereals restrained overall exports growth.

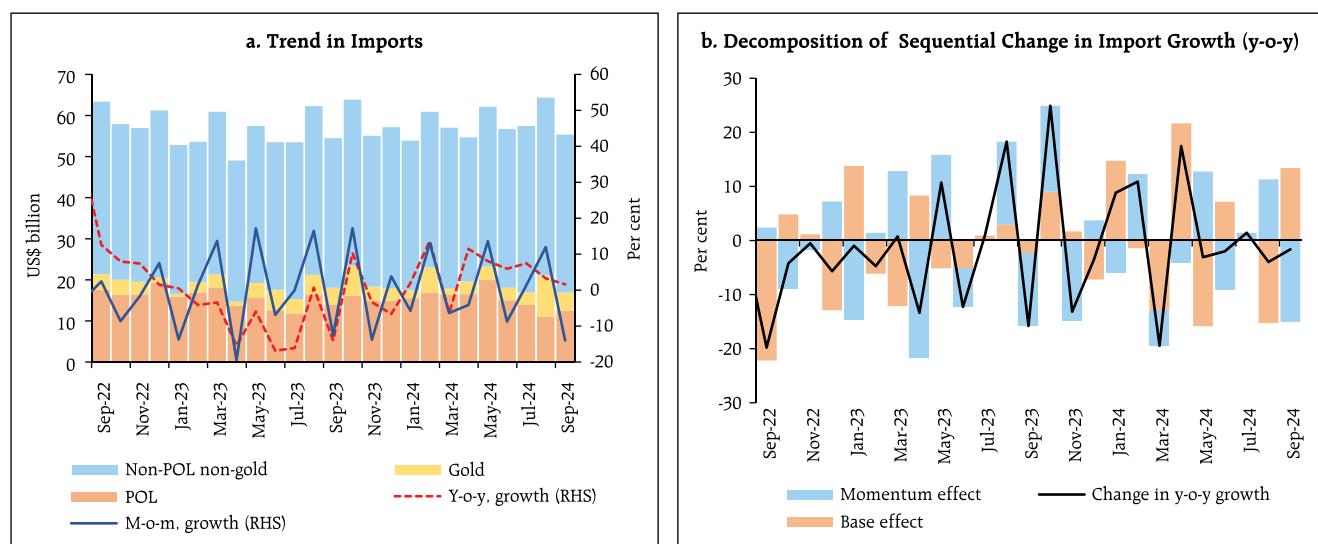
Exports to 13 out of 20 major destinations expanded in September 2024 and during April–September 2024, with the US, the UAE and the Netherlands being the top 3 export destinations.

Merchandise imports at US\$ 55.4 billion expanded by 1.6 per cent (y-o-y) in September, despite a sequential contraction which was more than offset by a positive base effect (Chart III.10). Out of 30 major commodities, 20 commodities (accounting for 48.7 per cent of the import basket) registered growth on a y-o-y basis in September.

Machinery, electronic goods, non-ferrous metals, chemicals, and gold contributed positively to

Chart III.9: India's Merchandise Exports – Relative Contribution (September 2024 over September 2023)

Sources: PIB; and RBI staff estimates.

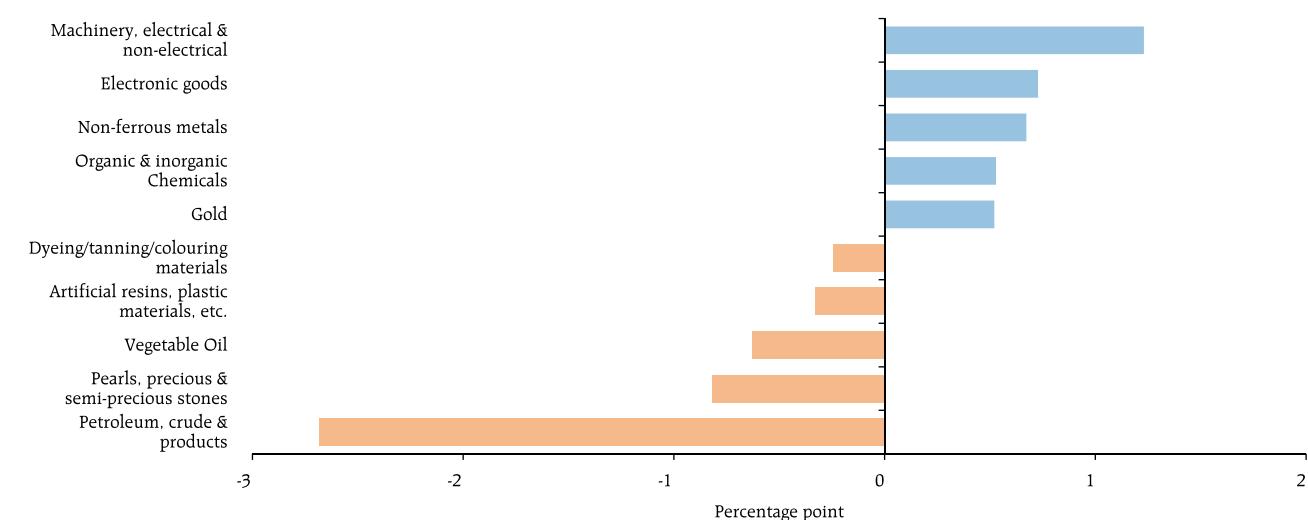
Chart III.10: India's Merchandise Imports

Sources: PIB; DGCIS; and RBI staff estimates.

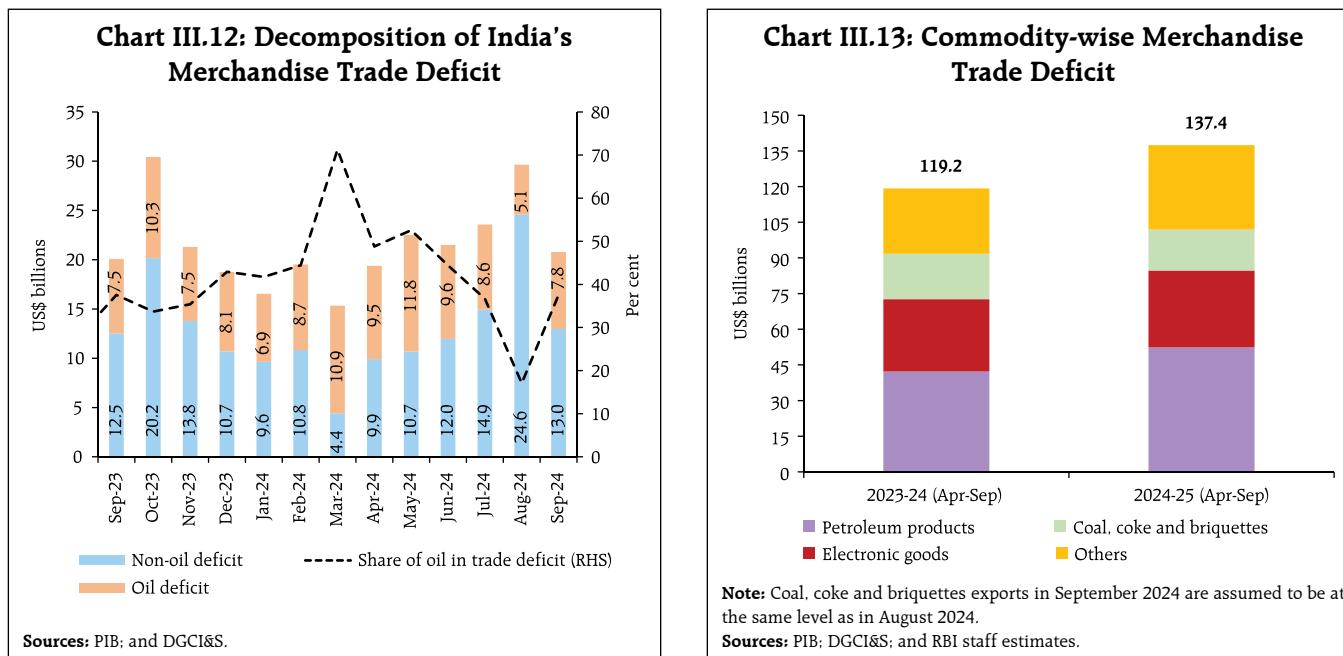
overall import growth, while POL, pearls, precious and semi-precious stones, vegetable oil, artificial resins, plastic materials, etc., and dyeing, tanning and colouring materials contributed negatively (Chart III.11). During April-September 2024, India's merchandise imports increased by 6.2 per cent (y-o-y) to US\$ 350.7 billion, mainly led by POL, gold, electronic goods, non-ferrous metals, and transport

equipment, while pearls, precious and semi-precious stones, chemical material and products, coal, coke and briquettes, fertilisers, and dyeing, tanning and colouring materials contributed negatively.

Imports from 9 out of 20 major source countries expanded in September 2024 on a y-o-y basis. Imports from 14 out of 20 major source countries increased during April-September 2024.

**Chart III.11: India's Merchandise Imports – Relative Contribution
(September 2024 over September 2023)**

Sources: PIB; and RBI staff estimates.



The merchandise trade deficit narrowed to a 5-month low at US\$ 20.8 billion in September 2024. The share of POL in the total merchandise trade deficit remained the same at 37.6 per cent in September 2024 as a year ago (Chart III.12).

During April-September 2024, India's merchandise trade deficit widened to US\$ 137.4 billion from US\$ 119.2 billion a year ago. Petroleum products were the largest source of the deficit, followed by electronic goods (Chart III.13).

India's pharmaceutical industry is the world's third largest by volume of production²⁸, being a global leader in the supply of diphtheria, tetanus and pertussis (DPT), *bacillus calmette–guérin* (BCG), and measles vaccines. It is also one of the largest suppliers of low cost vaccines in the world. Drugs and pharmaceuticals are the sixth largest commodities in India's export basket, with a share of 6.4 per cent in 2023-24. Drug formulations and biologicals have been the largest drivers of drugs and pharmaceuticals exports, with more than a three-fourths share, followed by bulk drugs and drug intermediates

(Chart III.14a). In 2023-24, drugs and pharmaceuticals exports increased by 9.7 per cent (y-o-y) to US\$ 27.9 billion. In 2024-25 so far (up to August), they grew by 8.2 per cent (y-o-y) to US\$ 11.9 billion. The drugs and pharmaceuticals sector yielded a trade surplus, mainly driven by drug formulations and biologicals (Chart III. 14b).

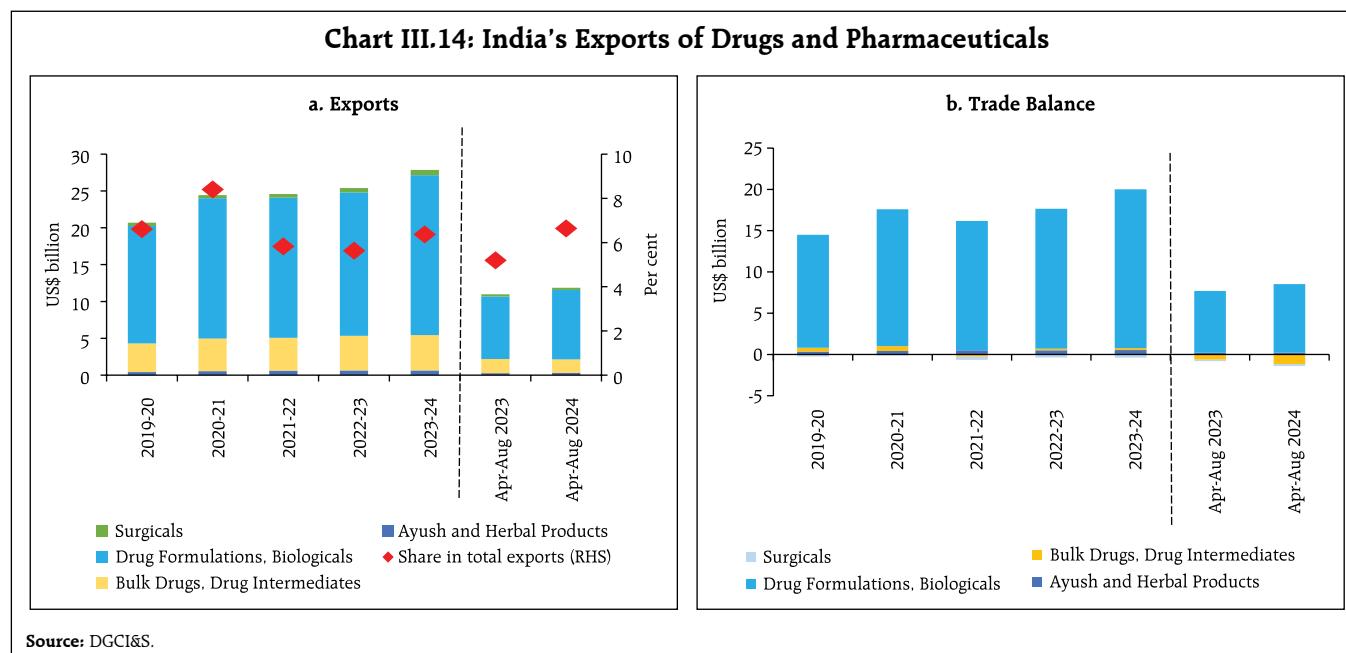
On the renewable energy front, India is the world's second-largest producer of wind turbine components following China, with a significant share of its manufacturing capacity focused on exports (Chart III.15). Low import dependency is reflective of around 70-80 per cent indigenisation that has been achieved with robust domestic manufacturing (Table III.1).

Table III.1: Manufacturing Capacity of Key Wind Turbine Components

Component	Global Capacity 2023 in Gigawatt (GW)	India's Capacity (Share in Global Market in per cent)
Gearbox	166.5	15.5 (9)
Generators	155.6	8.25 (5)
Blades	156.8	12.92 (8)
Power Converters	222.7	10.6 (5)
Towers	38	2.8 (7)

Source: CEEW.

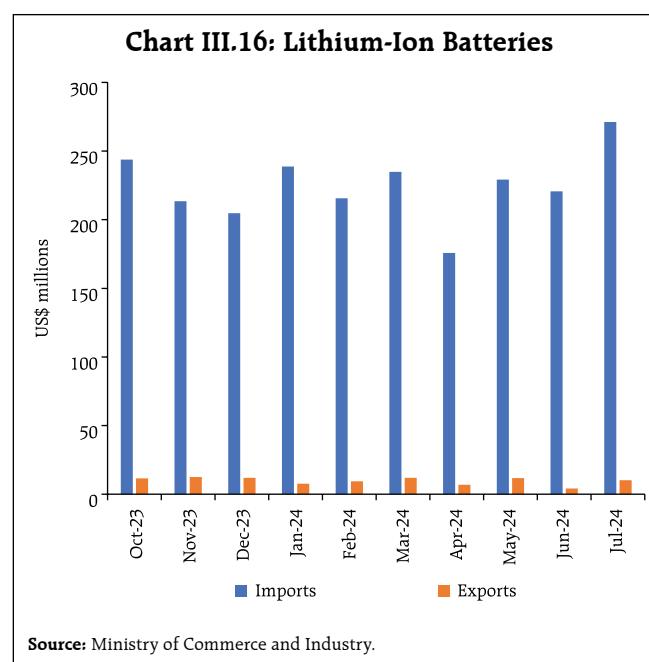
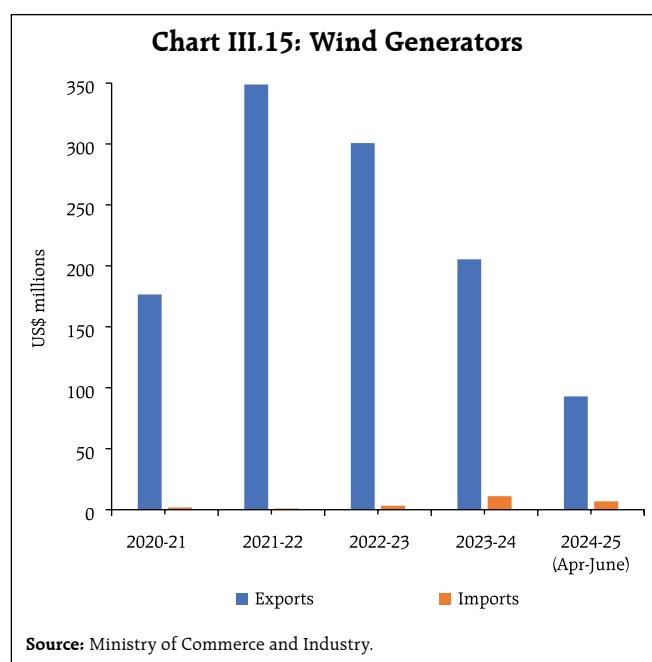
²⁸ Annual Report 2023-24, Department of Pharmaceuticals, Ministry of Chemicals and Fertilisers, Government of India.

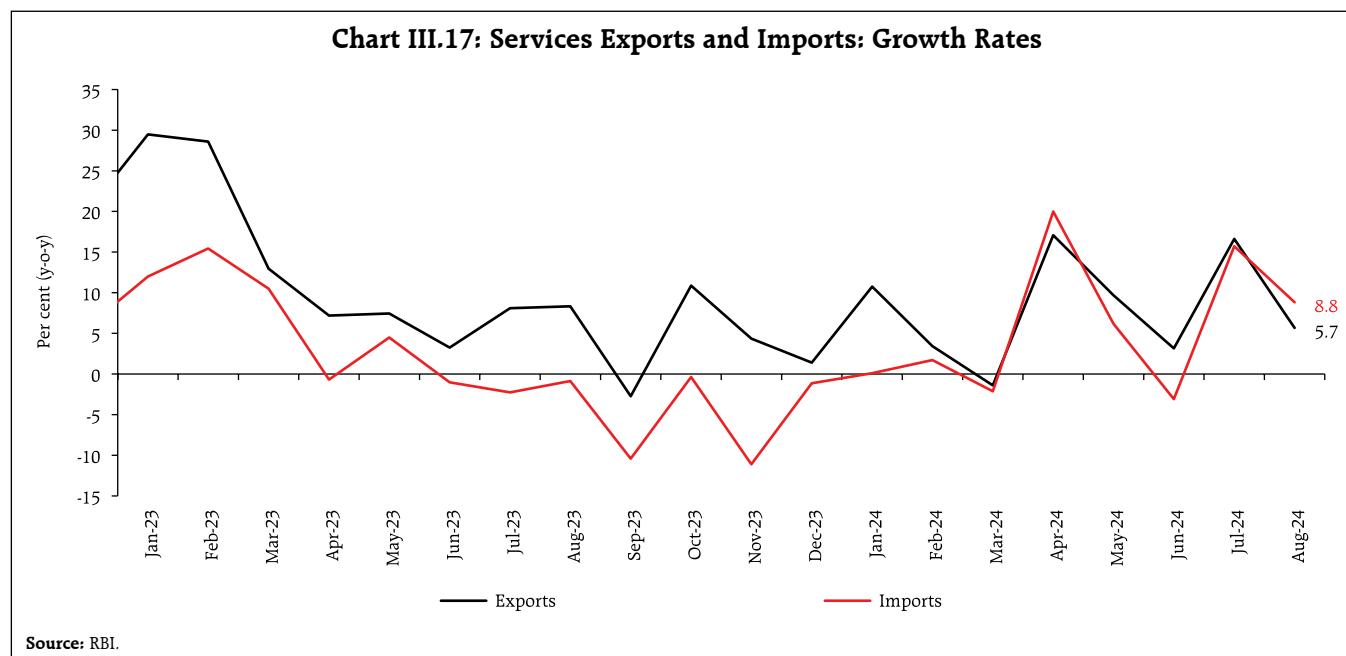


India is a major importer of lithium-ion batteries in the world (Chart III.16). India has a mature but small lithium-ion battery assembly sector, with over 6.5 gigawatt-hour (GWh) of manufacturing capacity. The government has approved the Production Linked Incentive (PLI) scheme for manufacturing advance chemistry cell (ACC) batteries with a total

outlay of ₹18500 crores, which is expected to reduce its dependence on imports.

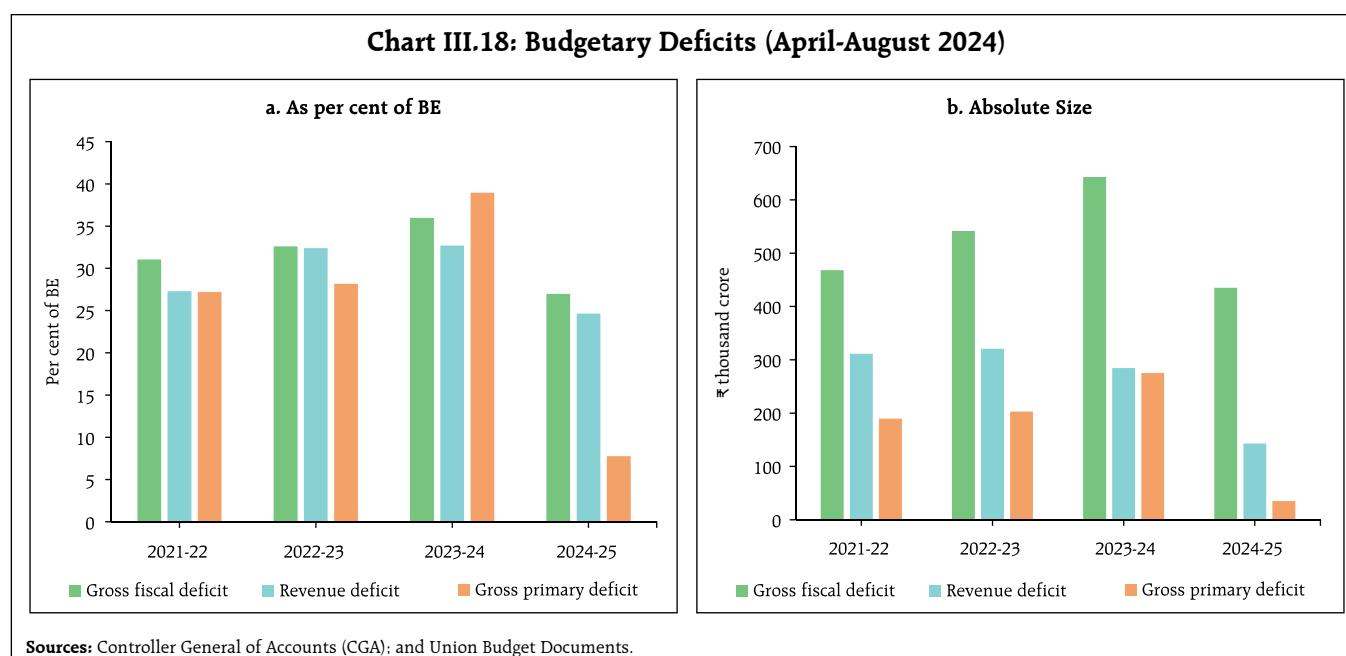
Services exports at US\$ 30.3 billion grew by 5.7 per cent (y-o-y) in August 2024 and services imports rose by 8.8 per cent (y-o-y) to US\$ 16.4 billion (Chart III.17). As a result, net services export earnings increased by 2.2 per cent (y-o-y) to US\$ 13.9 billion during the month.





All major key deficit indicators of the Union government, viz., the gross fiscal deficit (GFD), the revenue deficit (RD), and the primary deficit (PD) recorded an improvement during April-August 2024 [both in absolute terms as well as in proportion to budget estimates (BE)] relative to the corresponding period of the previous year. The GFD stood at 27 per

cent of BE in April-August 2024, down from 36 per cent in the corresponding period of the previous year (Chart III.18a and III.18b). Robust growth in revenue receipts during April-August 2024, coupled with a contraction in the total expenditure of the Union government by 1.2 per cent on a y-o-y basis, led to an improvement in the financial position of the Union Government.



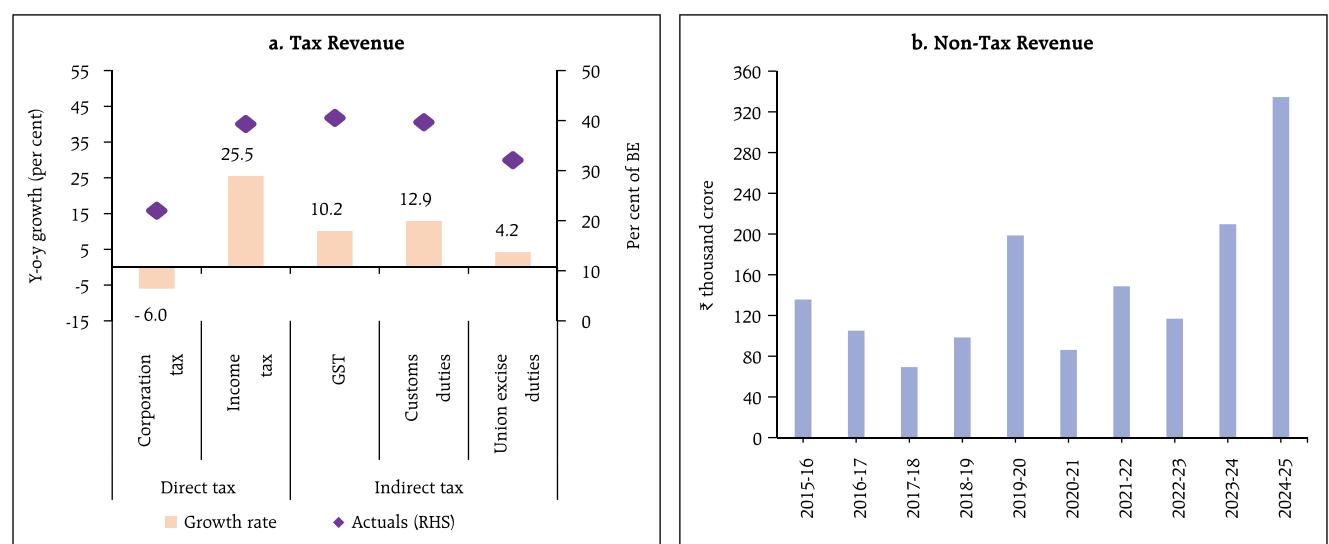
Revenue expenditure moderated to 4.1 per cent during April-August 2024 from a growth of 14.1 per cent recorded in April-August 2023. The outgo on major subsidies contracted marginally by 1.2 per cent, partly owing to a decline in the international price of fertiliser. Similarly, capital expenditure growth recorded a contraction, partly attributable to the model code of conduct imposed due to the general elections held in Q1:2024-25. During July-August 2024, however, capital expenditure rebounded with a y-o-y growth of 25.8 per cent. Further, in September 2024, the government relaxed its cash management guidelines with the objective of boosting expenditure.²⁹

On the receipts side, gross tax revenues recorded a growth of 12.1 per cent during April-August 2024 vis-à-vis a growth of 16.5 per cent in the corresponding period of the previous year.

Under direct taxes, income tax collections registered a robust growth rate of 25.5 per cent (y-o-y) [Chart III.19a]. Corporate taxes, however, recorded a decline during the period, although it recovered substantially by mid-September.³⁰ Under indirect taxes, GST collections recorded a growth of 10.2 per cent. With the surplus transfer of ₹2.1 lakh crore by the Reserve Bank, non-tax revenues recorded a growth of 59.6 per cent during April-August 2024 (Chart III.19b). Disinvestment receipts, however, lagged the budgeted target, leading to a contraction of 42.4 per cent in non-debt capital receipts during the concerned period. Overall, the total receipts of the Union government posted a growth of 18.3 per cent in April-August 2024 over their level in the corresponding period of the previous year.

Gross GST collections (Centre *plus* States) for the month of September amounted to ₹1.73 lakh crore,

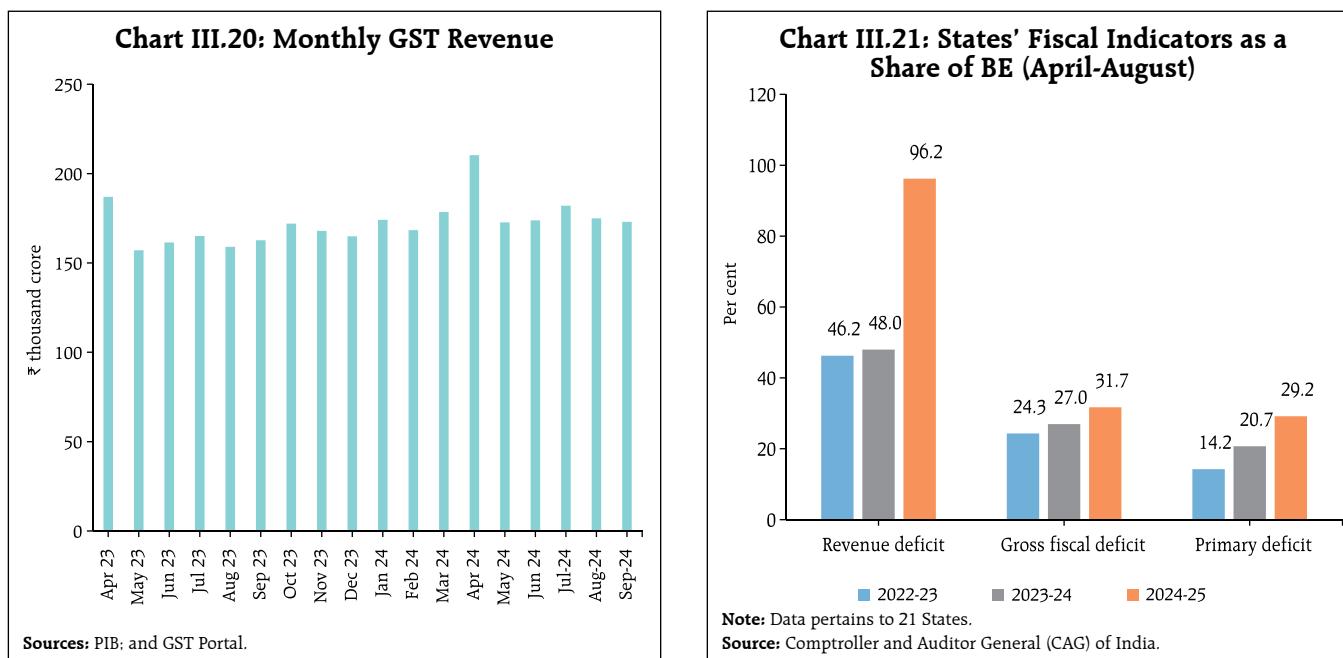
Chart III.19: Revenue Receipts of the Union Government (April-August 2024)



Sources: CGA; and Union Budget Documents.

²⁹ As per the office memorandum released by the Department of Economic Affairs (DEA) on September 4, 2024 the stipulations pertaining to the big releases (₹500 crore or more) will be relaxed until further notice to provide operational flexibility to execute the budget. The newly provided relaxations will remain subjected to the compliance guidelines of Single Nodal Agency (SNA)/Central Nodal agency (CNA) and of Monthly Expenditure Plan (MEP)/Quarterly expenditure Plan (QEP).

³⁰ As per the data on the advance tax collections up to September 17, 2024, the corporate tax collections recorded a y-o-y growth of 18.2 per cent indicating that the decline in April-August 2024 is likely to be more than compensated (<https://incometaxindia.gov.in/news/net-direct-tax-collection-provisional-as-on-17.09.2024-for-the-financial-year-2024-25.pdf>).



registering a growth of 6.5 per cent on a y-o-y basis (Chart III.20). After accounting for refunds, net GST collections stood at ₹1.52 lakh crore, growing at 3.9 per cent on a y-o-y basis. Further, the cumulative gross GST collections for April-September 2024 stood at ₹10.9 lakh crore, recording a growth of 9.5 per cent over April-September 2023.

Provisional data for April-August 2024 indicate that States' GFD increased to 31.7 per cent of BE

from 27 per cent in the previous year (Chart III.21). Revenue receipt growth decelerated due to a decline in tax revenue growth and a contraction in non-tax revenue and grants from the Union government (Table III.2). Growth in States' goods and services tax (SGST), the largest driver of tax revenue, moderated. Stamp duties and registration fees witnessed robust growth, while sales tax collections showed signs of recovery from a contraction during the same period in the previous year.

Table III.2: States' Key Fiscal Indicators (April-August 2024-25)

(Per cent)

	Per cent of BE			Y-o-Y Growth Rate		
	2022-23	2023-24	2024-25	2022-23	2023-24	2024-25
1. Revenue Receipts	33.6	32.8	32.0	28.1	8.8	5.0
1.1. Tax Revenue	37.1	35.9	35.4	33.0	15.7	11.4
Stamp Duties and registration fees	40.3	36.6	38.0	43.6	15.8	16.2
GST	43.6	43.9	43.3	31.7	19.0	10.3
Sales Tax	40.1	34.4	35.2	20.1	-2.1	4.2
State Excise Duties	37.3	36.9	34.8	27.0	12.8	5.6
1.2. Non-Tax Revenue	29.1	31.9	26.2	53.6	16.1	-9.9
1.3. Grants-in-Aid	24.1	20.2	15.7	10.2	-27.0	-33.5
2. Revenue expenditure	33.9	33.2	33.8	15.6	7.7	10.4
2.1 Interest Payments	32.3	31.8	33.7	11.1	8.8	14.3
3. Capital expenditure	20.5	23.4	21.3	6.3	35.0	-4.9
3.1 Capital Outlay	19.6	23.8	20.3	4.4	42.3	-9.4

Note: Data pertains to 21 States.

Sources: CAG of India; and Budget documents of State governments.

On the expenditure side, revenue expenditure growth increased, while capital expenditure declined during this period. Going forward, capital expenditure is expected to pick up owing to the Union government's provision of special assistance of ₹1.5 lakh crore long term interest free loans.

Aggregate Supply

The final estimates of foodgrains production for 2023-24 stood at a record 332.3 million tonnes, which was 0.8 per cent higher than the final estimates for 2022-23, despite 2023 being an *El Niño* year with below normal monsoon. Increases in the production of wheat and rice more than compensated for the decline in pulses and coarse cereals production (Chart III.22).

As per the 3rd advance estimates (AE) for 2023-24, horticultural crop production declined (for the first time since 2002-03) to 353.2 million tonnes, driven down by declines in the production of onions and potatoes by 19.7 per cent and 5.1 per cent, respectively (Chart III.23). Deficient rainfall and heat waves associated with *El Niño* weather conditions adversely affected horticulture crop production during 2023-24.

The 2024 southwest monsoon (SWM) ended with above-normal rainfall at 108 per cent of the long period average (LPA), the highest since 2020. It was in line with the India Meteorological Department's (IMD's) long range forecast for 2024 SWM (June-September). The rainfall was 7 per cent, 19 per cent, and 14 per cent above the LPA in northwest, central, and southern peninsula, respectively, but it was 14 per cent below the LPA in east and northeast India. Out of 36 subdivisions, 33 received normal or above normal rainfall this year, an increase from 29 subdivisions last year (Chart III.24).

The production weighted rainfall index (PRN) stood at 107 per cent of the LPA and it remained above normal for other major crops except rice for which it was normal (Chart III.25). Notably, PRNs for all key crops during this season exceeded their respective five-year averages (Chart III.26).

The high spatial dispersion of rainfall observed in the early part of the monsoon season declined from mid-July onwards as rainfall activity became broad based (Chart III.27).

Chart III.22: Agriculture Crops Production 2023-24 (Final Estimates)

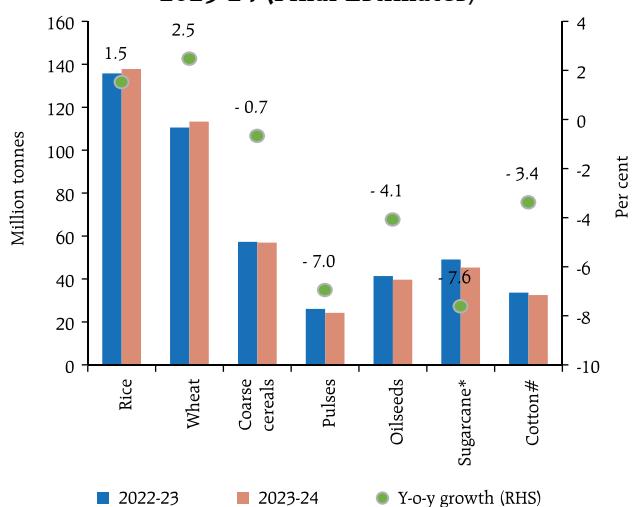
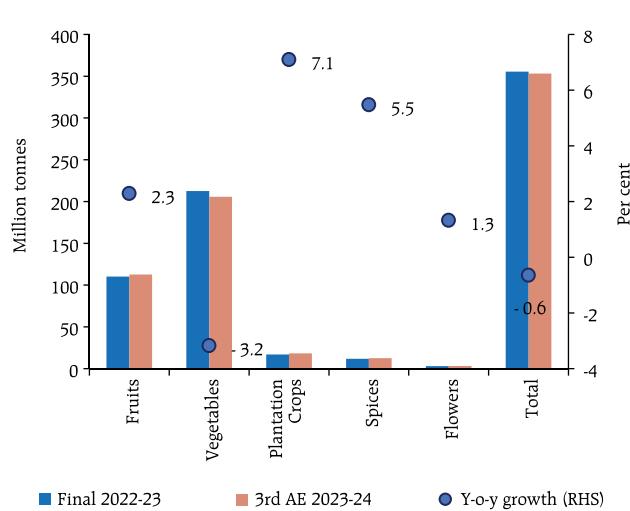
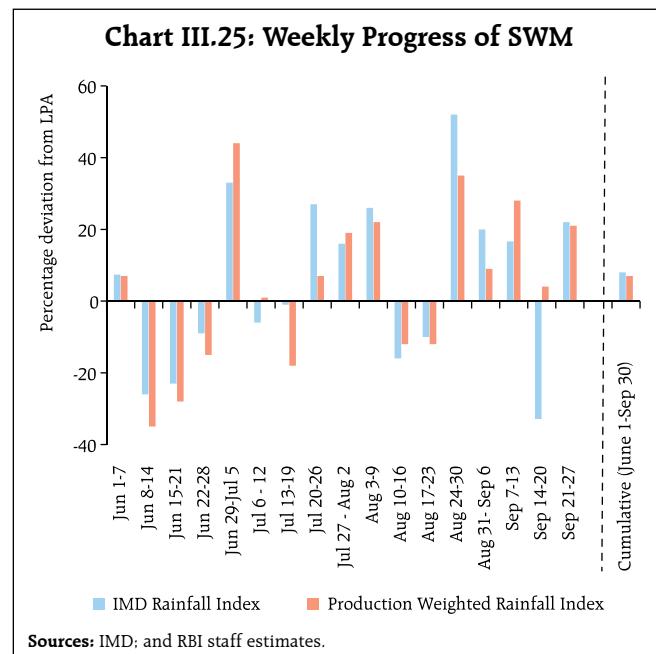
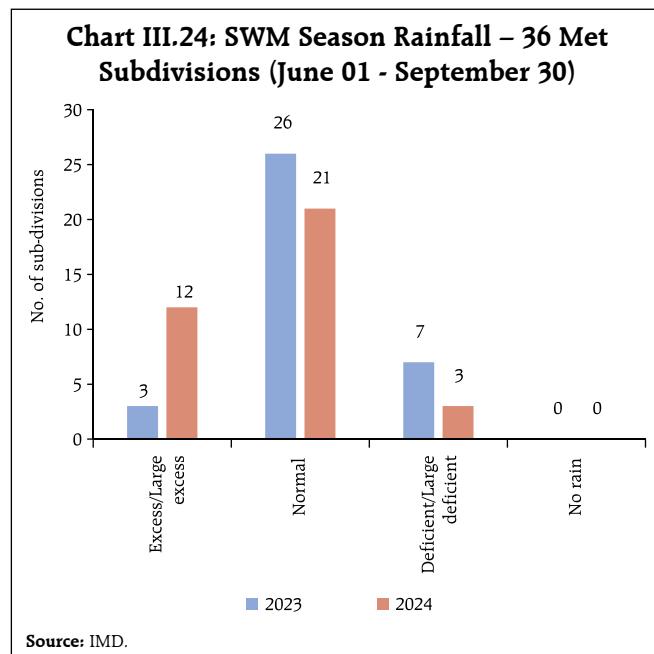


Chart III.23: Horticulture Crops Production 2023-24 (3rd AE)



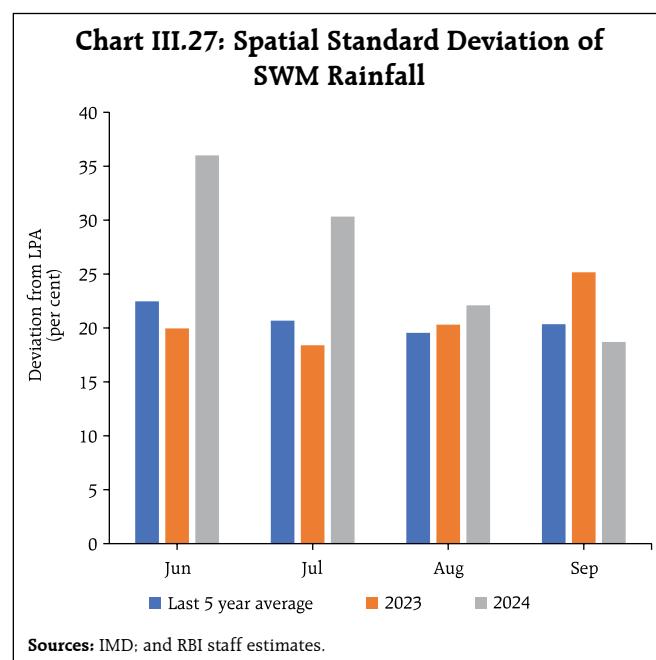
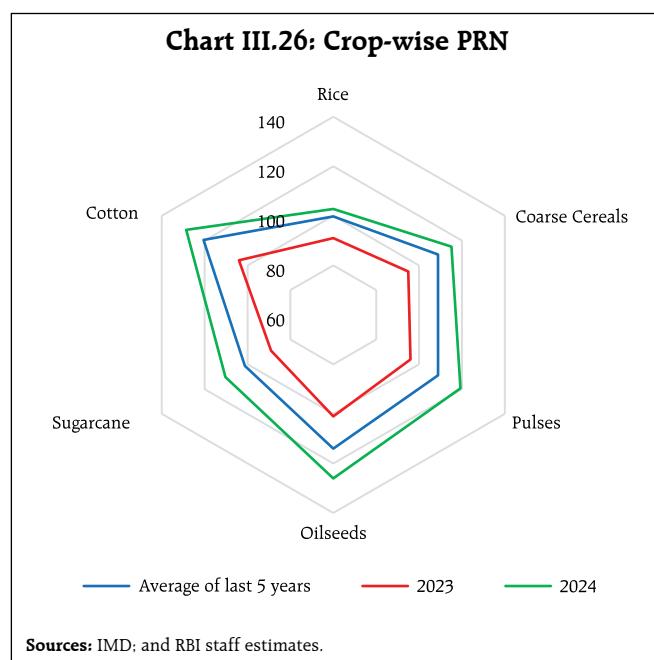


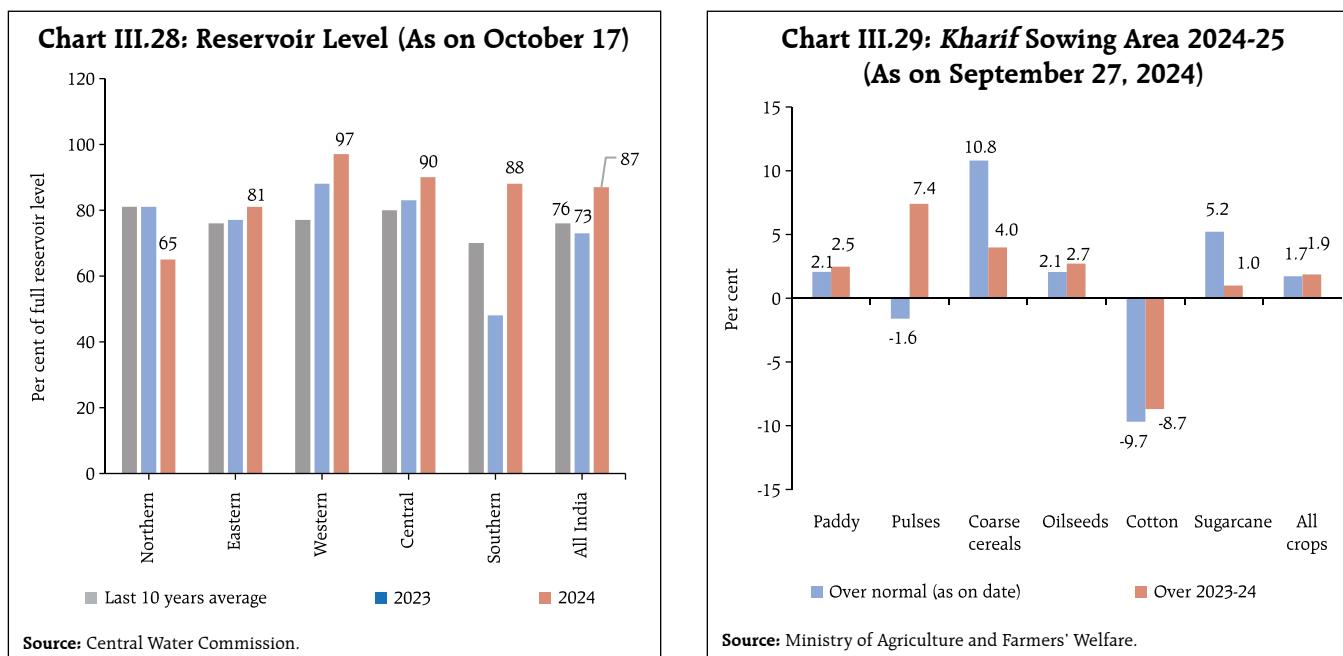
Water levels in reservoirs at 87 per cent of the total capacity as on October 17, 2024 was 19.9 per cent and 14.7 per cent higher than last year and the decadal average, respectively (Chart III.28).

As on September 27, 2024, the total *kharif* sown area stood at 1108.6 lakh hectares (101.1 per cent of full season normal area), higher than last year and

the normal area (Chart III.29). Except cotton, the area under all crops has increased over last year.

Minimum support prices (MSP) for the *rabi* marketing season (April 2025 to March 2026) were increased in the range of 2.4 per cent (for Safflower) to 7.0 per cent (for Barley) [Chart III.30]. Significant increases in MSP were announced for rapeseed and



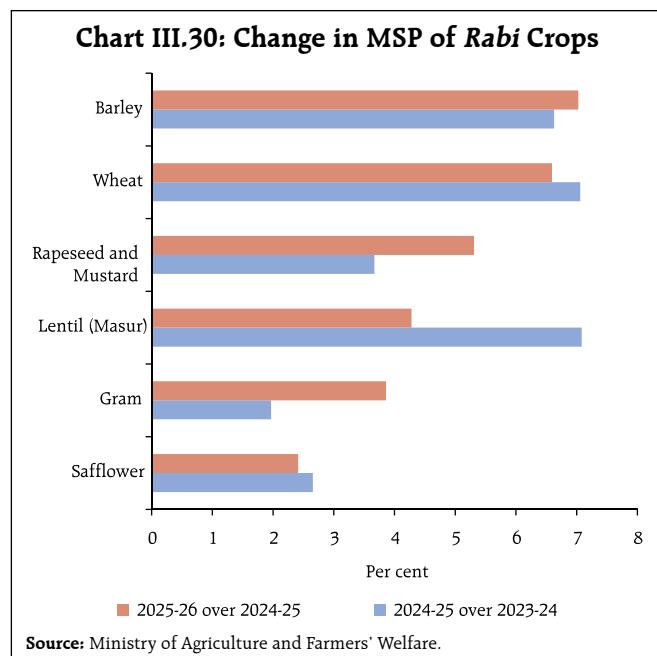


mustard at ₹300 per quintal, as well as for lentil (Masur) at ₹275 per quintal. This is in line with the recent policies announced by the government to boost oilseeds and pulses production and reduce the import dependency.

As per the IMD's recent forecast for post-monsoon season (October-December), rainfall is most likely to be above normal (>112 per cent of LPA) over the south

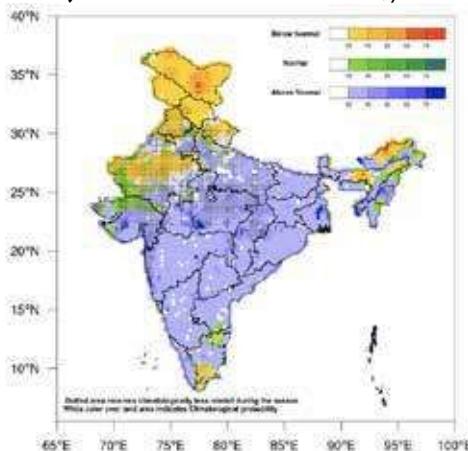
peninsula³¹. So far, the cumulative rainfall has been 1 per cent below the LPA during the current Northeast monsoon (NEM) season (October 01-18). Forecasts indicate an increased likelihood of *La Niña* conditions developing during the post-monsoon season, which augurs well for the *rabi* sowing (Chart III.31).

The stock of rice with the Food Corporation of India (FCI) stood at 387 lakh tonnes as on October 01, 2024 which was 23.0 per cent higher than on the corresponding date last year. The government procured 525.4 lakh tonnes of rice in the *kharif* marketing season (KMS) 2023-24, which was 7.7 per cent lower than in last year's season. In view of the ample stock of rice and moderating retail prices, the government amended the export policy for non-basmati white rice from prohibited to free on September 28, 2024, subject to a minimum export price (MEP) of US\$ 490 per tonne. In the case of wheat, the government procured 266 lakh tonnes in the *rabi* marketing season (RMS) 2024-25, which was 1.6 per cent higher than in the last



³¹ South Peninsular India consists of five meteorological subdivisions (Tamil Nadu, Puducherry and Karaikal, Coastal Andhra Pradesh, Rayalaseema, Kerala and Mahe, and South Interior Karnataka). IMD has been preparing forecasts for northeast monsoon (post-monsoon) season rainfall over the south peninsula since 1998 because this region receives major part of its annual rainfall during this season.

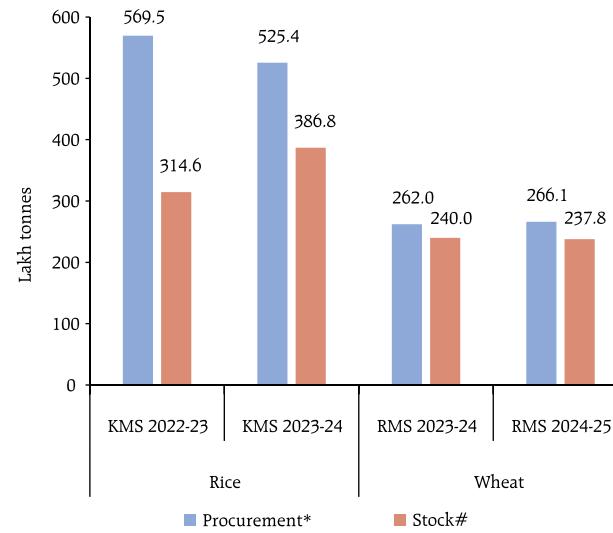
**Chart III.31: Northeast Monsoon Forecast
(October - December 2024)**



Note: The chart denotes the probability forecast of tercile categories (below normal, normal, and above normal) of rainfall over India during October to December 2024 period. The figure illustrates the most likely categories as well as their probabilities. Tercile categories have equal climatological probabilities of 33.33 per cent each.

Source: IMD.

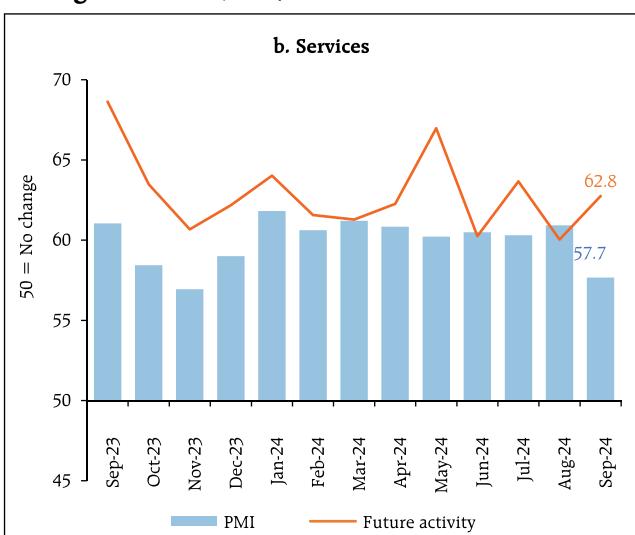
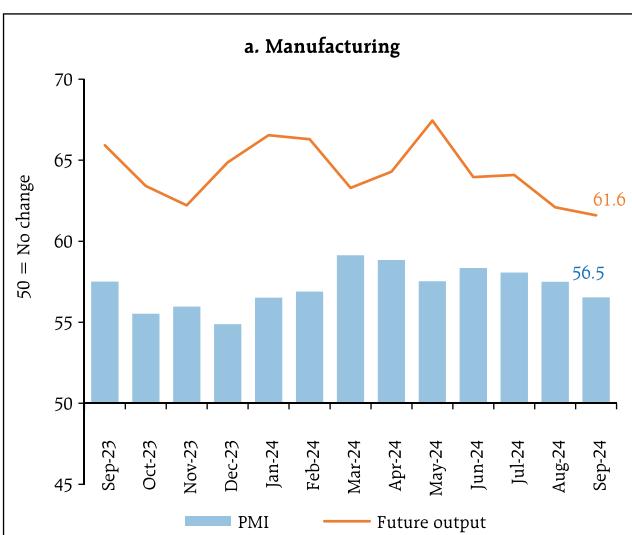
Chart III.32: Central Public Distribution System



season. The stock of wheat at 238 lakh tonnes (as on October 01, 2024) remained 0.9 per cent lower than last year. The government revised downward the stock limit on wheat for traders, retailers, and processors to increase its availability and curb prices. The buffer norm for rice and wheat stock for October-December quarter was 102.5 lakh tonnes and 205.2 lakh tonnes, respectively (Chart III.32).

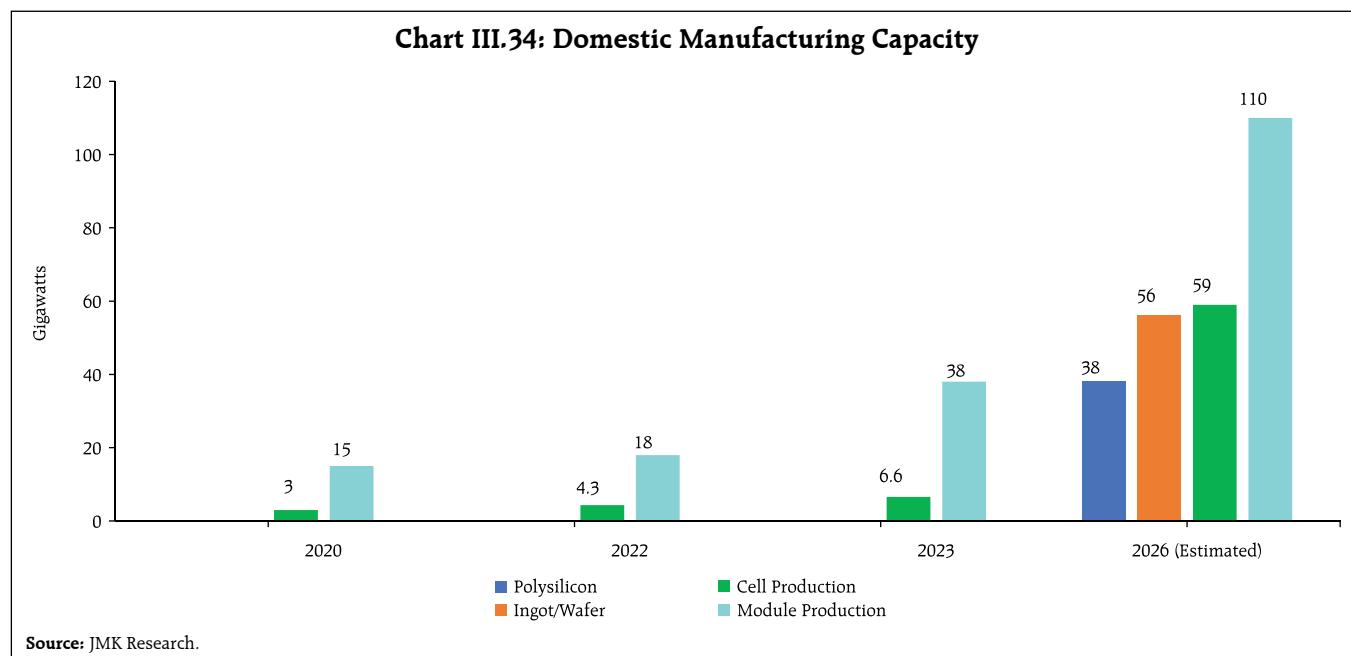
India's manufacturing PMI eased in September due to deceleration in the pace of expansion in new orders, employment and output (Chart III.33a). The services sector PMI also moderated to ten-month low in September due to a slowdown in new business activity (Chart III.33b). Business expectations in the manufacturing sector showed signs of moderation, while the services sector exhibited an improvement.

Chart III.33: Purchasing Managers' Index (PMI)



Note: A level of 50 corresponds to no change in activity and a reading above 50 denotes expansion and vice versa.

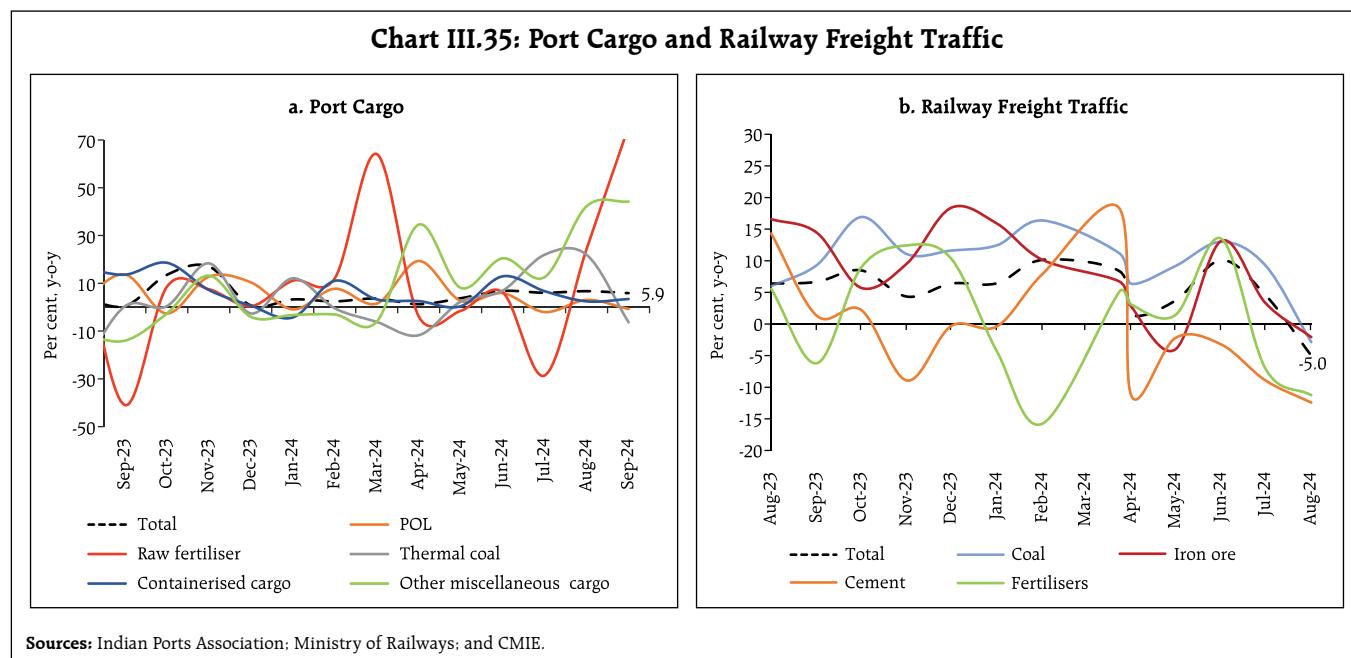
Source: S&P Global.



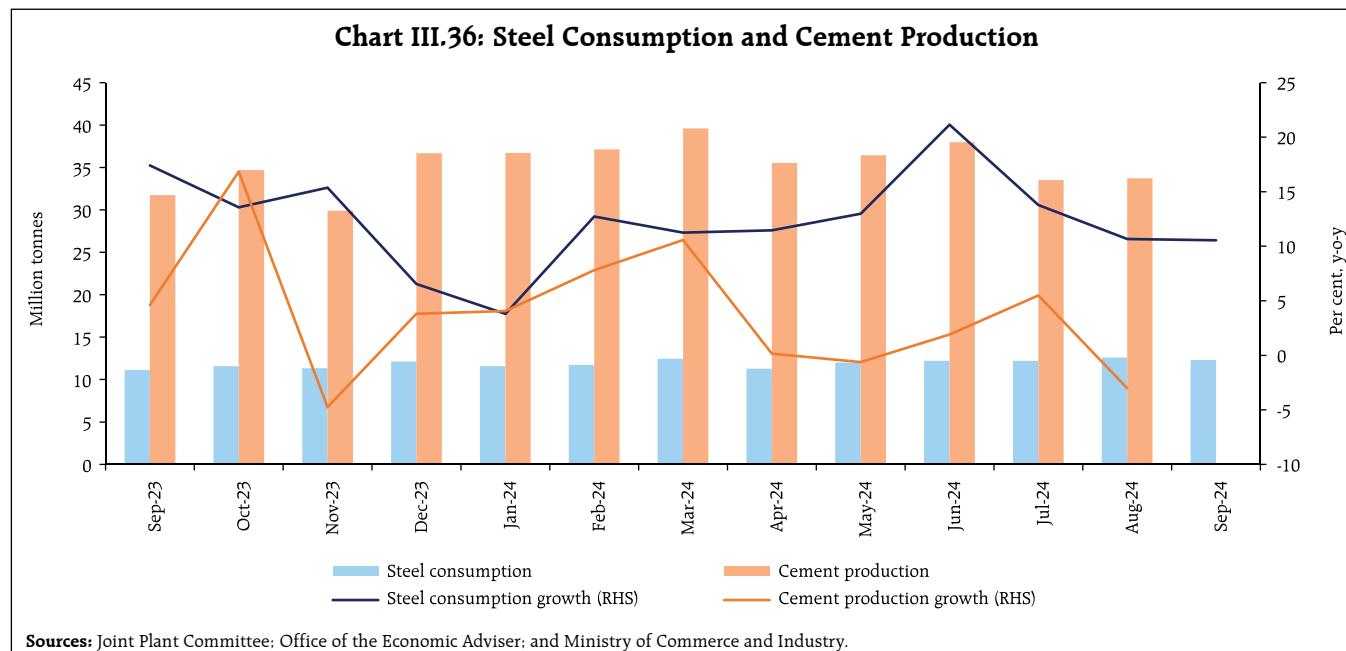
On the renewable energy front, India has built 6.6 gigawatt (GW) of indigenous solar cell manufacturing capacity in 2023. India is likely to develop a significant manufacturing presence in polysilicon, ingots wafers, cells and module manufacturing once the manufacturing capacity allotted under the Production Linked Incentive (PLI)

scheme³² comes online (Chart III.34).

Port traffic increased by 5.9 per cent (y-o-y) in September 2024, driven by other miscellaneous cargo, petroleum, oil and lubricants (Chart III.35a). Railway freight traffic, on the other hand, recorded a y-o-y decline in August, led by coal and cement (Chart III.35b).



³² The Government has allocated a total capacity of 48337 megawatt (MW) of domestic solar PV module manufacturing capacity, with a total outlay of ₹18500 crores under the PLI Scheme for high efficiency solar PV modules. It consists of 15400 MW of manufacturing capacity under P+W+C+M (Polysilicon, wafers, cells and modules) Basket, thereby ensuring that the entire manufacturing supply chain can be established in India.



Within the construction sector, steel consumption expanded by 10.5 per cent (y-o-y) in September. Cement production, however, declined by 3.0 per cent in August 2024 (Chart III.36).

Available high frequency indicators for the services sector reflect the resilience of activity in September 2024, supported by rural demand, domestic air passenger traffic and steel consumption (Table III.3).

Table III.3: High Frequency Indicators- Services

(y-o-y, per cent)

Sector	Indicator	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
Urban demand	Passenger Vehicles Sales	17.3	4.3	3.2	13.9	5.7	8.9	1.2	4.3	4.9	-2.0	-1.8	-0.4
Rural demand	Two-Wheeler Sales	20.1	31.3	16.0	26.2	34.6	15.3	30.8	10.1	21.3	12.5	9.3	15.8
	Three-Wheeler Sales	42.1	30.8	30.6	9.5	8.3	4.3	14.5	14.4	12.3	5.1	8.0	6.7
	Tractor Sales	-4.3	6.4	-19.8	-15.3	-30.6	-23.1	-3.0	0.0	3.6	1.6	-5.8	3.7
Trade, hotels, transport, communication	Commercial Vehicles Sales		3.2			-3.8			3.5			-11.0	
	Railway Freight Traffic	8.5	4.3	6.4	6.4	10.1	8.6	1.4	3.7	10.1	4.6	-5.0	
	Port Cargo Traffic	13.8	16.9	0.6	3.2	2.1	2.7	1.3	3.8	6.8	6.0	6.7	5.9
	Domestic Air Cargo Traffic*	10.6	9.0	8.7	10.0	11.5	8.7	0.3	10.3	10.3	8.8	0.6	-12.5
	International Air Cargo Traffic*	15.0	4.9	12.2	19.3	30.2	22.5	16.2	19.2	19.6	24.4	20.7	3.2
	Domestic Air Passenger Traffic *	10.7	8.7	8.1	5.0	5.8	4.7	3.8	5.9	6.9	7.6	6.7	7.8
	International Air Passenger Traffic *	17.5	19.8	18.1	17.0	19.3	15.0	16.8	19.6	11.3	8.8	11.1	9.7
	GST E-way Bills (Total)	30.5	8.5	13.2	16.4	18.9	13.9	14.5	17.0	16.3	19.2	12.9	18.5
	GST E-way Bills (Intra State)	30.0	22.7	14.2	17.9	21.1	15.8	17.3	18.9	16.4	19.0	13.1	19.0
	GST E-way Bills (Inter State)	31.2	-16.2	11.4	13.8	15.0	10.7	9.6	13.6	16.3	19.6	12.5	17.7
	Hotel occupancy rate@	62.5	63.0	70.0	66.6	72.5	64.4	62.3	60.3	62.0	63.1	61.3	
Construction	Average revenue per room	14.8	15.9	12.8	11.0	4.1	6.7	4.8	1.8	2.8	7.6	5.2	
	Tourist Arrivals	19.8	16.8	7.8	10.4	15.8	8.0	7.7	0.3	9.0			
	Steel Consumption	13.6	15.4	6.5	3.8	12.7	11.2	11.5	13.0	21.1	13.8	10.7	10.5
	Cement Production	17.0	-4.8	3.8	4.0	7.8	10.6	0.2	-0.6	1.9	5.5	-3.0	
PMI Index#	Services	58.4	56.9	59.0	61.8	60.6	61.2	60.8	60.2	60.5	60.3	60.9	57.7

<< Contraction ----- Expansion >>

Note: #: Data in levels. *: September 2024 data are based on the monthly average of daily figures. @: Data in rate, not in y-o-y rate of growth. The heatmap is constructed for each indicator for the period July-2021 till date.

Sources: SIAM; Ministry of Railways; CMIE; Tractor and Mechanisation Association; Indian Ports Association; Office of Economic Adviser; GSTN; Airports Authority of India; HVS Anarock; Ministry of Tourism; Joint Plant Committee; and IHS Markit.

Inflation

Headline inflation, as measured by y-o-y changes in the all-India CPI³³, increased to a nine-month high of 5.5 per cent in September 2024 from 3.7 per cent in August 2024 (Chart III.37). The sharp increase in inflation of 1.75 percentage points came from a positive momentum of 60 bps and an unfavourable base effect of 115 bps. All CPI sub-groups – food; fuel and lights; and core (CPI excluding food and fuel) – showed positive momentum, registering m-o-m increases of 1.0 per cent, 0.1 per cent, and 0.3 per cent, respectively.

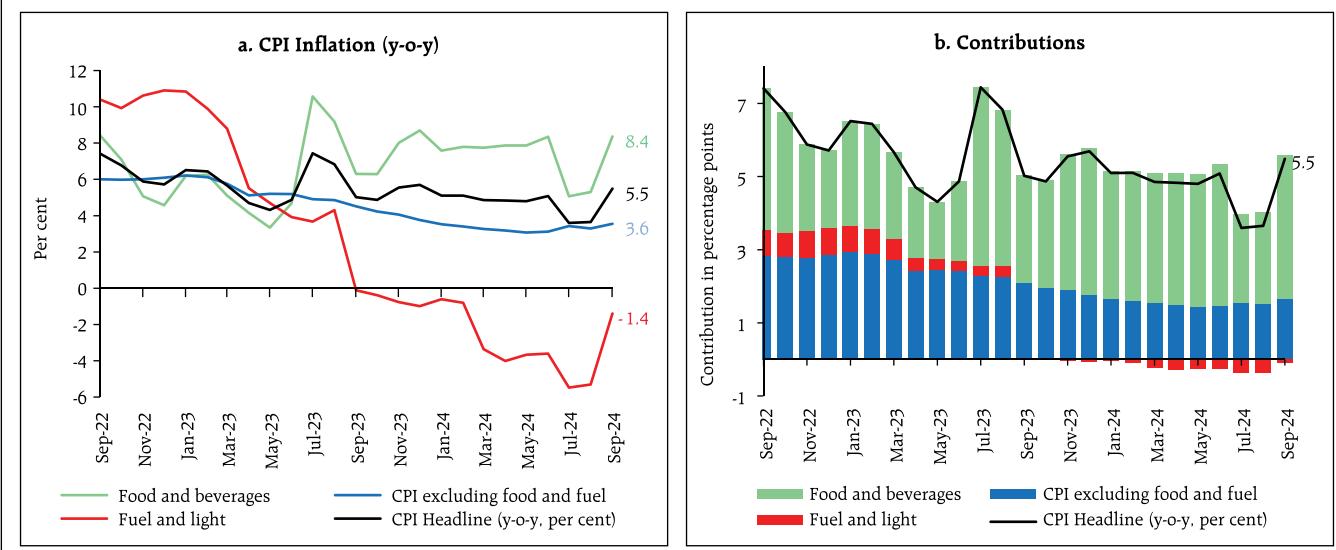
Food inflation increased y-o-y to 8.4 per cent in September from 5.3 per cent in August, driven up by a positive momentum and an unfavourable base effect. In terms of sub-groups, inflation in vegetables, fruits, milk and products, non-alcoholic beverages and prepared meals picked up while that in cereals, meat and fish, eggs, pulses and sugar moderated (Chart III.38). Price of edible oils and fats moved out of deflation after 19 consecutive months, while deflation in spices prices deepened.

Fuel and light deflation narrowed significantly to (-)1.4 per cent in September from (-)5.3 per cent in August, driven by electricity, firewood, and chips prices and a lower rate of deflation in LPG prices reflecting the dissipation of the impact of the 16 per cent reduction in these prices a year ago. Kerosene prices, on the other hand, moved back into deflation.

Core inflation firmed up to 3.6 per cent in September from 3.3 per cent in August. Price growth increased in respect of housing, household goods and services, transport and communication, and personal care and effects while it remained steady for sub-groups such as clothing and footwear, and health. Prices of recreation and amusement, education and pan, tobacco and intoxicants, however, recorded a moderation in growth (Chart III.39).

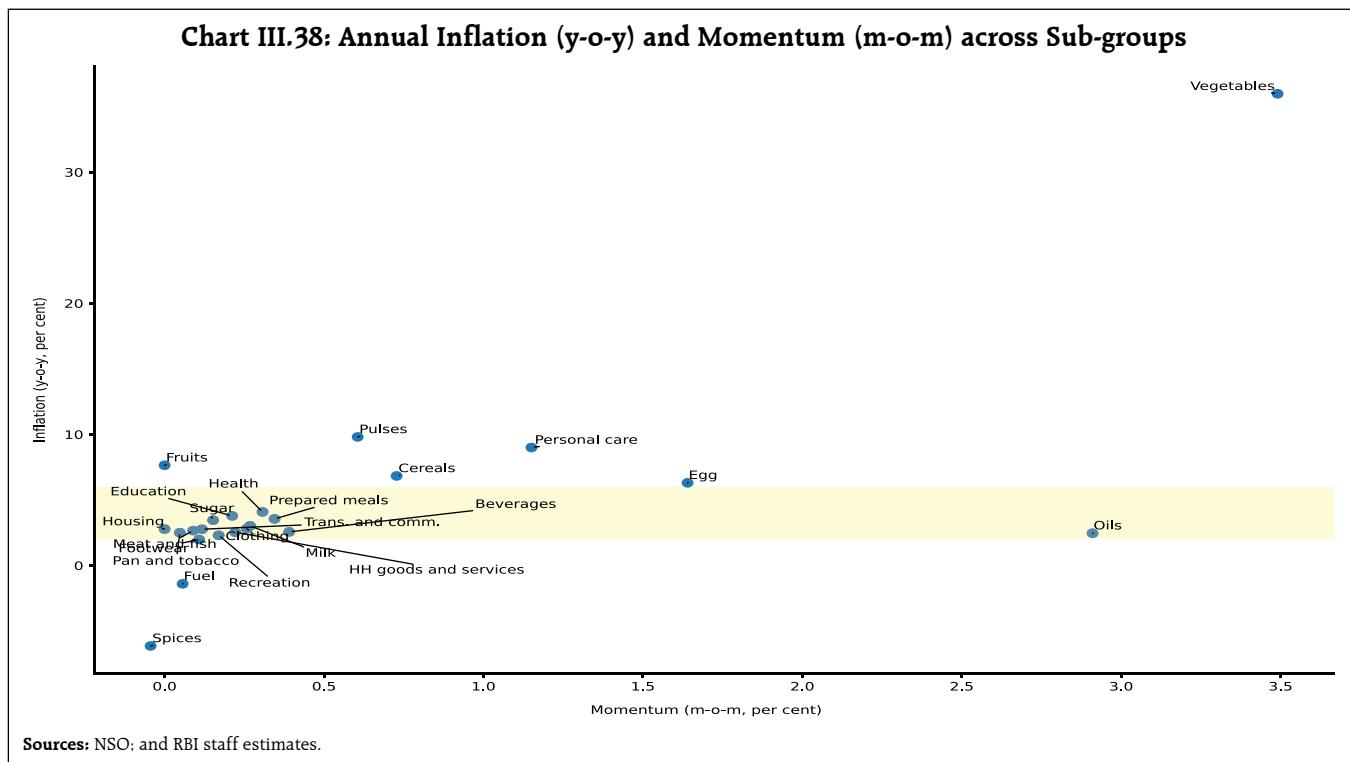
In terms of regional distribution, inflation hardened in both rural and urban areas in September, with rural inflation at 5.9 per cent being higher than urban inflation at 5.0 per cent. Majority of the states registered inflation close to 6 per cent (Chart III.40).

Chart III.37: Trends and Drivers of CPI Inflation



Sources: NSO; and RBI staff estimates.

³³ As per the provisional data released by the NSO on October 14, 2024.



High frequency food price data for October so far (up to 17th) show a moderation in the prices of cereals (mainly for rice) and pulses (except for gram dal). Edible oil prices continued to record a broad based hardening

after the import duty was hiked by 20 percentage points in September 2024. Among key vegetables, potato prices softened, while those of onions and tomatoes recorded a steep increase (Chart III.41).

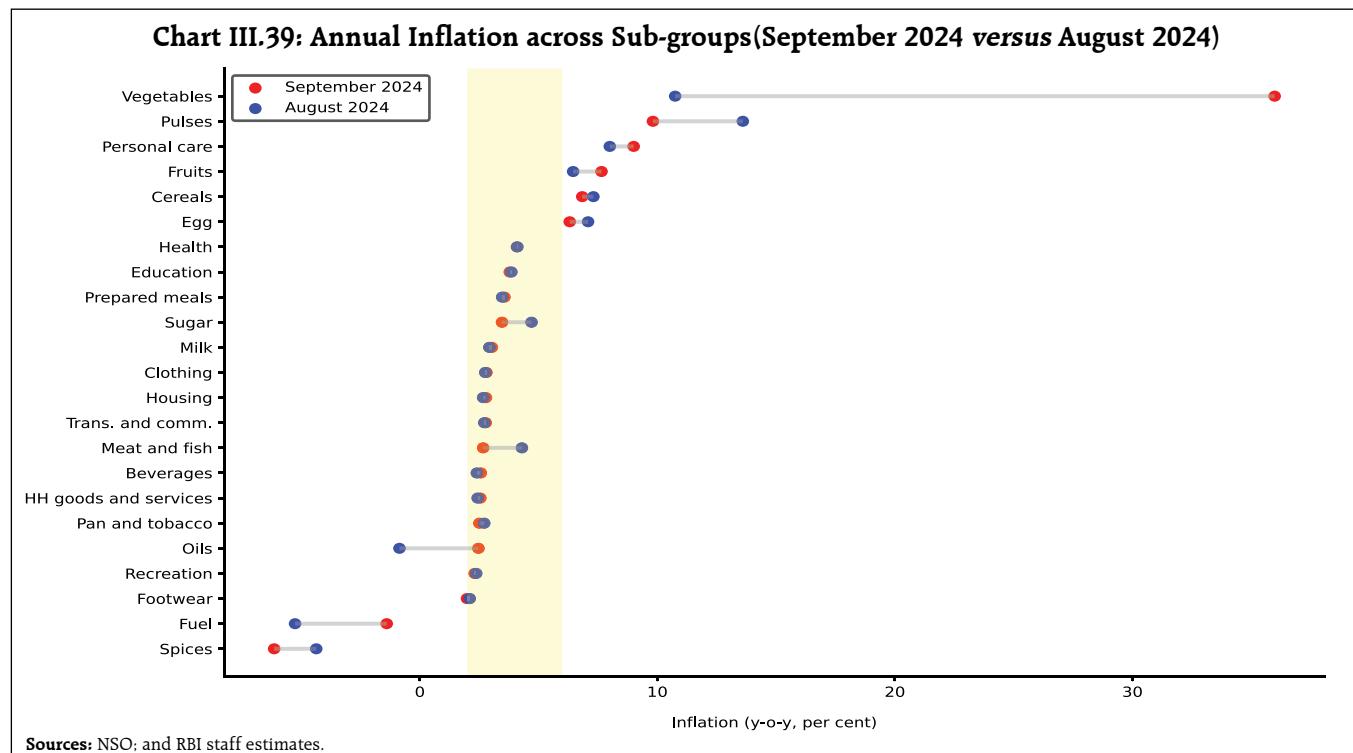


Chart III.40: Spatial Distribution of Inflation: September 2024 (CPI-Combined, y-o-y, per cent)



Note: Map is for illustrative purposes only.

Sources: NSO; and RBI Staff estimates.

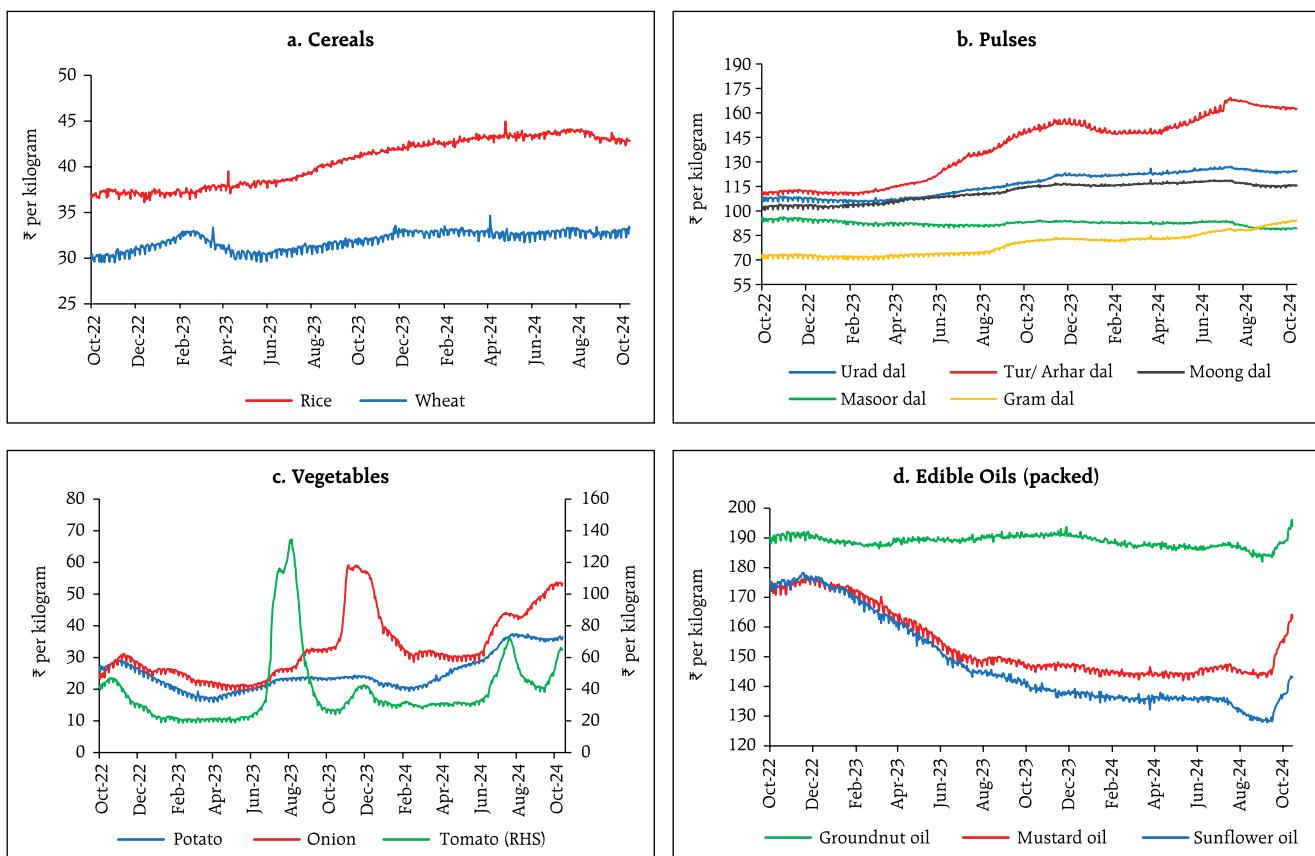
The government scrapped the US\$ 550 a tonne minimum export price on onions (introduced on May

03, 2024) and the export duty was reduced from 40 per cent to 20 per cent in September. These changes could have led to higher export demand, putting upward pressure on domestic prices. The production of both onion and tomato crops during the *kharif* season is, however, expected to be robust on account of favourable monsoon conditions, which may bring about downward pressure on prices (Chart III.42).

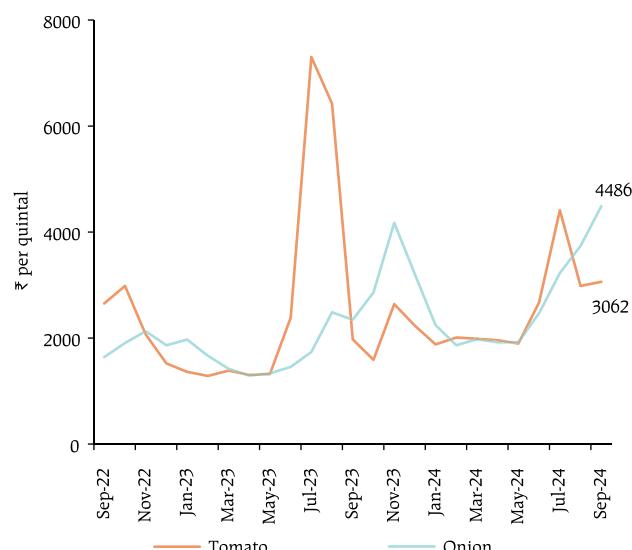
Retail selling prices of petrol and diesel remained unchanged in October so far (up to 17th). LPG prices were also kept unchanged while kerosene prices continued to decline (Table III.4).

The PMIs for September 2024 indicated that the rate of expansion of input costs across both manufacturing and services firms increased, following a moderation in August. On the other hand, selling price pressures across manufacturing

Chart III.41: DCA Essential Commodity Prices



Sources: Department of Consumer Affairs, GoI; and RBI staff estimates.

Chart III.42: Average Mandi Prices

Sources: Food Corporation of India; and Centre for Monitoring Indian Economy.

firms eased to a four-month low, while the services sector recorded the slowest expansion in selling prices in the last 31 months (Chart III.43).

In the latest bi-monthly round of the RBI's survey, households' inflation expectations moderated by

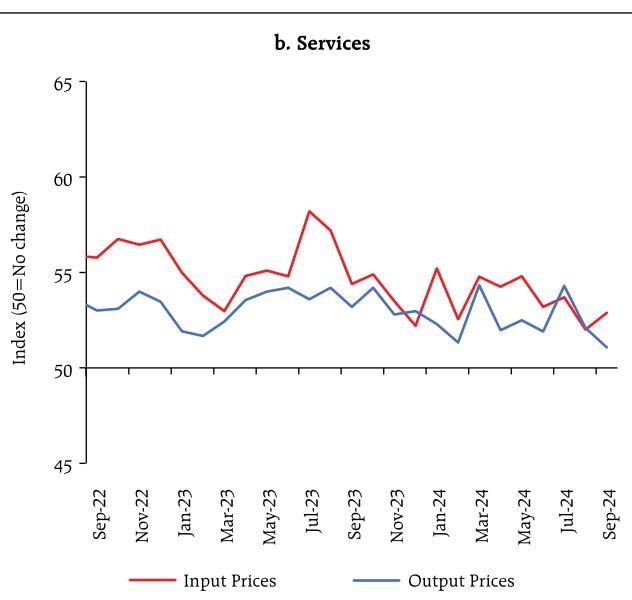
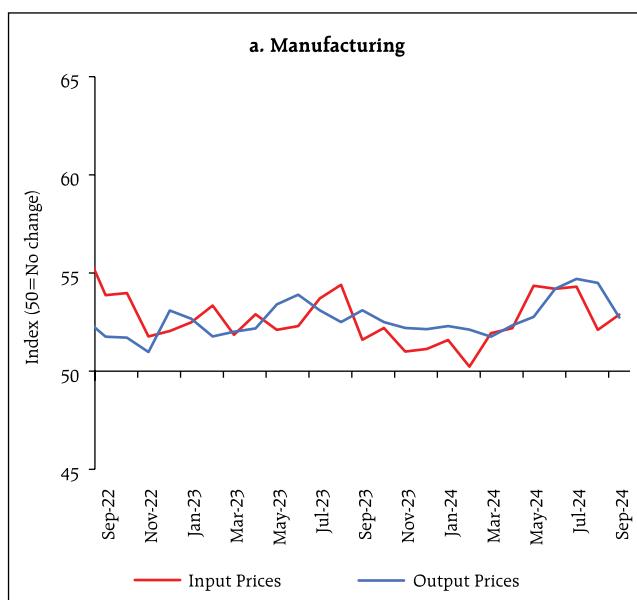
Table III.4: Petroleum Products Prices

Item	Unit	Domestic Prices			Month-over-month (per cent)	
		Oct-23	Sep-24	Oct-24^	Sep-24	Oct-24^
Petrol	₹/litre	102.92	100.97	100.97	0	0
Diesel	₹/litre	92.72	90.42	90.42	0	0
Kerosene (subsidised)	₹/litre	57.95	45.78	42.93	-1.9	-6.2
LPG (non-subsidised)	₹/cylinder	913.25	813.25	813.25	0	0

^ : For the period October 1-17, 2024.

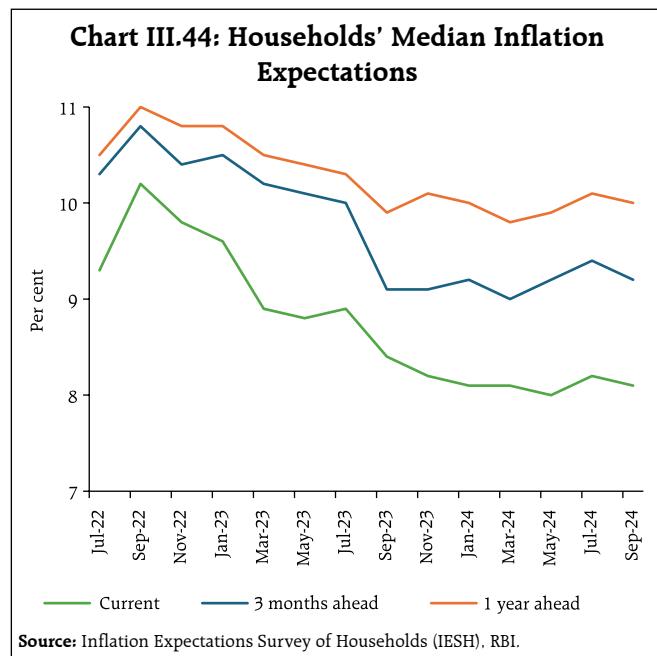
Note: Other than kerosene, prices represent the average Indian Oil Corporation Limited (IOCL) prices in four major metros (Delhi, Kolkata, Mumbai and Chennai). For kerosene, prices denote the average of the subsidised prices in Kolkata, Mumbai and Chennai. Sources: IOCL; Petroleum Planning and Analysis Cell (PPAC); and RBI staff estimates.

20 bps and 10 bps for the 3-months and one-year horizons, respectively. Respondents' perception of current inflation has been generally on a declining trend since September 2022, barring two episodes of marginal increase (Chart III.44).

Chart III.43: PMI: Input and Output Prices

Note: A level of 50 corresponds to no change in activity and a reading above 50 denotes expansion and vice versa.

Source: S&P Global.



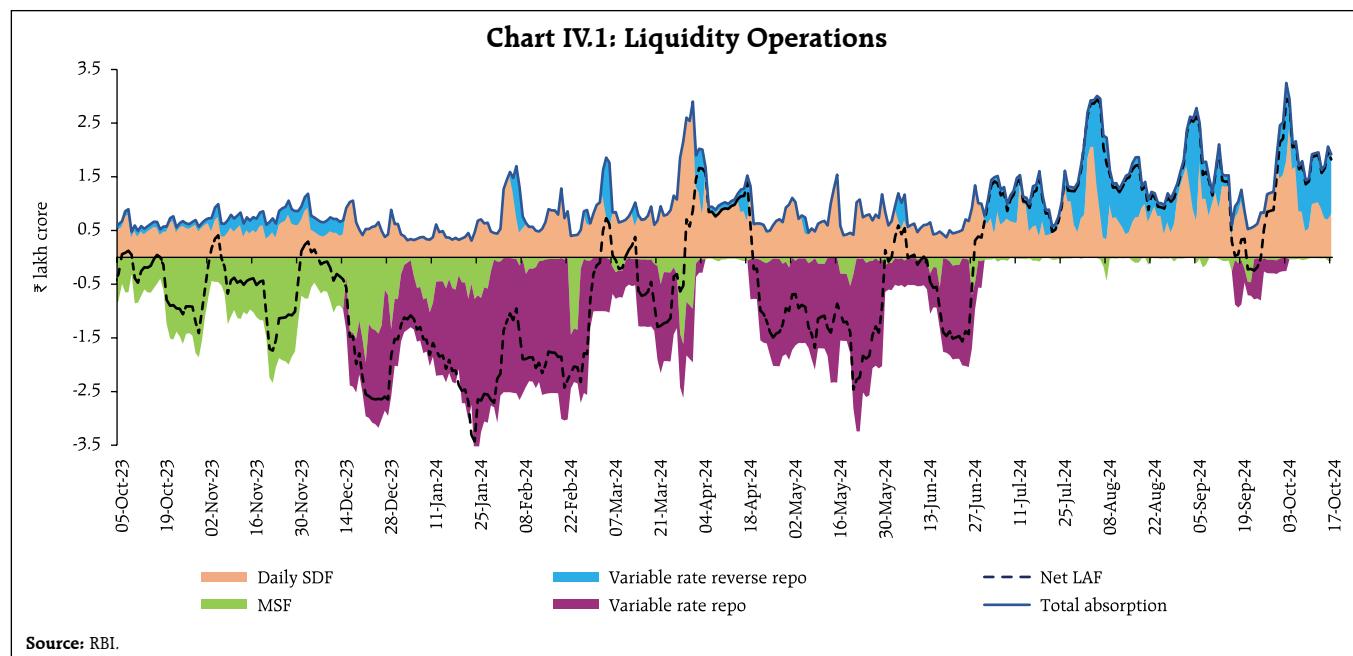
IV. Financial Conditions

In the bimonthly monetary policy meeting of October 2024, the Monetary Policy Committee (MPC) decided to keep the policy repo rate unchanged at 6.50 per cent by a majority of 5:1. In a unanimous decision, the MPC changed the stance to neutral from withdrawal of accommodation while remaining

unambiguously focused on a durable alignment of inflation with the target, while supporting growth.

System liquidity mostly remained in surplus during September-October so far (up to October 17), owing to a pickup in government spending and the return of currency to the banking system. There was, however, a brief period of liquidity deficit during the latter half of September (September 21-25) on account of advance tax payments and GST related outflows. Overall, the average daily net absorption under the liquidity adjustment facility (LAF) was ₹1.2 lakh crore during September 16 to October 17, 2024, as against ₹1.53 lakh crore during August 16 and September 15, 2024 (Chart IV.1).

In view of the evolving liquidity conditions, the Reserve Bank conducted one main and three fine-tuning variable rate repo (VRR) operations during September 17-24, cumulatively injecting ₹2.1 lakh crore into the banking system to provide adequate liquidity. As liquidity returned to the banking system, one main and six fine-tuning variable rate reverse repo (VRRR) auctions were conducted to mop up surplus liquidity amounting to ₹4.1 lakh

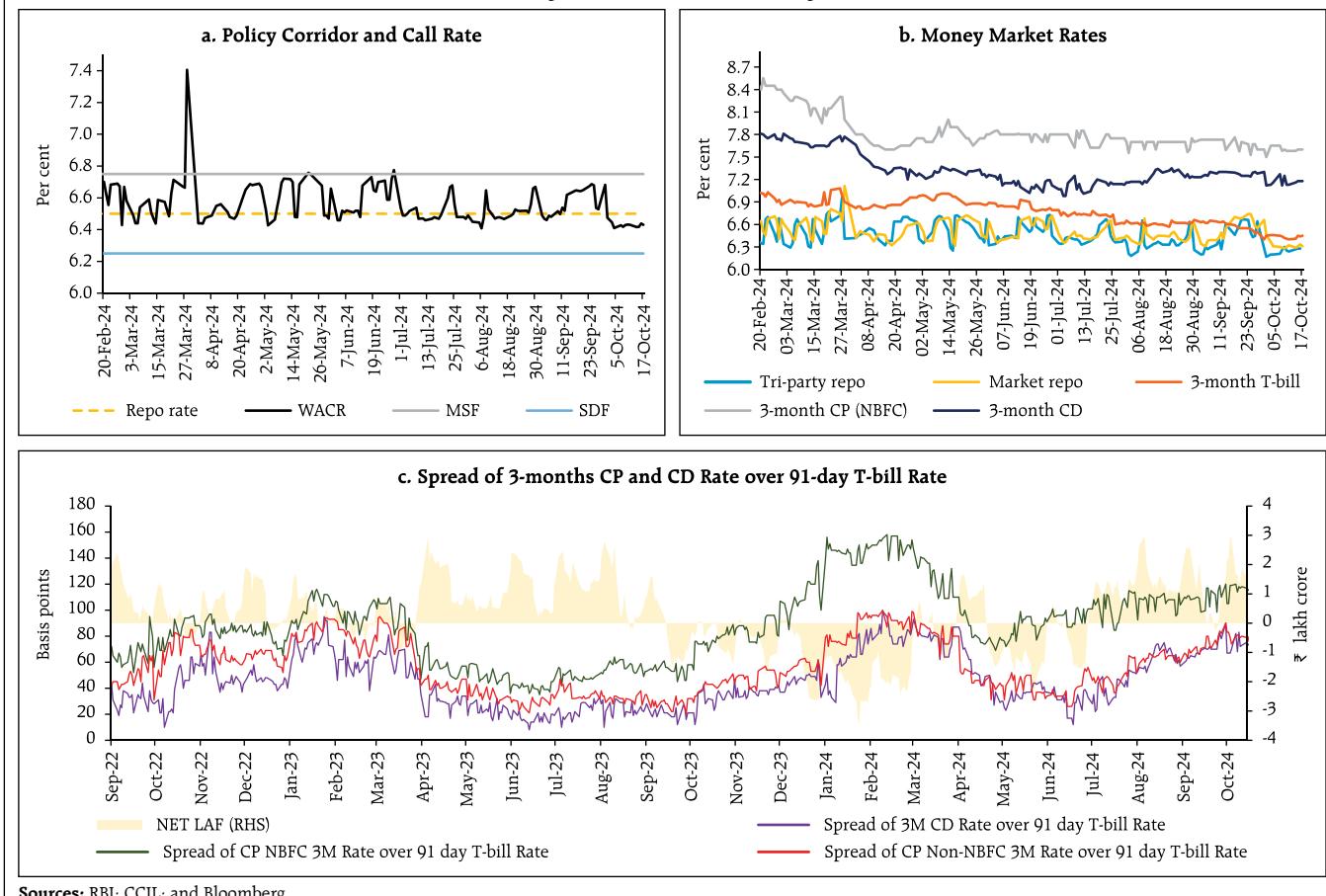


crore during September 30 to October 17, 2024. Banks continue to show reluctance in parting with liquidity for longer tenors, as evidenced by lower offer-cover ratios in the main operation. Of the average total absorption of ₹1.54 lakh crore during September 16 to October 17, 2024, placement of funds under the standing deposit facility (SDF) accounted for 68 per cent. Average daily borrowings under the marginal standing facility (MSF) increased to ₹0.08 lakh crore during September 16 to October 17, 2024 from ₹0.05 lakh crore during August 16 and September 15, 2024.

The weighted average call rate (WACR) averaged 6.50 per cent during September 16 to October 17 as compared with 6.52 per cent during August 16 to September 15, 2024 (Chart IV.2a). The WACR,

however, firmed up and traded above the policy repo rate for a brief period (September 21-25) on account of liquidity deficit in the banking system due to reasons discussed earlier. On September 30, the WACR spiked by 15 bps on account of the usual half year end tightness brought about by (i) banks reducing their exposure in the uncollateralised market, which lowers their requirements of provisioning for capital adequacy; and (ii) mutual funds (MFs) reducing their lending in the tri-party repo segment because of redemption pressures. These circumstances notwithstanding, the WACR remained within the policy corridor. In the collateralised segment, the tri-party repo rate moved in tandem with the WACR, averaging 11 bps below the policy repo rate during the same period (Chart IV.2b).

Chart IV.2: Policy Corridor and Money Market Rates



Sources: RBI; CCIL; and Bloomberg.

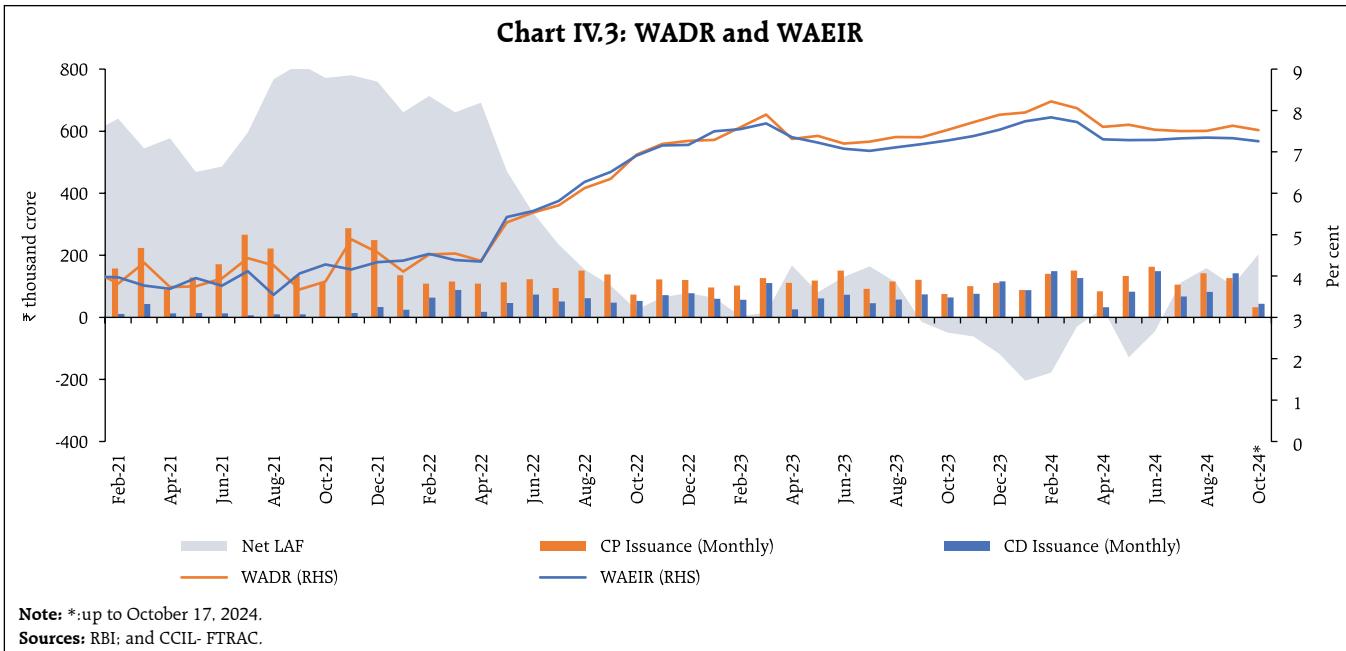
In the short-term money market segment, yields on 3-month treasury bills (T-bills) softened during September 16 and October 17 on account of lower short-term borrowing requirements of the Government, as reflected in cancellation of T-bill auctions in the second half of September. Rates on 3-month commercial paper (CPs) issued by NBFCs and 3-month CDs have eased during the same period (Chart IV.2b).

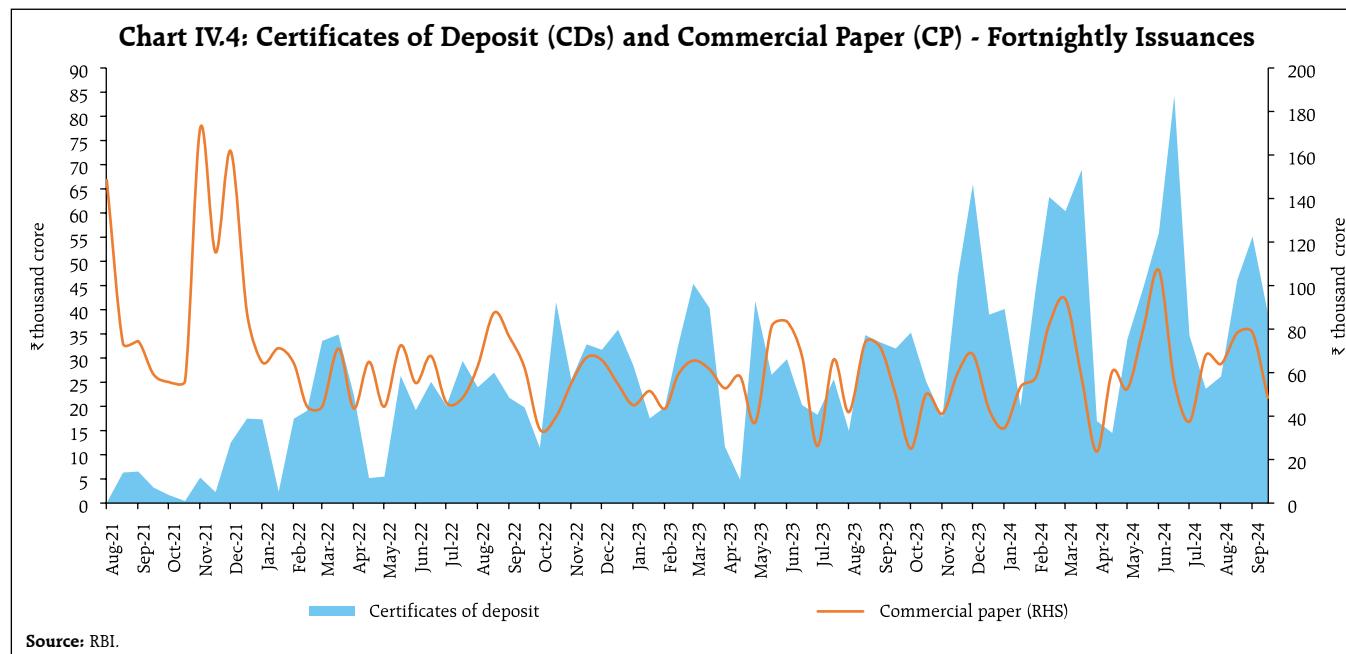
The average risk premium in the money market (spread between 3-month CP and 91-day T-bill rates) was at 113 bps during the period September 16 – October 17, 2024, 6 bps higher than during August 16 to September 15, 2024. In the secondary market, the spread of 3-month CP (NBFC) and CD rates over the 91-day T-bill rate stood at 115 bps and 73 bps, respectively, during October 2024 (upto October 17), higher than 71 bps and 28 bps a year ago (Chart IV.2c). Though the spreads in general tend to ease during periods of surplus liquidity, they have increased in recent months, mainly due to a fall in 91-Day T-Bill rates.

The weighted average discount rate (WADR) of CPs and weighted average effective interest rate (WAEIR) of CDs generally evolved in line with monetary conditions (Chart IV.3). The WADR stood at 7.51 per cent in October 2024 (upto October 15), higher than 7.45 per cent during the corresponding period of previous year. Also, WAEIR increased to 7.27 per cent (upto October 17, 2024) from 7.23 per cent a year ago, reflecting the large volume of CD issuances.

In the primary market, CD issuances grew by 69 per cent (y-o-y) to ₹5.58 lakh crore during 2024-25 (up to October 4) as banks turned to the CD market for their funding requirements (Chart IV.4). Banks prefer to bridge the funding gap through issuances of short-term CDs rather than raising deposit rates. CP issuances stood at ₹8.0 lakh crore during 2024-25 (up to October 15), higher than ₹7.34 lakh crore in the corresponding period of the previous year. With the Reserve Bank increasing risk weights on bank loans to NBFCs, CP issuances by NBFCs increased as they looked towards diversifying their funding sources.

Chart IV.3: WADR and WAEIR

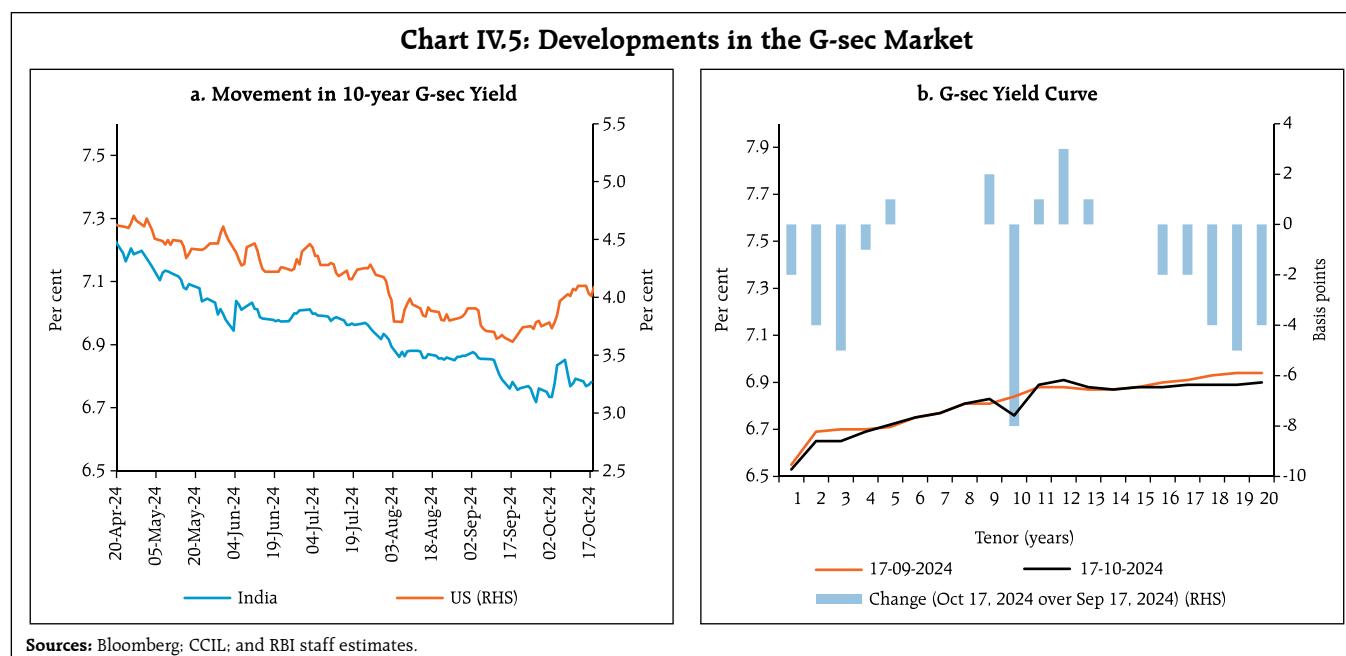


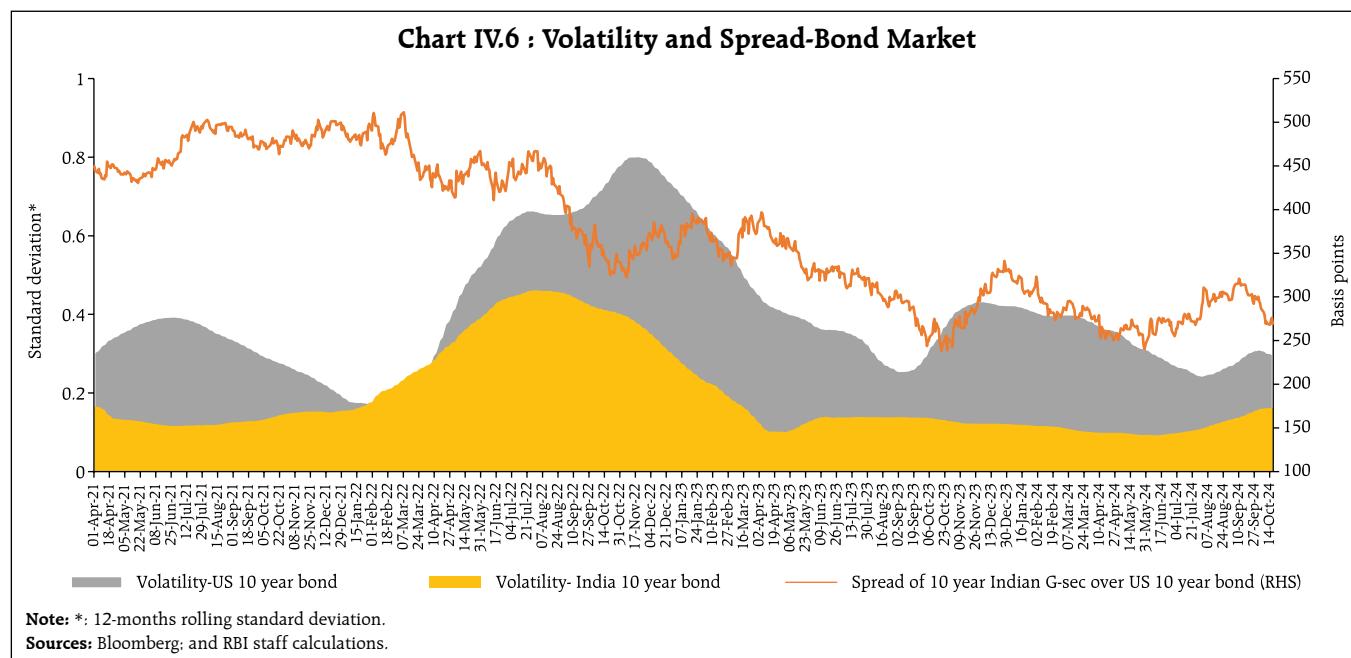


In the fixed income segment, domestic bond yields generally softened in September on account of benign domestic inflation, improved global investor sentiment, falling US treasury yields and decline in crude oil prices, but they exhibited some hardening in early October. The yield on the 10-year Indian benchmark government security (G-sec) moved in a range of 6.72 - 6.85 per cent during September 16 –

October 17, 2024 (Chart IV.5a). The average term spread (10-year *minus* 91-day T-bills) remained stable at 29 bps during September 16 – October 17, as compared with 23 bps during August 16 - September 15. G-sec yield broadly remained stable across the mid-segment (except 10-year) of the term structure. (Chart IV.5b).

The spread of 10-year Indian G-sec yield over that of 10-year US bonds has remained range-bound,





after falling to a 17-year low in October 2023. As on October 18, 2024, the spread stood at 271 bps as against 243 bps a year ago. The volatility of yields in the Indian bond market has been low compared to that of the US treasury market, though both have risen since August 2024. The unwinding of yen carry trade and uncertainty regarding magnitude and timing of monetary policy easing provided upsides (Chart IV.6).

Corporate bond yields moderated in tandem with softening G-sec yields. Risk premia generally remained unchanged (except for 1-year AAA category) during September 16 - October 15, 2024 (Table IV.1). Corporate bond issuances were ₹79,856 crore during August 2024 as compared with ₹49,329 crore a year ago. During 2024-25 (up to August), however, corporate bond issuances were marginally lower at ₹3.3 lakh crore than ₹3.4 lakh crore during the same period of the previous year.

Reserve money (RM) excluding the first-round impact of change in the cash reserve ratio (CRR) recorded a growth of 7.0 per cent (y-o-y) as on October 11, 2024 (6.1 per cent a year ago) [Chart IV.7].

Growth in currency in circulation (CiC), the largest component of RM, increased to 6.7 per cent (y-o-y) as on October 11, 2024 from 3.0 per cent as on May 17, 2024, on account of the base effect of the withdrawal of ₹2000 banknotes³⁴ – 98 per cent has returned to the banking system, mostly in the form of deposits (as on September 30, 2024).

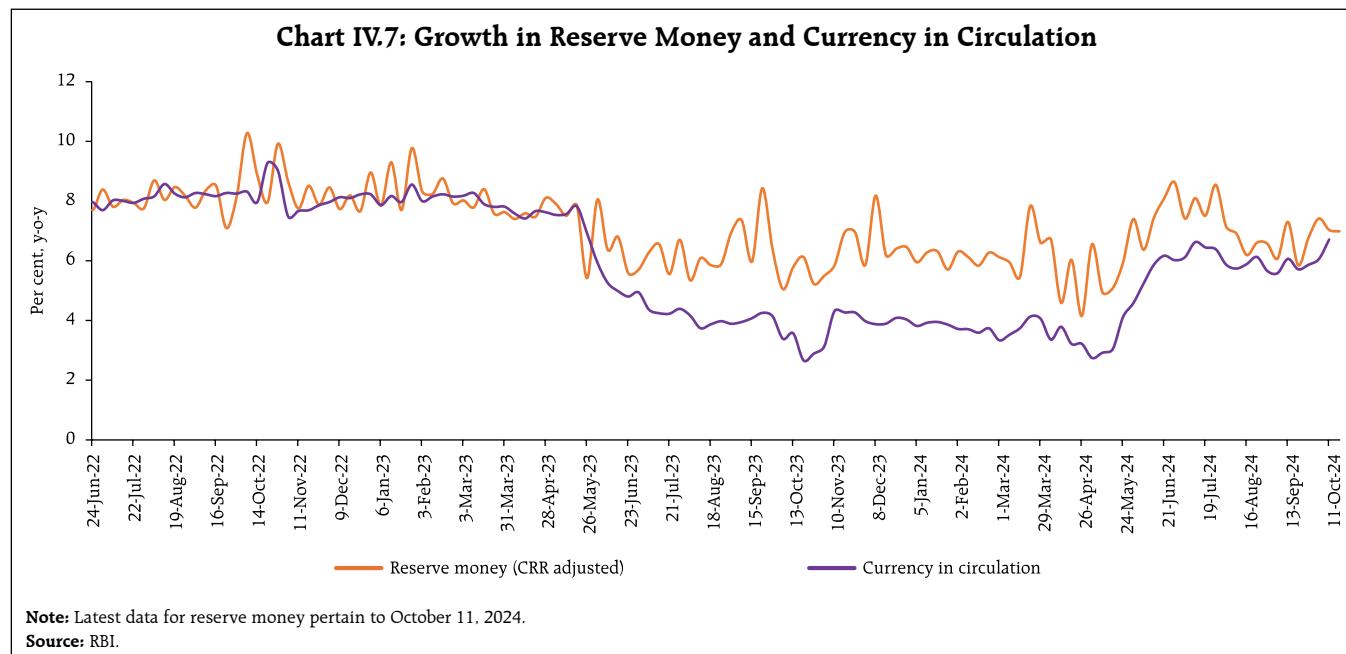
Table IV.1: Financial Markets - Rates and Spread

Instrument	Interest Rates (per cent)			Spread (bps) (Over Corresponding Risk-free Rate)		
	Aug 16, 2024 – Sept 15, 2024	Sept 16, 2024 – Oct 15, 2024	Variation	Aug 16, 2024 – Sept 15, 2024	Sept 16, 2024 – Oct 15, 2024	Variation
1	2	3	(4 = 3-2)	5	6	(7 = 6-5)
Corporate Bonds						
(i) AAA (1-year)	7.94	7.83	-11	112	117	5
(ii) AAA (3-year)	7.81	7.74	-7	95	95	0
(iii) AAA (5-year)	7.75	7.65	-10	85	83	-2
(iv) AA (3-year)	8.56	8.49	-7	170	170	0
(v) BBB- (3-year)	12.14	12.07	-7	528	528	0

Note: Yields and spreads are computed as averages for the respective periods.

Sources: FIMMDA; and Bloomberg.

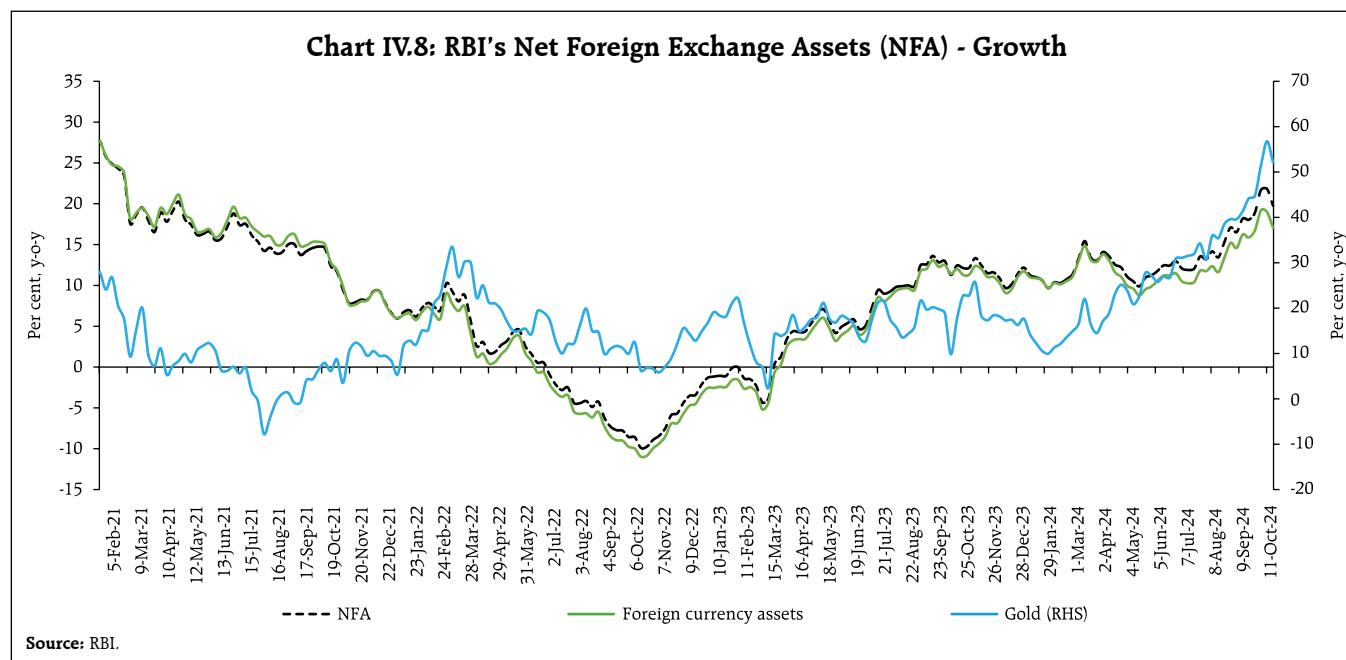
³⁴ Announced on May 19, 2023.



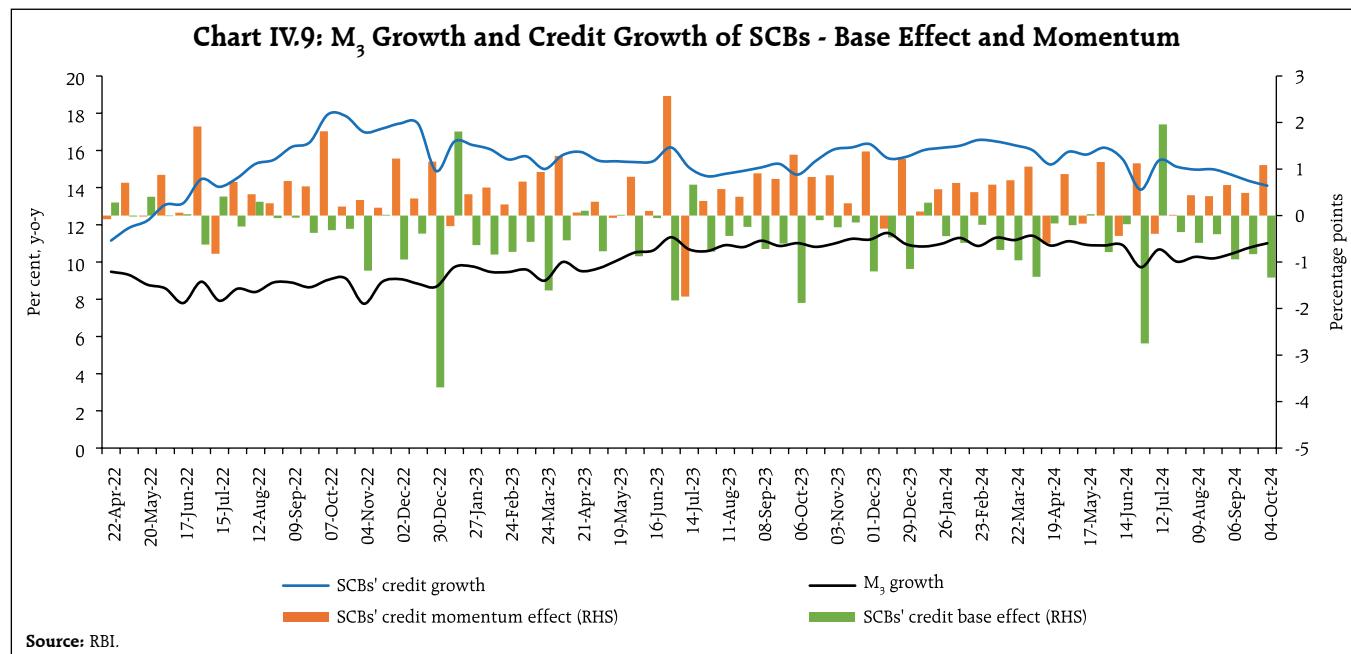
On the sources side (assets), RM comprises net domestic assets (NDA) and net foreign assets (NFA) of the Reserve Bank. Foreign currency assets (accounting for more than 90 per cent of NFA) increased by 19.8 per cent (y-o-y) as on October 11, 2024. Gold – the other major component of NFA – grew by 52.1 per

cent, the highest since August 2020, mainly due to revaluation gains from rising gold prices (Chart IV.8).

Money supply (M_3) rose by 11.0 per cent (y-o-y) as on October 4, 2024 (same as a year ago).³⁵ Aggregate deposits with banks, accounting for around 87 per cent of M_3 , increased by 11.7 per cent (12.2 per cent



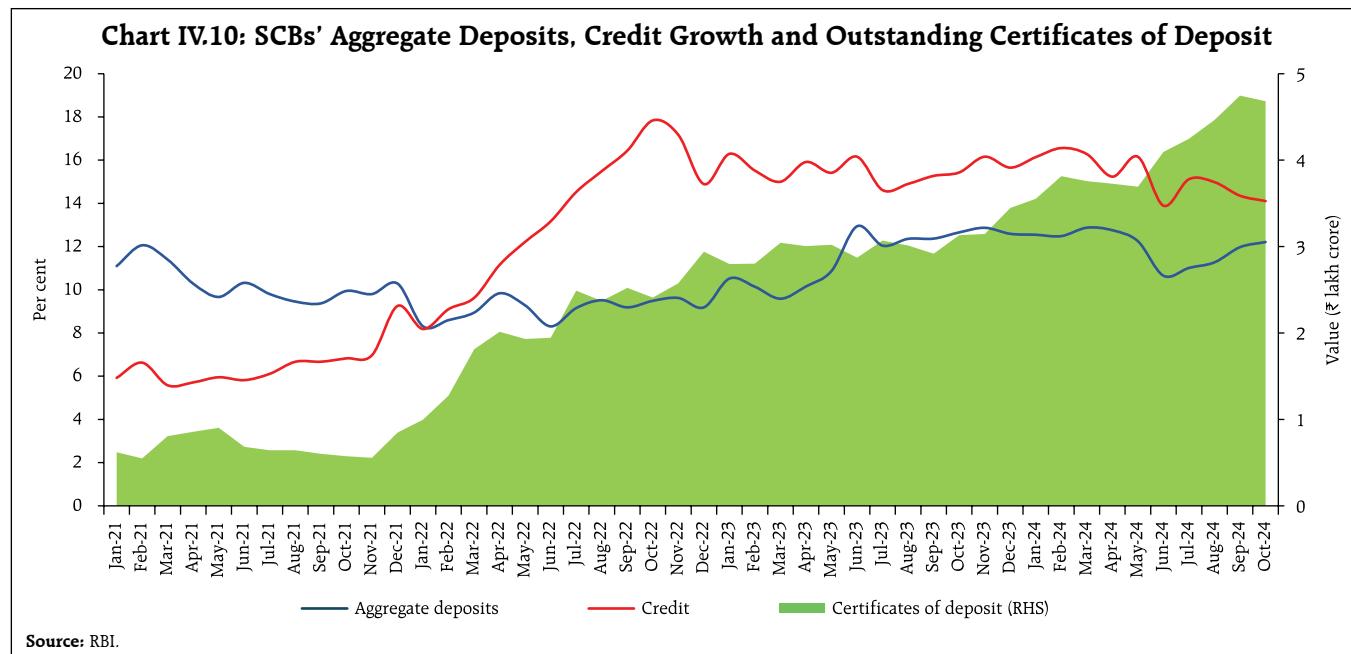
³⁵ Excluding the impact of the merger of a non-bank with a bank (with effect from July 1, 2023).

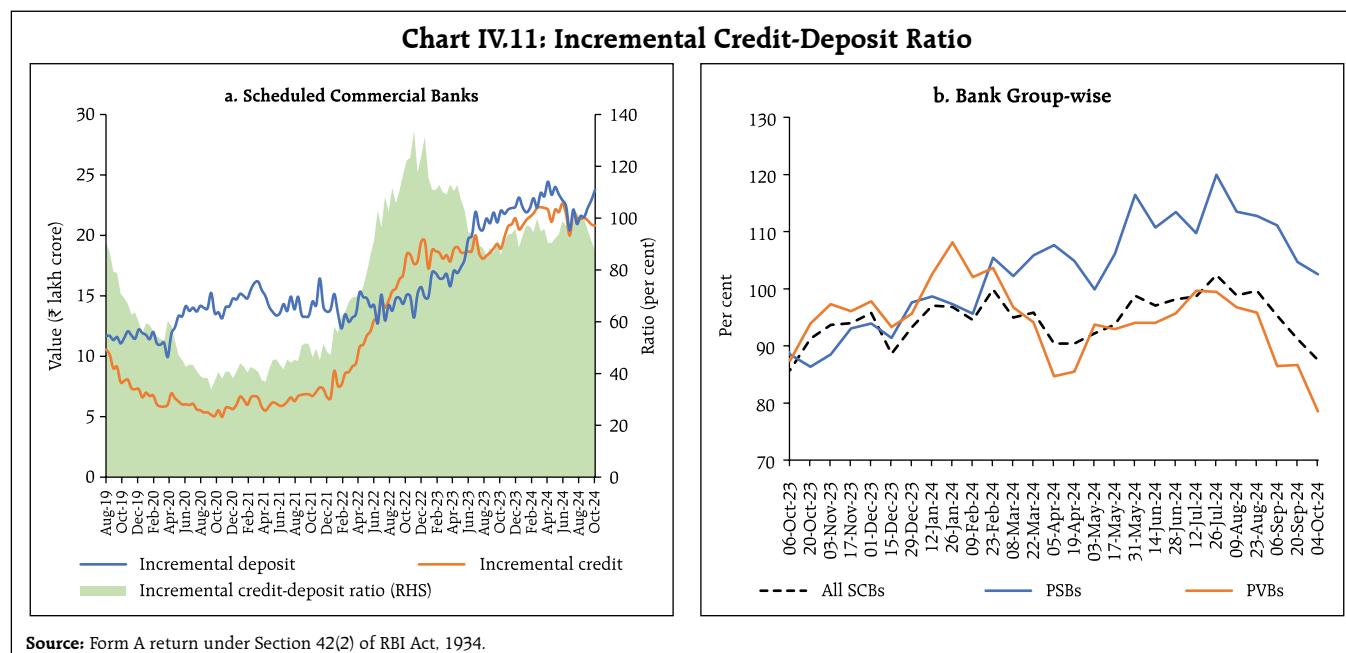


a year ago). Scheduled commercial banks' (SCBs') credit growth stood at 14.1 per cent as on October 4, 2024 (14.7 per cent a year ago) [Chart IV.9].

SCBs' deposit growth (excluding the impact of the merger), which witnessed an increase in the wake of withdrawal of ₹2000 banknotes, continued to remain in double digits since April 2023 (Chart IV.10).

While SCBs' incremental credit-deposit (CD) ratio declined from 95.8 as at end-March 2024 to 87.5 as on October 4, 2024, there has been a narrowing of the gap between credit and deposits (Chart IV.11a). For public and private sector banks, the incremental CD ratio stood at 102.5 per cent and 78.5 per cent (88.5 per cent and 87.4 per cent a year ago), respectively, as on October 4, 2024 (Chart IV.11b). With the statutory





requirements for CRR and statutory liquidity ratio (SLR) at 4.5 per cent and 18 per cent, respectively, around 77 per cent of deposits were available with the banking system for extending credit as on October 4, 2024.

In response to the 250 bps hike in the policy repo rate since May 2022, banks have revised upwards their repo-linked external benchmark-based lending rates (EBLRs) by a similar magnitude. The median 1-year marginal cost of funds-based lending rate (MCLR) of SCBs has increased by 170 bps during May 2022 to September 2024. Consequently, the weighted average lending rates (WALRs) on fresh

and outstanding rupee loans have increased by 190 bps and 119 bps, respectively, during May 2022 to August 2024. On the deposit side, the weighted average domestic term deposit rates (WADTDRs) on fresh and outstanding rupee term deposits of SCBs increased by 243 bps and 190 bps, respectively, during the same period (Table IV.2).

Transmission across bank groups indicates that the increase in the WALR on fresh rupee loans was higher in the case of public sector banks (PSBs) vis-à-vis private banks; however, in the case of deposits, it was higher for PSBs during the same period (Chart IV.12).

Table IV.2: Transmission to Banks' Deposit and Lending Rates

(Variation in bps)

Period	Repo Rate	Term Deposit Rates		Lending Rates			
		WADTDR – Fresh Deposits	WADTDR- Outstanding Deposits	EBLR	1-Yr. MCLR (Median)	WALR - Fresh Rupee Loans	WALR- Outstanding Rupee Loans
Easing Phase Feb 2019 to Mar 2022	-250	-259	-188	-250	-155	-232	-150
Tightening Period May 2022 to Aug* 2024	+250	243	190	250	170	190	119

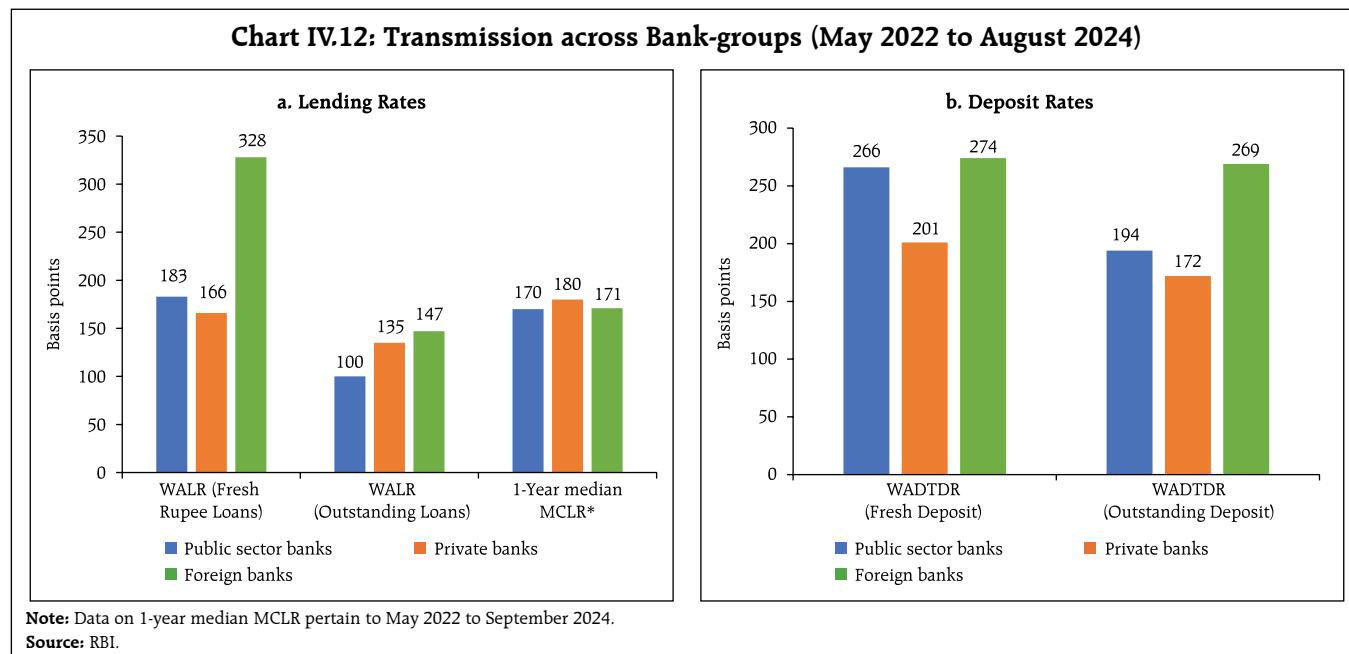
Notes: Data on EBLR pertain to 32 domestic banks.

*: Data on EBLR and MCLR pertain to September 2024.

WALR: Weighted Average Lending Rate; **WADTDR:** Weighted Average Domestic Term Deposit Rate;

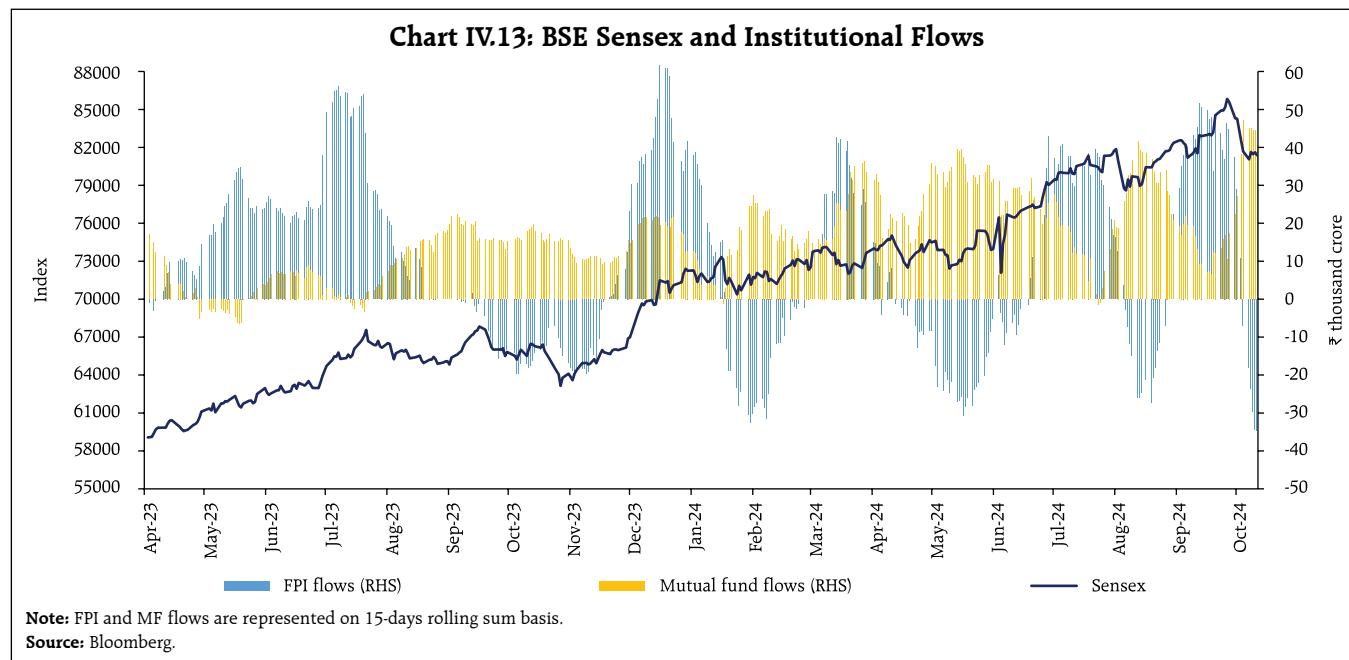
MCLR: Marginal Cost of Funds-based Lending Rate; **EBLR:** External Benchmark based Lending Rate.

Source: RBI staff estimates.



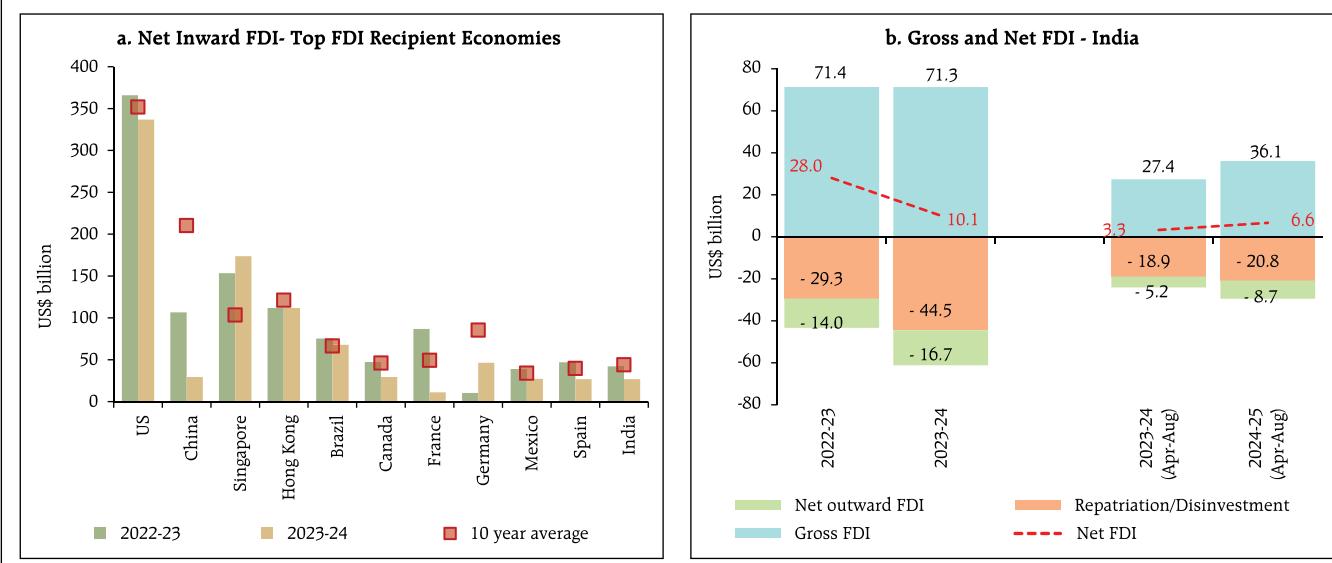
The Government of India kept rates on small savings schemes unchanged for Q3:2024-25.³⁶ Rates on most of the small savings instruments are now above the formula based rates, except rates on public provident funds and post office recurring deposits.³⁷

During September-October 2024 so far, Indian equity markets registered losses, with the BSE Sensex decreasing by 1.4 per cent to close at 81,225 on October 18, 2024 (Chart IV.13). After remaining rangebound in the first half of September, the BSE Sensex experienced a bullish run to breach the



³⁶ https://dea.gov.in/sites/default/files/Q3_2425.pdf

³⁷ Chapter IV: Monetary Policy Report - October 2024, RBI.

Chart IV.14: Foreign Direct Investment Flows

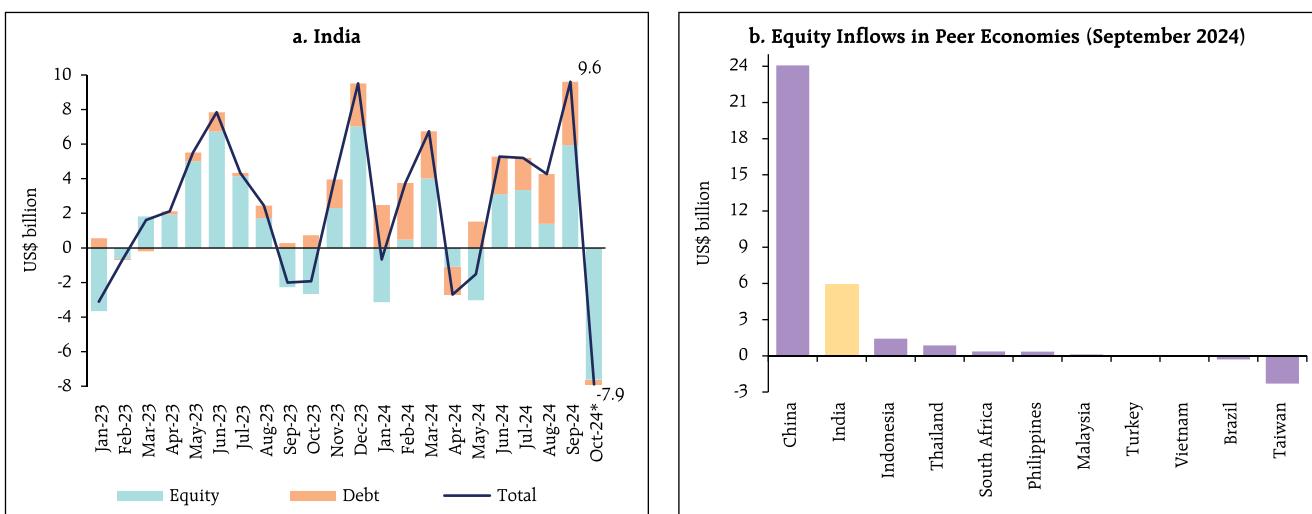
Sources: RBI; and IMF.

historical 85,000 mark, mostly supported by cues from global markets. Thereafter, the markets exhibited a declining bias as domestic sentiments remained subdued amidst escalation of geopolitical conflicts in the Middle East, rise in crude oil prices and media reports of portfolio outflows from other Asian EMEs to China. Weaker-than-expected corporate earnings releases for Q2:2024-25 also weighed on the sentiment in domestic equity markets. During September, FPIs remained net buyers in the domestic equity markets but turned net sellers in October (up to October 16, 2024) amid risk-off sentiment.

Net FDI inflows has moderated across the top FDI recipient economies (Chart IV.14a). During 2024-25, FDI flows to India recorded signs of revival as gross inward FDI during April-August 2024 increased to US\$ 36.1 billion from US\$ 27.4 billion a year ago, while net FDI at US\$ 6.6 billion during April-August 2024 more than doubled from a year ago (Chart IV.14b). Around two-thirds of the gross FDI inflows were directed towards manufacturing, financial services, communication services, and electricity and other energy sectors. About three-fourths of the flows

were sourced from Singapore, Mauritius, the UAE, the Netherlands, and the US.

Net foreign portfolio investment (FPI) inflows to the tune of US\$ 9.6 billion in September 2024 rose to their highest level since December 2020 (Chart IV.15a). Net FPI inflows in the equity segment accelerated in September 2024 to a nine-month high level to US\$ 5.9 billion, boosted by the rate cut in the US, unwinding of Yen carry trade, and optimistic domestic growth prospects. Among peer EMEs, Indian equities received the highest inflows after China in September (Chart IV.15b). The debt segment continues to receive steady FPI inflows to the tune of US\$ 23.5 billion since October 2023, following the announcement of the inclusion of Indian sovereign bonds in JP Morgan's Government Bond Index – Emerging Markets (GBI-EM). Among sectors, financial services and telecommunications received the highest FPI inflows during September. Net FPI outflows amounted to US\$ 7.9 billion during October 2024 (up to October 16), triggered by rising risk-off sentiment globally.

Chart IV.15: Net Portfolio Investments

Notes: 1. Debt includes investments under the voluntary retention route and hybrid instruments.

2. *: Data up to October 16, 2024.

Sources: National Securities Depository Limited (NSDL); and Institute of International Finance.

Net accretions to non-resident deposits rose to US\$ 7.8 billion during April-August 2024 from US\$ 3.7 billion a year ago, led by accretions to all three accounts, namely, Non-Resident (External) Rupee Accounts [NR(E)RA], Non-Resident Ordinary (NRO) and Foreign Currency Non-Resident [FCNR(B)] accounts.

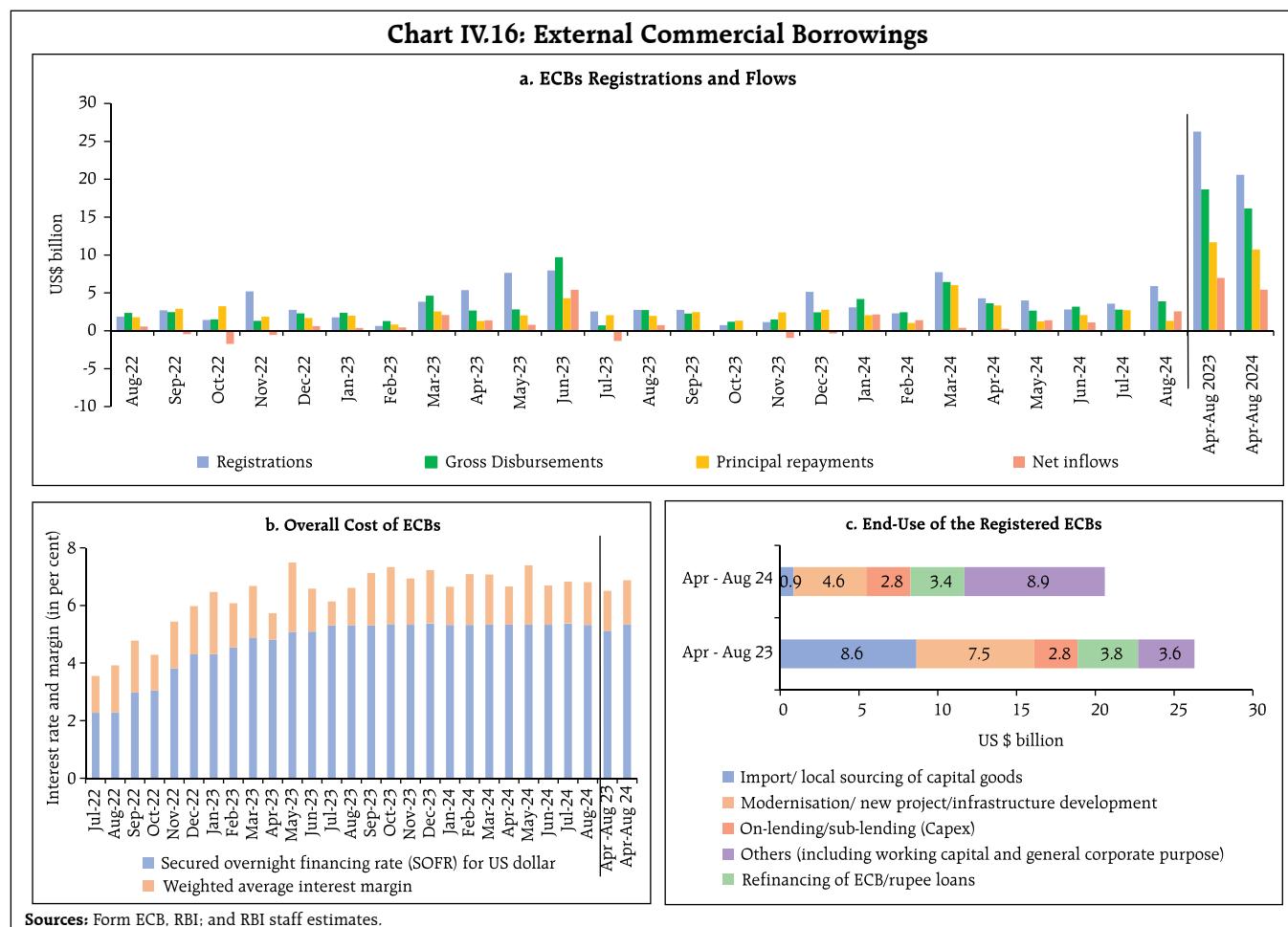
During April-August 2024, both registrations (US\$ 20.6 billion) and gross disbursements (US\$ 16.1 billion) of external commercial borrowings (ECBs) were lower than in the corresponding period last year (Chart IV.16a). Adjusting for principal repayments, net ECB inflows (US\$ 5.4 billion) in 2024-25 so far were lower than in the corresponding period previous year. The overall cost of ECBs rose by 37 bps during April-August 2024 over the corresponding period last year. The weighted average interest margin (WAIM) over the benchmark rates increased by 14 bps during April-August 2024 *vis-à-vis* the corresponding period last year (Chart IV.16b).

Two-fifths of the total ECB loans raised during April-August 2024 were for capital expenditure purposes (including on-lending and sub-lending for capex) [Chart IV.16c].

India's foreign exchange reserves reached a historical high of US\$ 704.9 billion on September 27, 2024. As on October 11, it stood at US\$ 690.4 billion, covering for 11.8 months of imports and more than 101 per cent of total external debt outstanding at end-June 2024 (Chart IV.17a). During 2024 so far (as on October 11), India's foreign exchange reserves increased by US\$ 68.0 billion, second only to China among major foreign exchange reserves holding countries (Chart IV.17b).

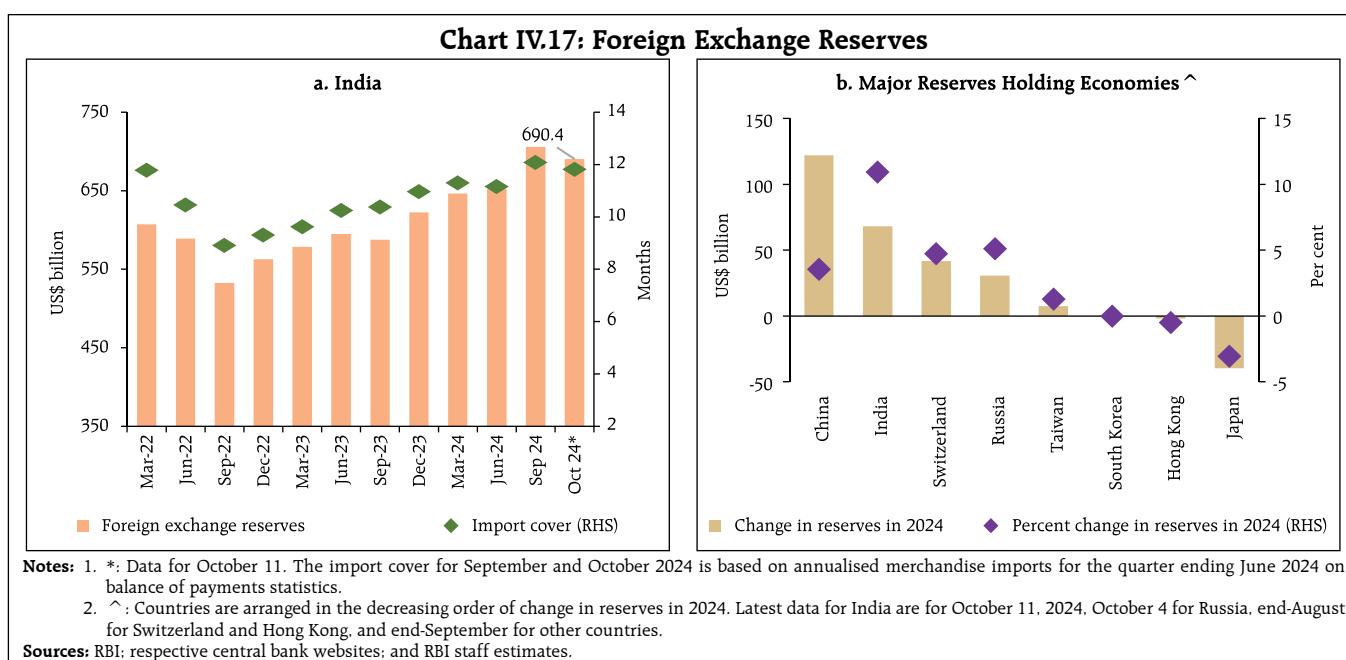
The Indian rupee (INR) remained the least volatile major currency during September 2024, depreciating by 0.1 per cent (m-o-m) *vis-à-vis* the US dollar (Chart IV.18).

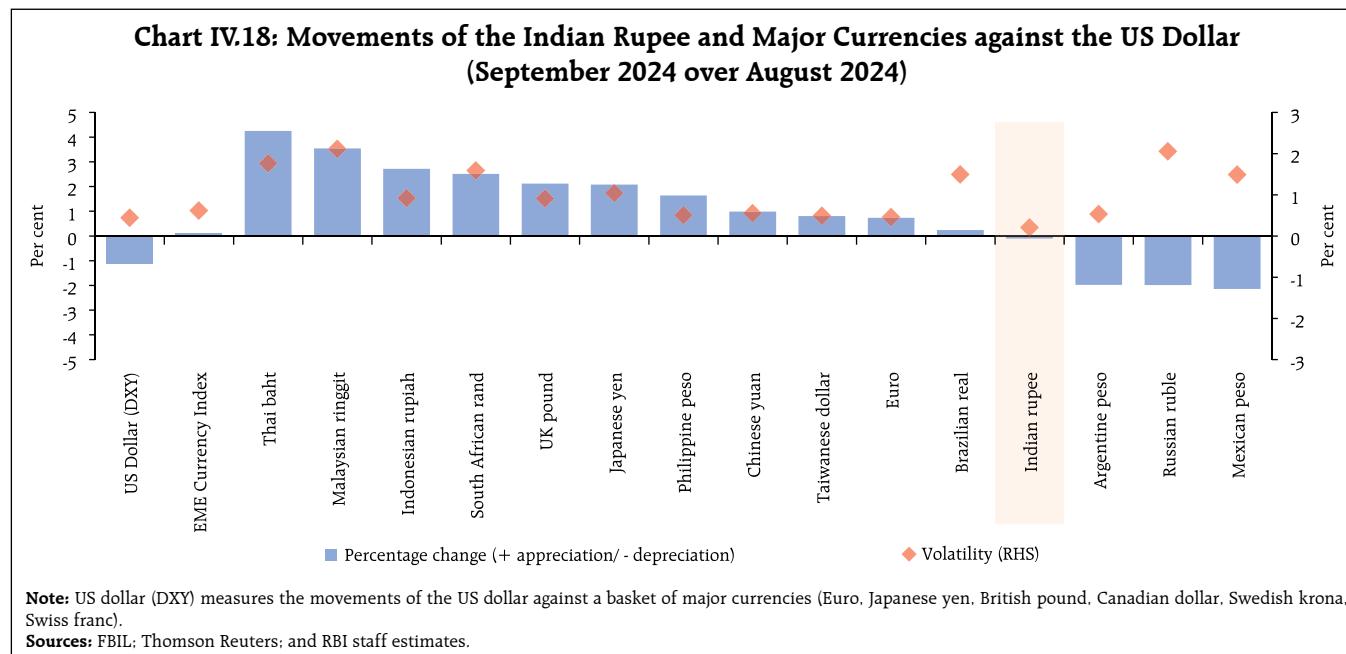
In terms of the 40-currency real effective exchange rate (REER), the INR depreciated by



0.3 per cent (m-o-m) in September 2024 as depreciation of the INR in nominal effective terms

more than offset positive relative price differentials (Chart IV.19).

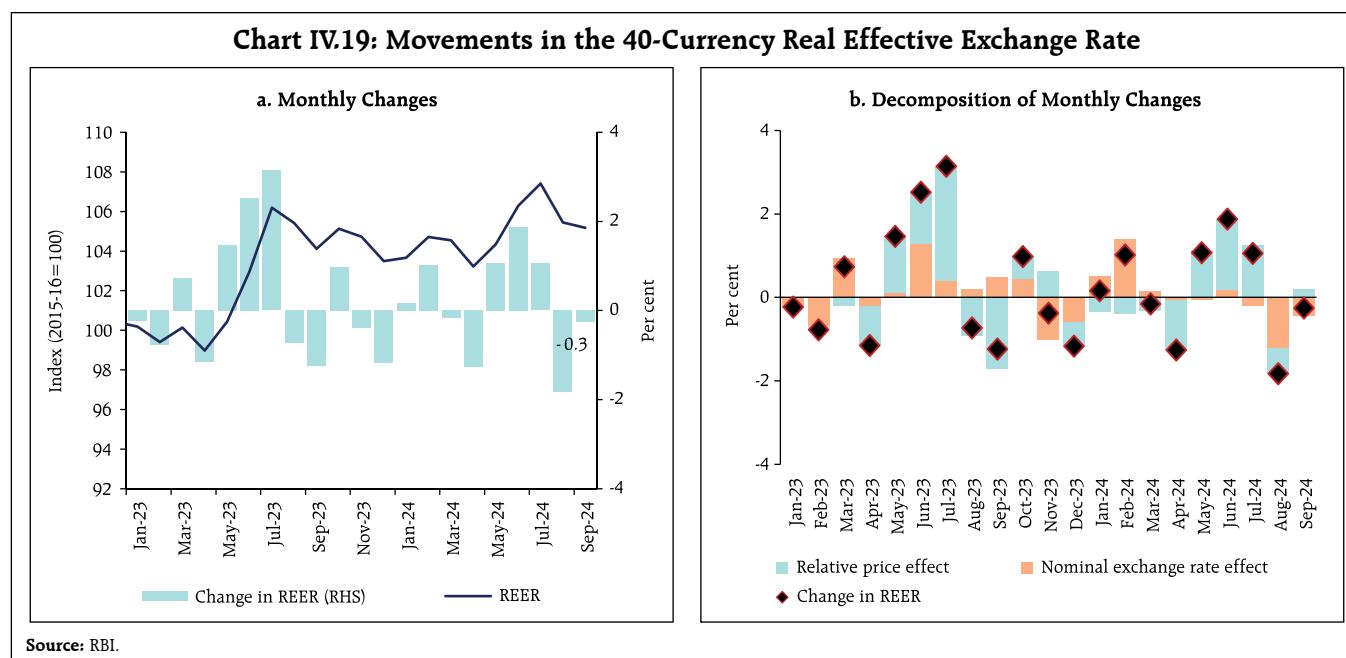


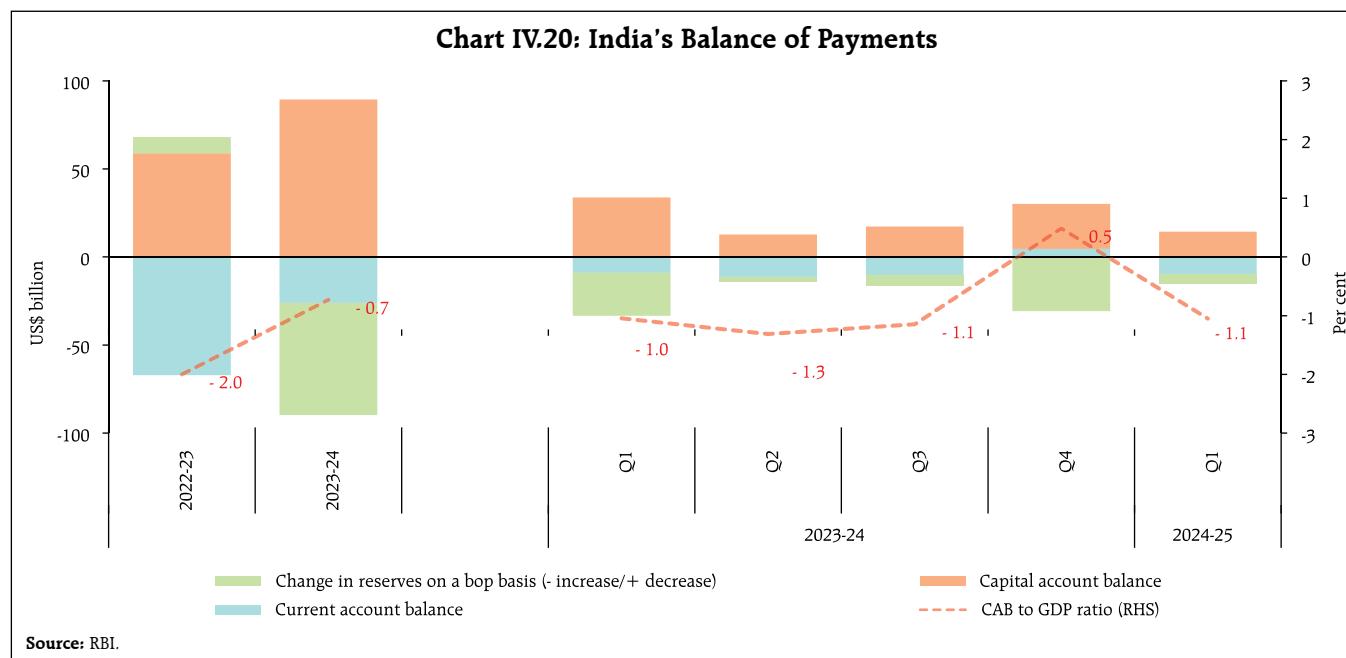


India's current account balance (CAB) recorded a deficit of 1.1 per cent of GDP in Q1:2024-25 as against a surplus of 0.5 per cent in the preceding quarter (Q4:2023-24) and a deficit of 1.0 per cent a year ago (Q1:2023-24). The widening of the current account deficit in Q1:2024-25 from a year ago was mainly due to a rise in the merchandise trade deficit, while

services exports and remittance receipts improved over the period. There was an accretion of US\$ 5.2 billion to the foreign exchange reserves (excluding valuation effects) in Q1:2024-25 as compared to US\$ 24.4 billion in Q1:2023-24 (Chart IV.20).

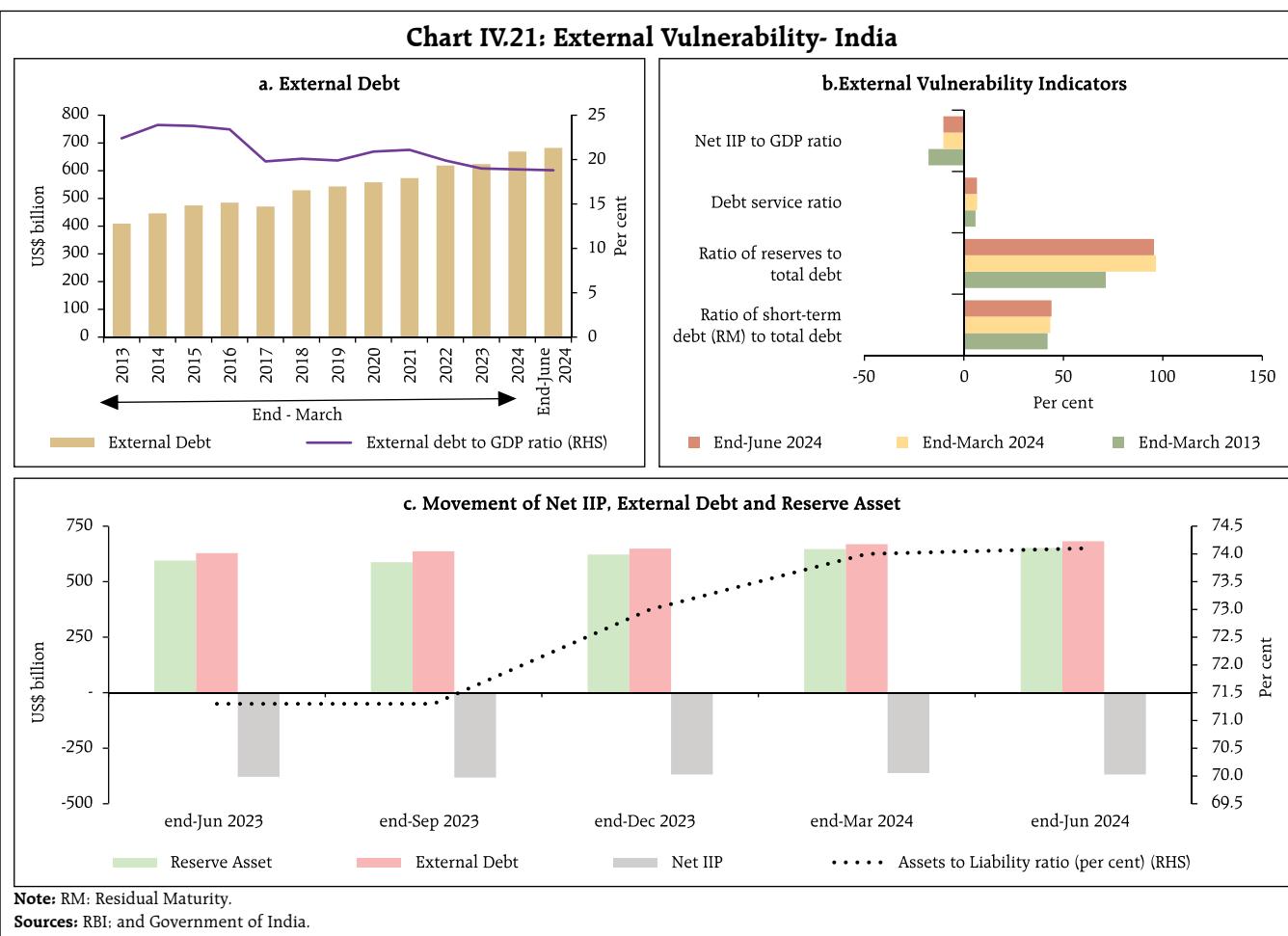
At end-June 2024, India's external debt at US\$ 682.3 billion stood at 18.8 per cent of GDP,





slightly lower than 18.9 per cent at end-March 2024 (Chart IV.21a). India's external sector remains

resilient as indicated by sustainable levels of key external indicators at end-June 2024 (Chart IV.21b).



India's net international investment position (IIP) increased by US\$ 6.7 billion during Q1:2024-25 due to a rise in foreign-owned financial assets in India *vis-à-vis* residents' overseas financial assets. However, the ratio of India's international assets to international liabilities improved to 74.1 per cent in June 2024 compared to 71.3 per cent in June 2023, indicating a stronger external position than a year ago (Chart IV.21c).

Payment Systems

Digital transactions continued advancing across various payment modes in September 2024 (Table IV.3). The Real Time Gross Settlement (RTGS) reached ₹177.8 lakh crore during the month—the highest in 2024-25 so far. Among the retail modes, transactions under the Unified Payments Interface (UPI), the National Electronic Funds Transfer (NEFT) and the National Automated Clearing House (NACH) posted double digit growth (y-o-y) in September. UPI scaled a new high of 15 billion transactions in the month, while its average ticket size declined to ₹1,372, indicating growing adoption of digital modes for small-value transactions. This is further corroborated by the bulk of the peer-to-merchant (P2M) and peer-to-peer (P2P) UPI volumes falling under the 'less

than ₹500' transaction band. Credit card issuances rose by 15 per cent in August 2024, bringing the total to 10.5 crore cards. Overall, in H1:2024-25, total digital payments increased (y-o-y) by 38 per cent (43 per cent in 2023-24) in volume and 19 per cent (15 per cent 2023-24) in value.³⁸

Various initiatives aimed at leveraging digital platforms for efficient disbursement of funds were introduced in September. The National Payments Corporation of India (NPCI) has enabled e-RUPI vouchers through the *Bharat* Interface for Money (BHIM) app for artisans under the PM *Vishwakarma* Scheme to disburse the scheme amount, promoting the adoption of digital payment modes.³⁹ Similarly, the Central Bank Digital Currency (CBDC) pilot project has been integrated with a state government scheme for efficient fund transfer.⁴⁰

As part of ongoing efforts to internationalise UPI, NPCI International Payments Limited (NIPL) has partnered with the Ministry of Digital Transformation of Trinidad and Tobago to develop a real-time payments platform, making it the first Caribbean nation to adopt India's home-grown payment mode.⁴¹

Table IV.3: Growth in Select Payment Systems

(y-o-y in per cent)

Payment Modes	Transaction Volume				Transaction Value			
	Aug-23	Aug-24	Sep-23	Sep-24	Aug-23	Aug-24	Sep-23	Sep-24
RTGS	16.0	8.9	7.9	9.1	17.8	15.8	5.5	22.3
NEFT	35.6	41.2	29.2	41.3	19.1	14.5	7.0	15.1
UPI	60.8	41.3	55.7	42.5	46.9	30.7	41.4	30.7
IMPS	4.8	-7.3	2.3	-9.1	15.3	12.4	11.7	11.4
NACH	14.1	23.9	20.2	20.2	17.9	25.6	14.1	27.1
NETC	13.3	6.8	15.4	6.5	21.9	8.4	19.9	10.4
BBPS	23.9	86.1	20.2	106.6	46.5	258.6	43.8	268.5

Note: **RTGS:** Real Time Gross Settlement, **NEFT:** National Electronic Funds Transfer, **UPI:** Unified Payments Interface, **IMPS:** Immediate Payment Service, **NACH:** National Automated Clearing House, **NETC:** National Electronic Toll Collection, **BBPS:** Bharat Bill Payment System.

Source: RBI.

³⁸ Data for September 2024 are provisional.

³⁹ NPCI. (2024). BHIM to Empower Artisans under PM *Vishwakarma* Scheme through e-RUPI Vouchers.

⁴⁰ Subhadra Yojana of Odisha State Government (PIB, 2024).

⁴¹ NPCI. (2024). NPCI International to Develop UPI-like Real-Time Payments Platform in Trinidad and Tobago.

In the Statement on Developmental and Regulatory Policies announced on October 09, 2024, the Reserve Bank increased the per-transaction limit for UPI123 Pay to ₹10,000 (from ₹5,000) and for the UPI Lite wallet to ₹1,000 (from ₹500). Additionally, the overall limit for UPI Lite was raised to ₹5,000 (from ₹2,000). It has also been proposed to introduce a 'beneficiary account name look-up facility' for RTGS and NEFT transactions to boost customer confidence and reduce the risk of wrong credits and frauds.⁴²

V. Conclusion

Going forward, uncertainty surrounding global economic prospects could persist in the near term with heightened geopolitical tensions in the Middle East. Increase in commodity prices, especially of crude oil and metals, raise pass-through risks for net importer countries. The future course of monetary policy the world over would, therefore have to take into account the risks to both growth and inflation from recent commodity price shocks. The response of the Chinese economy to the stimulus measures announced also remains unclear, complicating the outlook for the global economy.

In India, aggregate demand is poised to shrug off the temporary slowdown in momentum in the second quarter of 2024-25 as festival demand picks up pace and consumer confidence improves. Rural demand is expected to get a boost from the improved agricultural outlook. Private investment should pick up steam in response to signs of pick-up in consumption demand and rising business optimism. With the financial sector ready to intermediate resources for productive investment, buffered by healthy balance sheets, and the government's continued thrust on capex, the investment outlook appears bright. The ongoing strengthening of global trade⁴³ could provide fillip

to external demand for India's exports although escalation of geopolitical tensions remains a potential threat.

In terms of aggregate supply, above normal rainfall in the monsoon season augurs well for overall *kharif* production in the country as well as for reservoir storage, which brightens the *rabi* season outlook. The increased likelihood of *La Niña* conditions developing during the post-monsoon season of 2024 is beneficial for overall precipitation, although the possibility of excessive rainfall damaging the standing *kharif* crops remains a risk.

Liquidity conditions remain in surplus mode. The Reserve Bank will continue to be nimble and flexible in its liquidity management operations and will deploy an appropriate mix of instruments to modulate both frictional and durable liquidity so as to ensure that interest rates evolve in an orderly manner.⁴⁴ Indian equity markets have scaled fresh peaks in the current year on strong macroeconomic fundamentals and long-term growth potential. Concerns, however, remain around stretched valuations and uncertainty surrounding geopolitical conflicts in the Middle East which got reflected in the pullback witnessed in October. Markets are likely to tread cautiously with an eye on corporate earnings reports for Q2:2024-25 and trends in global markets. Despite these concerns, the pipeline for primary market issuances remains strong.

India's external sector is showing resilience despite rising geopolitical tensions. On October 08, 2024, the Financial Times Stock Exchange (FTSE) – Russell announced that it would include India's sovereign bonds in its Emerging Markets Government Bond Index (EMGBI) over a six-month period from September 2025 with a share of 9.35 per cent on a market value weighted basis. This is expected to

⁴² RBI Press Release. Statement on Developmental and Regulatory Policies. October 09, 2024.

⁴³ Global goods trade has continued to recover in the third quarter of 2024 despite headwinds, as per the WTO goods trade barometer (September 2024).

⁴⁴ Governor's Statement: October 9, 2024, Monetary Policy Statement 2024-25.

boost flows to the debt segments significantly, apart from positioning India as a favourable investment destination. The innate strength of India's external sector lies in its strong macroeconomic fundamentals, supported by high foreign exchange reserves.

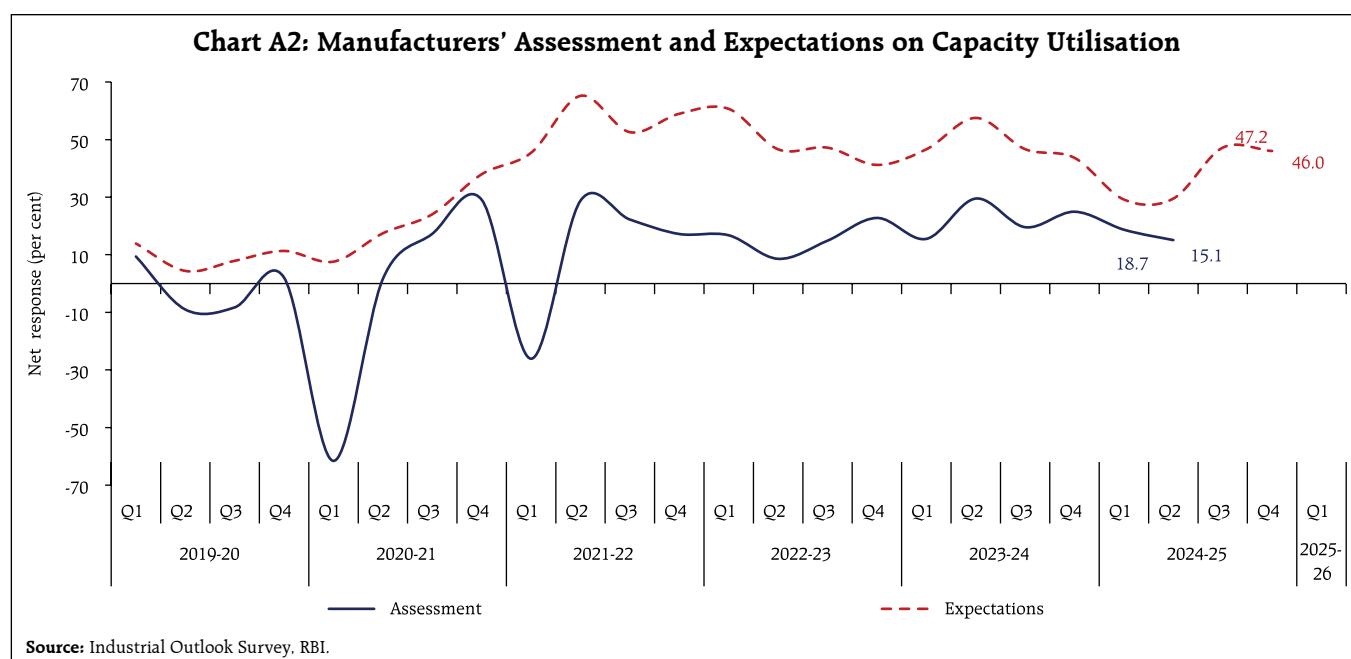
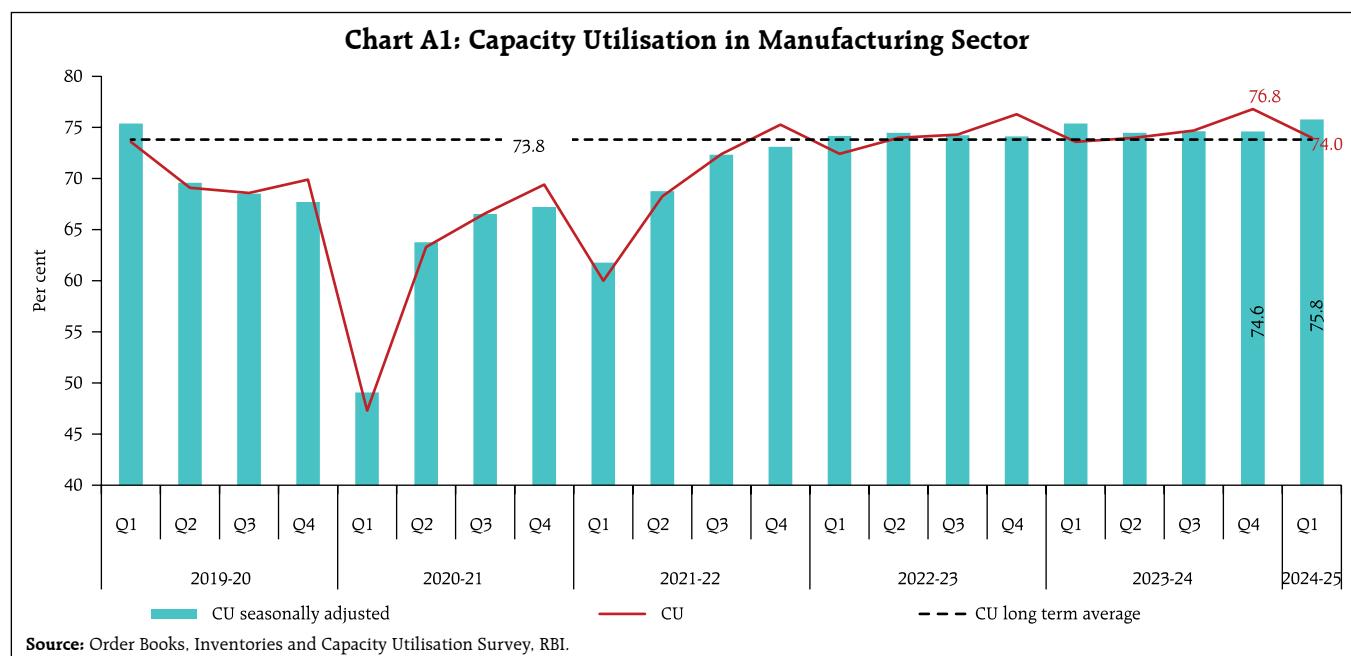
Digital payment transactions are expected to gain from strong tailwinds with the onset of the

festive season, marked by mega e-commerce sales and rising demand from smaller towns and cities. Increasingly, consumers in Tier 3 to 6 cities are using digital payment services daily.⁴⁵ These developments highlight the vast potential for driving adoption and ensuring sustained usage of digital payments at the grassroots level.

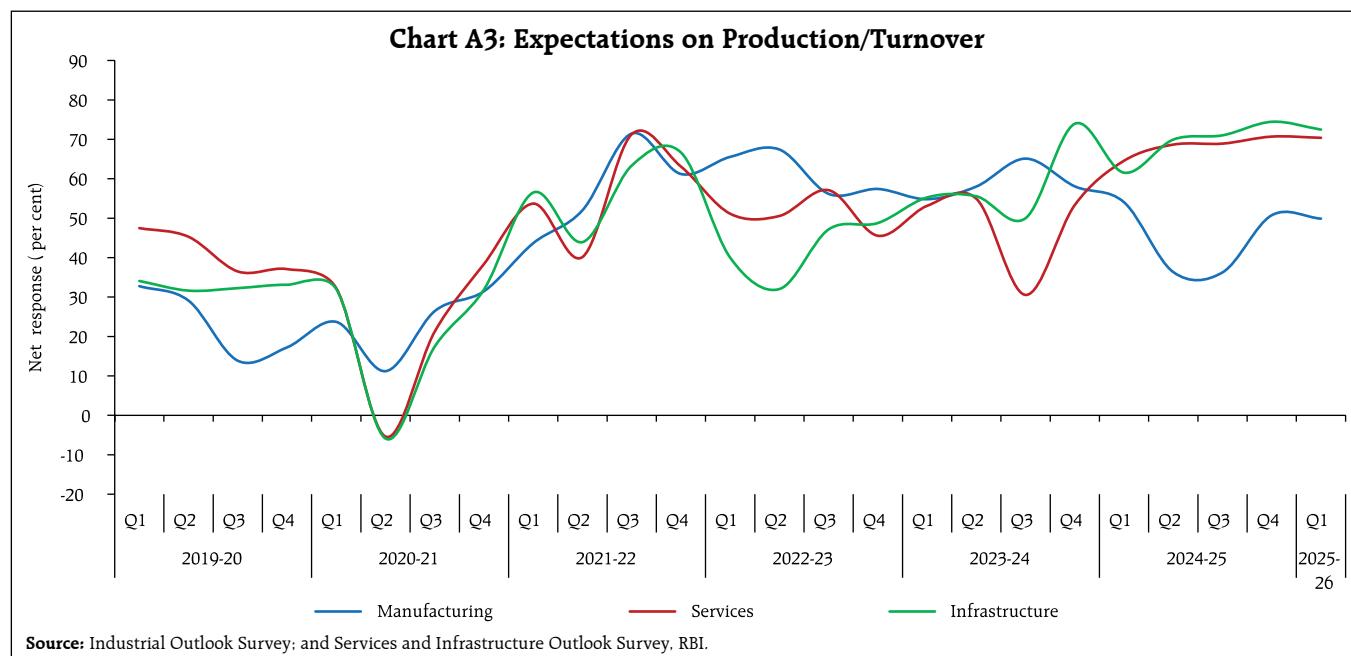
⁴⁵ Chase India Report (August 2024). The State of Digital Payments in India.

Annex 1: Major Takeaways from the RBI's Enterprise Surveys

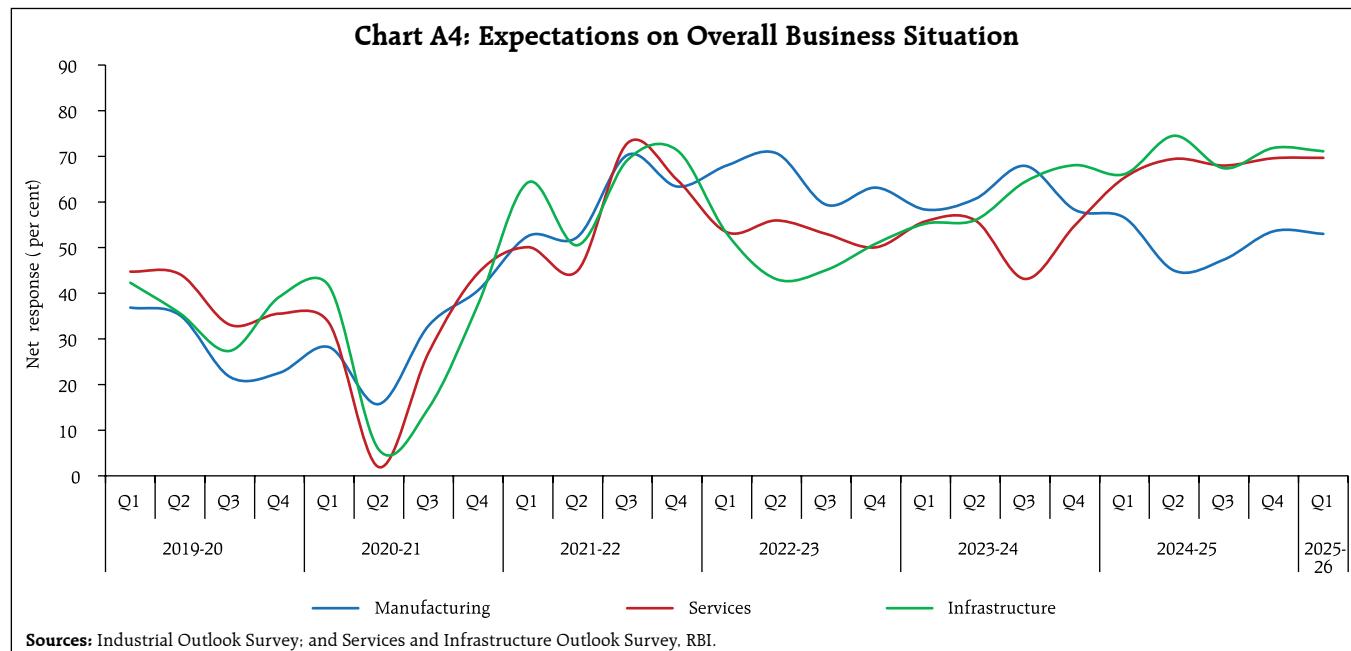
- CU in the manufacturing sector recorded a seasonal decline in Q1:2024-25 (Chart A1). Seasonally adjusted CU, however, increased by 120 basis points during the quarter. Manufacturers maintained a positive outlook on CU in the ensuing quarters (Chart A2).



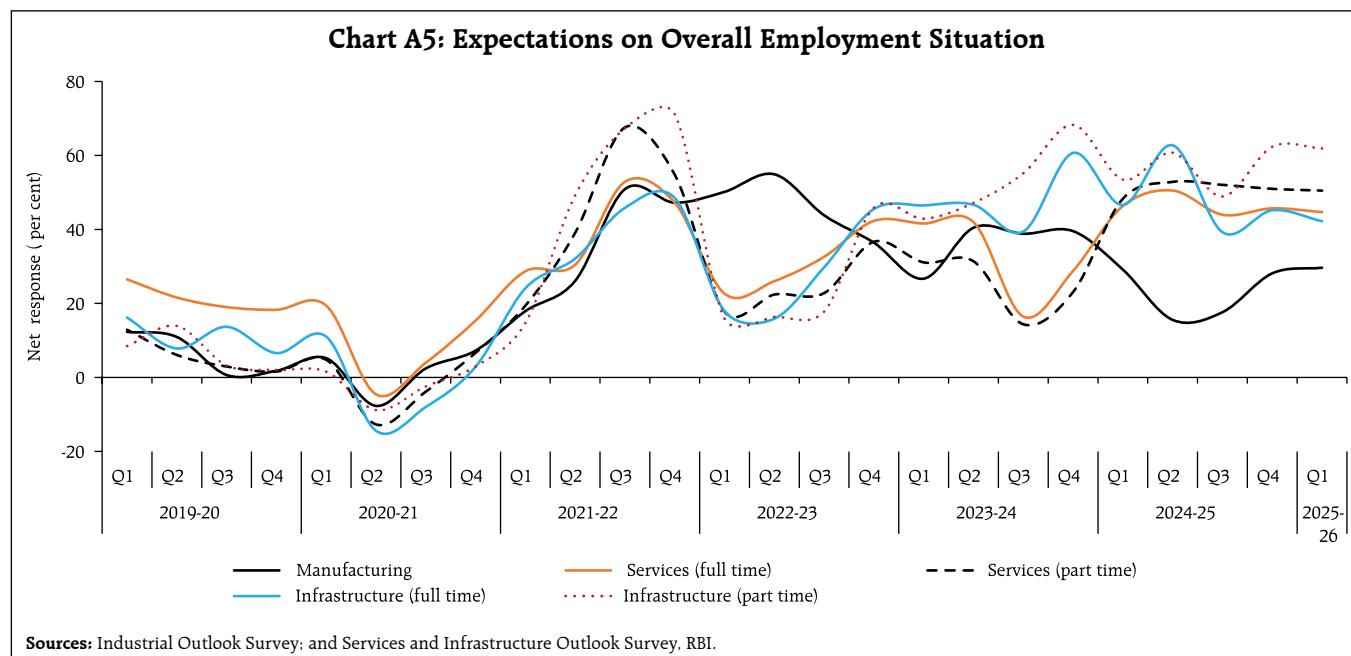
- Manufacturing firms expect similar levels of optimism on production in Q3:2024-25 and it is likely to improve from Q4 onwards (Chart A3).



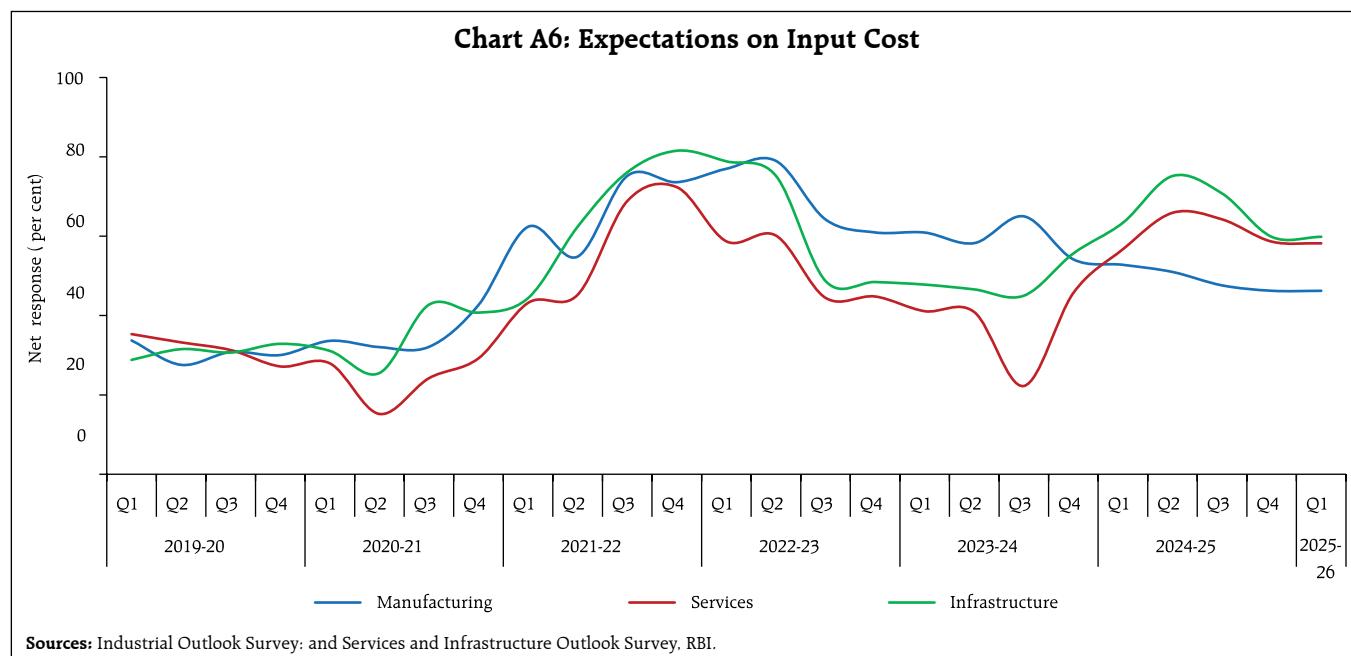
- Services and infrastructure firms continue to poll a highly optimistic outlook on demand conditions (Chart A4). Firms remain optimistic on the overall business situation till Q1:2025-26.



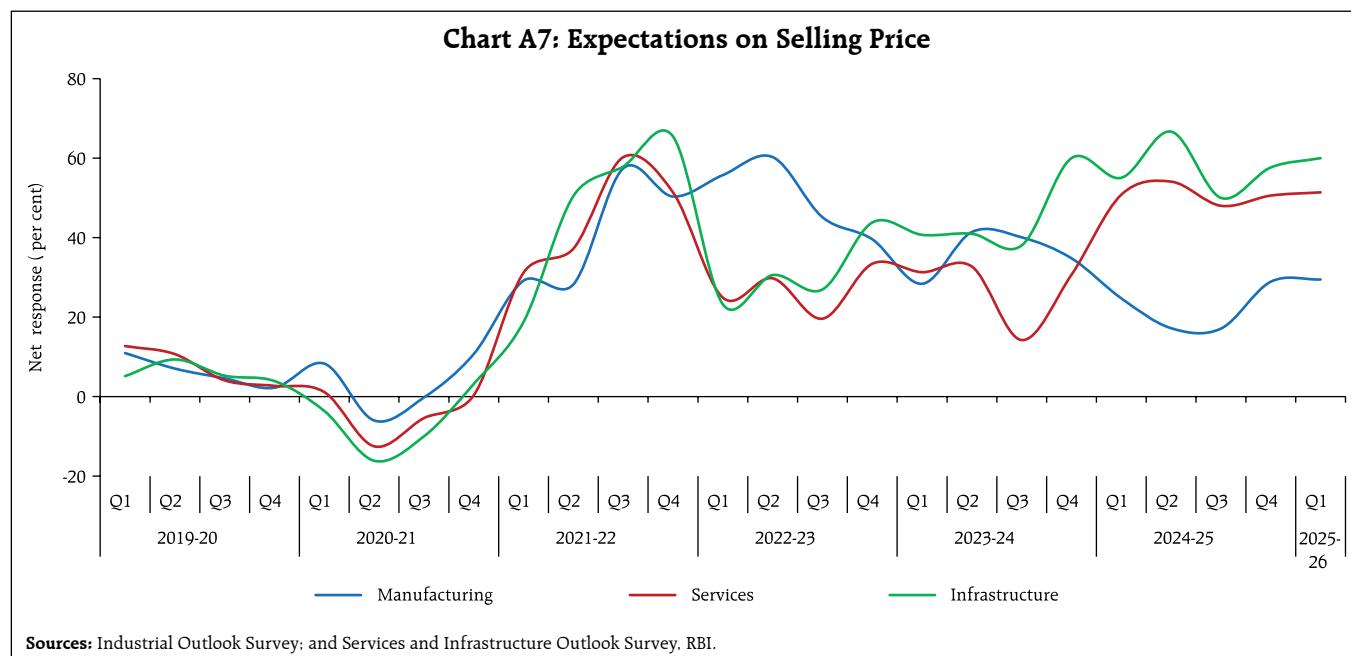
- Employment is expected to move in tandem with demand conditions (Chart A5).



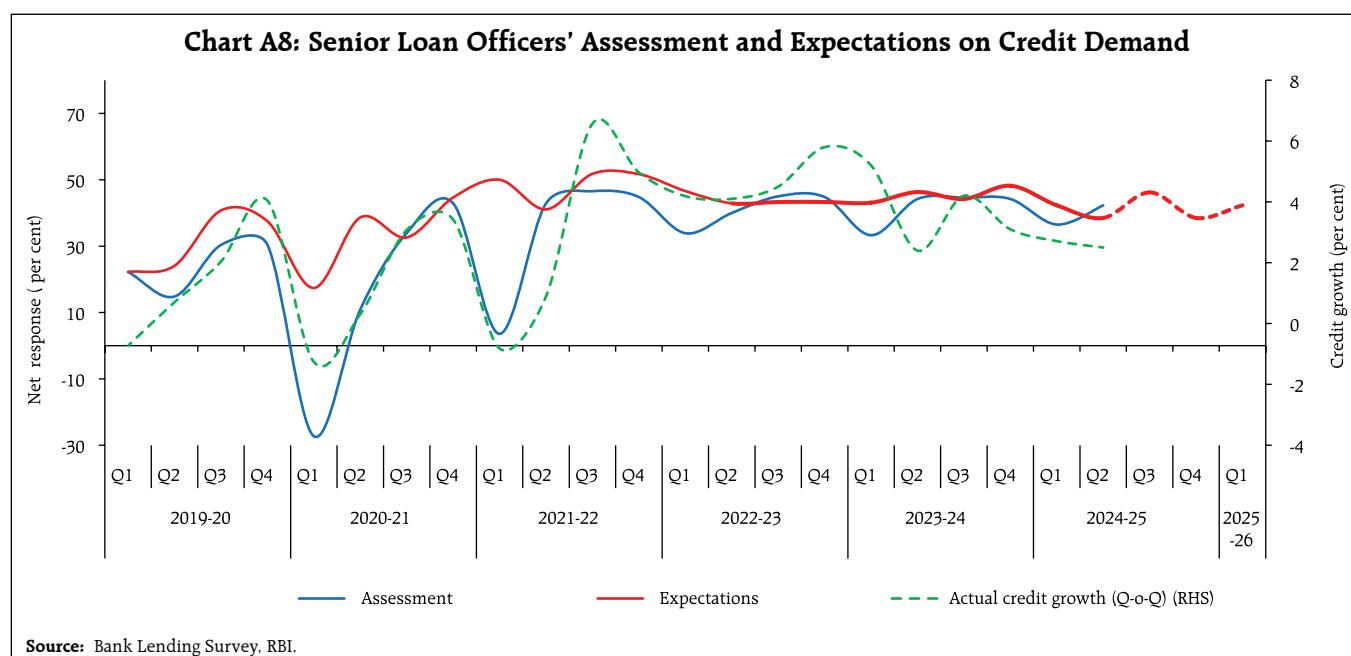
- Input cost pressures are likely to ease for the manufacturing sector while the same is expected to persist for the services and the infrastructure sectors in Q3:2024-25 (Chart A6).



- The manufacturing sector anticipates stable growth in selling prices in Q3:2024-25. Growth in selling prices is expected to moderate for the services and infrastructure sectors in Q3:2024-25 (Chart A7).



- Bankers expect higher loan demand and easy terms and conditions for loans across major sectors (Chart A8).



Note: The 'net response' is calculated as the difference between the percentage of respondents reporting optimism and that reporting pessimism. The increase option (I) is an optimistic response for all parameters, except the cost related parameters, such as cost of raw materials, etc., where the decrease option (D) signifies optimism from the viewpoint of a respondent company.

Monetary Policy Transmission in India: The Recent Experience

by Michael Debabrata Patra,
Indranil Bhattacharyya, Joice John and
Avnish Kumar ^

Evaluating the impact of monetary policy changes to inflation, aggregate demand and inflation expectations in India through the transmission channels of the spectrum of financial markets, during the phase of monetary policy tightening since May 2022 indicates relatively strong effects on the shorter end of the term structure. Monetary policy shocks, however, significantly impact all market segments and across tenors. Pass-through to the exchange rate and equity prices has been relatively low. Overall, policy rate increases have anchored inflation expectations and modulated aggregate demand, generating disinflationary responses.

Introduction

The efficient conduct of monetary policy is contingent upon the propagation of monetary policy impulses across the spectrum of financial markets on to the real economy. For central banks, as the monopoly supplier of reserves, the responsibility for transmission is to ensure that the monetary policy impulse is fully and seamlessly reflected at the short-end of the term structure – the money market (Patra, 2022). Accordingly, a money market interest rate – usually the rate determined in the uncollateralised segment of the money market to represent the infra-marginal demand for reserves – is designated as the operational target of monetary policy. If markets are efficient and complete, changes in short term rates synaptically travel across the term structure and impact long-term rates which, in turn, influence spending decisions, saving and investment

of businesses and households, to get manifested in output and prices and hence in societal welfare.

The efficacy of monetary transmission is based on (i) active liquidity management by the central bank; (ii) an efficient payment and settlement system; (iii) well-integrated financial markets that arbitrage interest rates across constituent segments; (iv) a sound and vibrant system of financial intermediaries, with asset-liability profiles that are responsive to policy rate changes; and (v) the absence of market pricing distortions like subventions and administered settings of interest rates. Even with the fulfilment of these pre-conditions, transmission losses often occur due to idiosyncrasies in market microstructure, frictions within and across market segments and the inexorable reality of macroeconomic and financial cycles.

Since early 2022, central banks across the world engaged in one of the most aggressive and synchronised episodes of monetary policy tightening in recent history in response to an inflation surge that found parallel in the great inflation of the 1970s. In India too, front-loaded and even pre-emptive monetary policy tightening was undertaken since May 2022. In the event, inflation has largely been restrained to its last lap of alignment with targets across geographies. In fact, early movers of monetary policy tightening in this episode have been successful enough to pivot to commencing easing cycles. In India, the process of disinflation has been stubborn, slow, and uneven, stalled by the incidence of repetitive and often overlapping supply shocks. The trajectory of disinflation has, however, been downwards and a durable alignment with the target is in sight. This article delves into this somewhat unique experience by revisiting the various channels of transmission with some stylised facts on developments over the past decade during tightening episodes (Section II), followed by an empirical assessment of transmission in financial markets and the impact of the current

[^] The authors are from the Reserve Bank of India. The views expressed in this article are those of the authors and do not represent the views of the Reserve Bank of India.

tightening cycle on macroeconomic variables (Section III), before concluding with some policy observations (Section IV).

II. Transmission Channels and Stylised Facts

In the literature, five key channels of monetary policy transmission have been identified, *viz.*, interest rates; credit; asset prices; the exchange rate; and expectations. The interest rate channel is the dominant one – expansionary monetary policy, for instance, leads to a lowering of the cost of loanable funds, which, in turn, raises investment and consumption demand and eventually both output and prices. Similar effects can accrue through changes in the availability of loanable funds, *i.e.*, the credit channel, although it is not a standalone alternative mechanism; it is best regarded as amplifying conventional interest rate effects and running alongside in impacting real activity (Bernanke and Gertler, 1995). Policy rate changes also induce shifts in asset prices that generate wealth effects through market valuations of financial assets and liabilities. This asset price channel of monetary transmission interacts with the bank lending or credit channel, enhancing or diminishing the capacity to borrow at prevailing interest rates, and reinforcing impulses to aggregate demand. Changes in domestic interest rates can also induce the external value of the domestic currency which, in turn, can bring about changes in exports and imports and thereby in aggregate demand and output. The exchange rate channel of monetary policy transmission is found to be dominant in small open economies (Chamon *et al.*, 2019). Over the last three decades, the expectations channel has assumed prominence in the conduct of forward-looking monetary policy. Economic agents form futuristic assessments about the economy, the central bank's reactions thereto and modulate their current behaviour accordingly. It is observed that these expectations-driven behavioural changes powerfully

influence changes in output and inflation. It is in this context that central bank communication is seen as vital for the anchoring of inflation expectations and actual inflation outcomes (Jung and Kühl, 2021). Clearly, the credibility of the monetary authority drives the expectations channel (Park, 2023). From this perspective, monetary policy has been characterised as the art of managing expectations (Woodford, 2003). In the final analysis, however, these channels work simultaneously, reinforcing and interacting with each other. Country circumstances matter, depending on the structure of the economy and the state of the financial system.

In India, monetary policy transmission to money markets is usually instantaneous and complete, especially across collateralised segments. In the uncollateralised call money market – the focus of transmission – sporadic and episodic deviations are observed in times of reserve requirement and balance sheet dates as well as in recurring events such as advance tax outflows and government salary payments. The government securities (G-sec) market assumes a central position in the intermediate to longer end of the interest rate continuum in view of it providing the risk-free term structure for pricing instruments issued by all other sectors of the economy. Liquidity in the G-sec market is not uniform across the curve but concentrated in few maturity segments because of "*preferred habitat*" and "*market segmentation*" behaviour of market participants. Corporate bond yields essentially track the movements in G-sec yields, with changing risk spreads over time caused by both variations in the risk-free rate and credit worthiness of corporates. Fixed income segments of the interest rate spectrum are also vulnerable to global spillovers.

In the credit segment, the extent and speed of policy rate pass-through to lending and deposit rates have varied sizeably in tightening episodes, depending

upon factors such as the duration of the cycle, the speed of the rate hikes and the prevailing liquidity conditions. There are also several idiosyncratic factors that influence monetary policy transmission, *viz.*, interest rate subventions; mismatches in the maturity profile of banks' assets and liabilities; loans being mostly contracted at floating rates with deposits contracted at fixed rates; rigidity in banks' savings deposit rates; competition from administered rates on small saving instruments; and the asset quality of financial intermediaries. The introduction of the external benchmark-based lending rate (EBLR) system of loan pricing, effective October 2019 has improved transmission in the credit market (Kumar et al., 2022). Against this backdrop, the rest of this section compares transmission across three monetary tightening episodes over the last decade.

II.1 Taper Tantrum (July 2013 - Dec 2014)

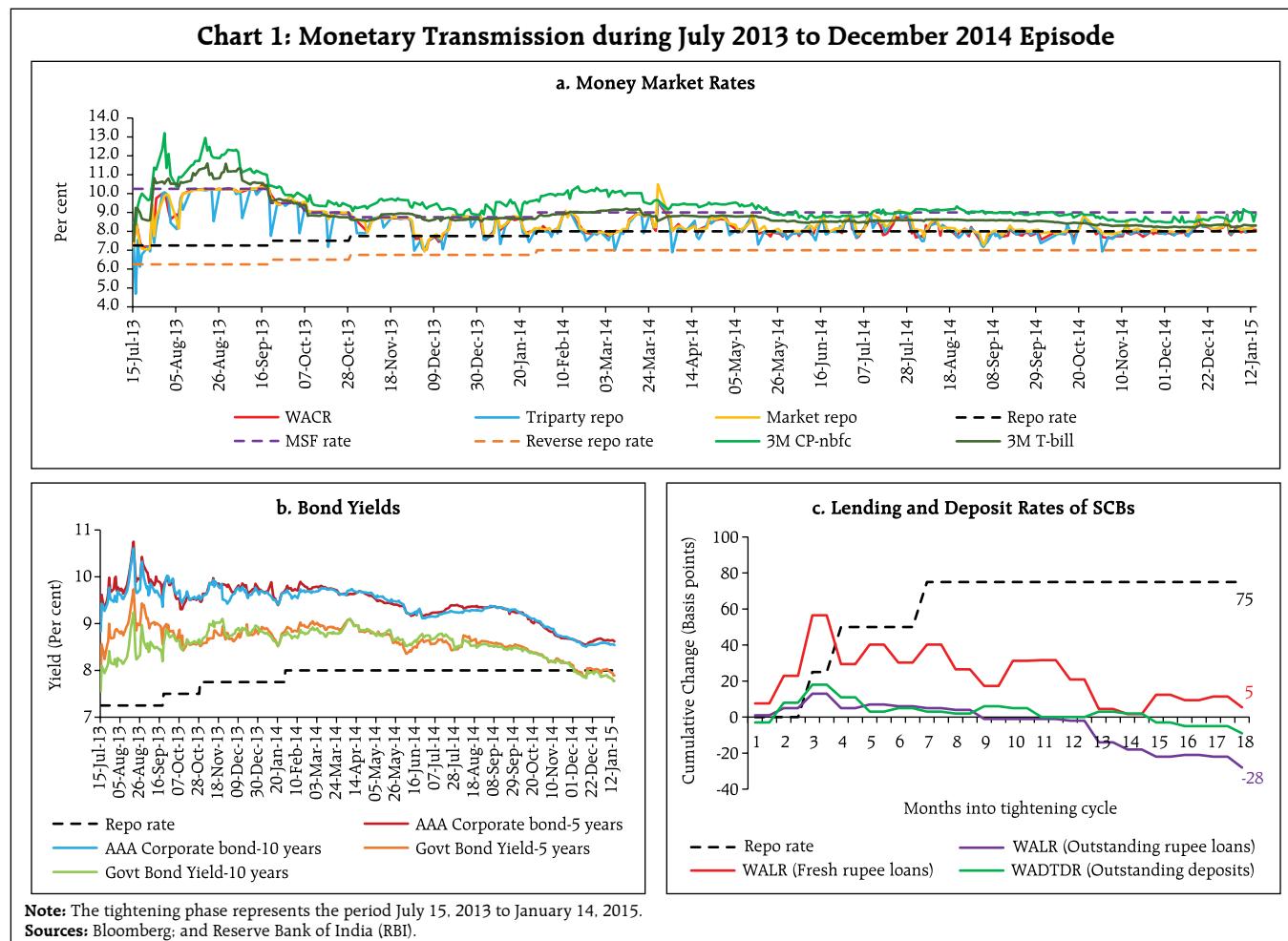
In May 2013, apprehensions of the likely tapering of US bond purchases under quantitative easing (QE) triggered outflows of portfolio investment from emerging market economies (EMEs), including India, particularly from the debt segment. Faced with this haemorrhage, the Reserve Bank resorted to exceptional measures from mid-July to September 2013 to address exchange market pressures – a rare instance of monetary policy steered to address exchange rate concerns. The marginal standing facility (MSF) rate was raised by 200 basis points (bps) on July 15, 2013, which became the *de facto* policy rate, supported by liquidity limits on banks' access to the liquidity adjustment facility (LAF); open market sales of government securities of ₹25 billion on July 18, 2013; and increase in daily cash reserve ratio (CRR) maintenance requirement; even as the repo rate was left unchanged. This was eventually followed by an increase in the policy repo rate to contain the inflationary pressures. Beginning

September 20, 2013, policy normalisation commenced in a calibrated manner even while persisting with the anti-inflationary monetary policy stance. Following the ebbing of volatility in the foreign exchange market, the Reserve Bank restored the width of the LAF corridor to 100 bps along with relaxations in regulatory prescriptions¹.

During July 2013 to December 2014, the Reserve Bank cumulatively increased the repo rate by 75 bps. Transmission to various segments of the financial market spectrum evolved in a differentiated manner in response to these policy actions.

The tightening of monetary and liquidity conditions and imposition of regulatory prescriptions led to a significant increase in money market rates in the range of 5 - 406 bps during July 15 to September 19, 2013. Normalisation of monetary policy, liquidity augmenting measures along with the relaxation in regulatory prescription beginning September 20 eased financial conditions thereafter. The rates in the money market (except CD rate) moderated significantly in the range of 148 – 217 bps during September 20, 2013 - January 14, 2015, even when the policy repo rate was increased by 75 bps (Chart 1a). Sovereign yields largely reflected the domestic monetary policy stance, which adjusted to insulate domestic macroeconomic conditions during the taper tantrum. Yields in G-Sec and corporate bond markets hardened during July to September 2013, and moderated as financial conditions eased after September. The yields in the corporate bond market broadly tracked the movements in G-sec yields (Chart 1b).

¹ The minimum daily maintenance requirement of the CRR was reduced from 99 per cent to 95 per cent effective from the fortnight beginning September 21, 2013. Additional liquidity was provided through term repos of 7-day and 14-day tenor for a notified amount equivalent to 0.25 per cent of net demand and time liabilities (NDTL) of the banking system through variable rate auctions on every Friday beginning October 11, 2013 and further increased to 0.5 per cent of NDTL of the banking system on October 29, 2013.



Transmission to the credit segment remained muted during July 2013 to December 2014. While the weighted average lending rate (WALR) on fresh rupee loans of scheduled commercial banks (SCBs) increased marginally, the WALR on outstanding rupee loans and weighted average domestic term deposit rate (WADTDR) on outstanding deposits witnessed a decline. During the initial months when the MSF rate was raised and liquidity tightening measures were undertaken, the lending and deposit rates increased only marginally. Once normalcy was restored in financial markets, banks started reducing their lending rates even as the repo rate was unchanged, thus impacting the efficacy of transmission in this cycle (Chart 1c).

II.2 Policy Tightening (June 2018 - January 2019)

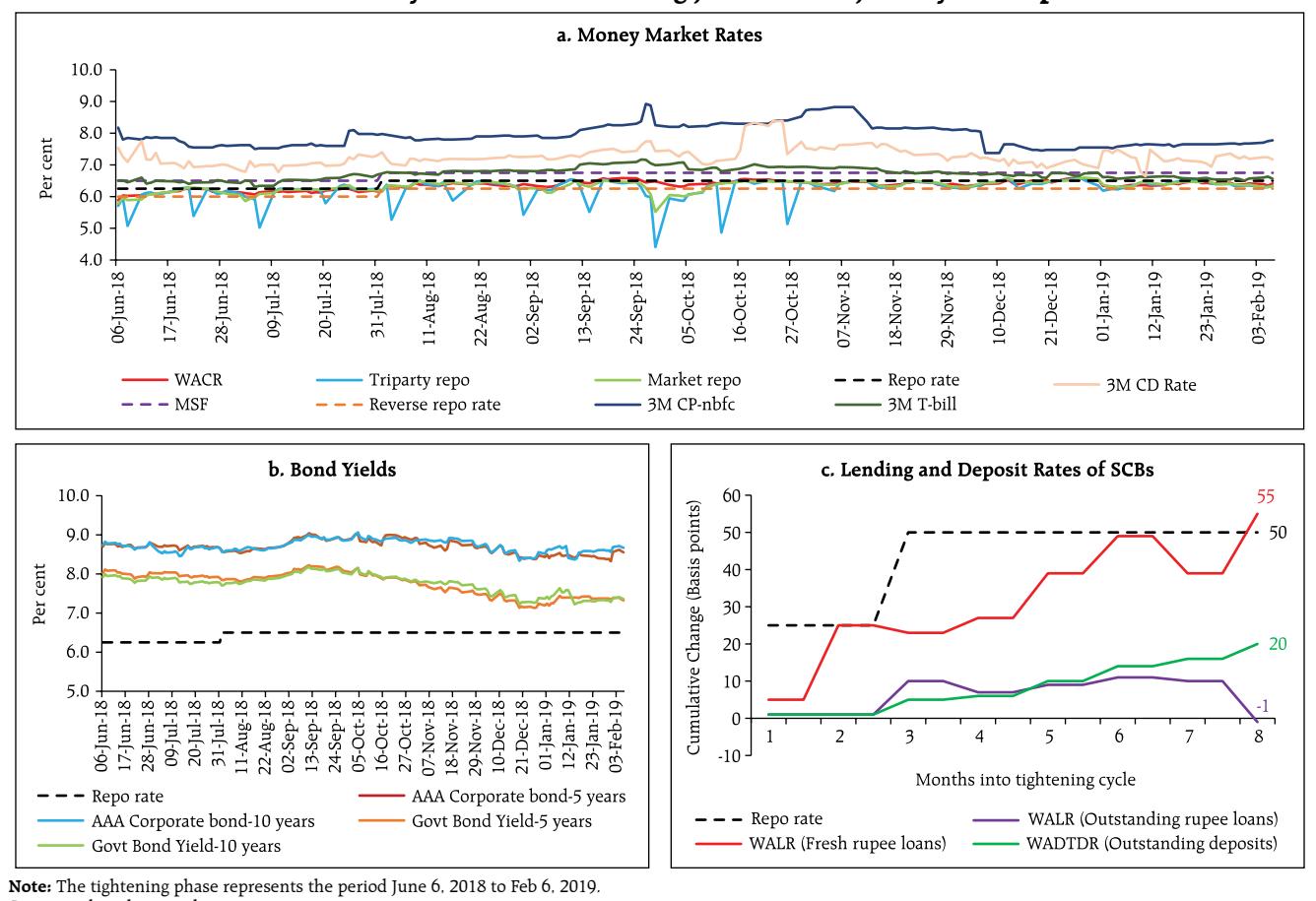
Taking into consideration the risks to inflation from global financial market developments, sharp increase in crude oil prices, rise in global commodity prices and input cost pressures, the Monetary Policy Committee (MPC) increased the policy repo rate cumulatively by 50 bps during June 6 to August 8, 2018 and maintained a pause thereafter before a cut in the February 2019 policy.

The pass-through to overnight money market rates was instantaneous and full during this tightening episode. Transmission to short term money market rates, however, remained muted; in fact, the rates on 3-month certificates of deposit (CDs) and commercial papers (CPs) declined. Durable

liquidity of ₹1.4 trillion was injected through open market purchases during October – December 2018 (RBI, 2018-19). Infusion of durable liquidity through open market operations (OMOs) and expectations of rate cuts had a softening impact on T-bill rates during October 2018 to January 2019. Accordingly, the CP and CD rates, which are typically priced off the risk-free rate (T-bill rate), moderated during the same period. Barring intermittent hardening, G-sec yields softened in this episode due to continuing fall in crude oil prices and buoyed sentiments after the announcement of multiple open market purchases by the RBI. The yields in corporate bond market also moderated (Chart 2a and 2b).

Monetary transmission to the deposit and lending rates was partial and delayed. During June 2018 to January 2019, SCBs increased their lending rate on fresh loans by 55 bps in response to the 50 bps change in the repo rate. Transmission to the WALR on outstanding rupee loans remained muted as the increase in interest rates on fresh loans was more than offset by the fall in interest rates on marginal cost of funds-based lending rate (MCLR)-linked loans contracted in the past and reset at lower rates. The internal benchmark-based lending rate regimes suffered from a multitude of issues, such as opacity and arbitrariness in calculation of the base rate/MCLR and spreads; and long reset clauses that inhibited efficient monetary transmission (Chart 2c).

Chart 2: Monetary Transmission during June 2018 to January 2019 Episode



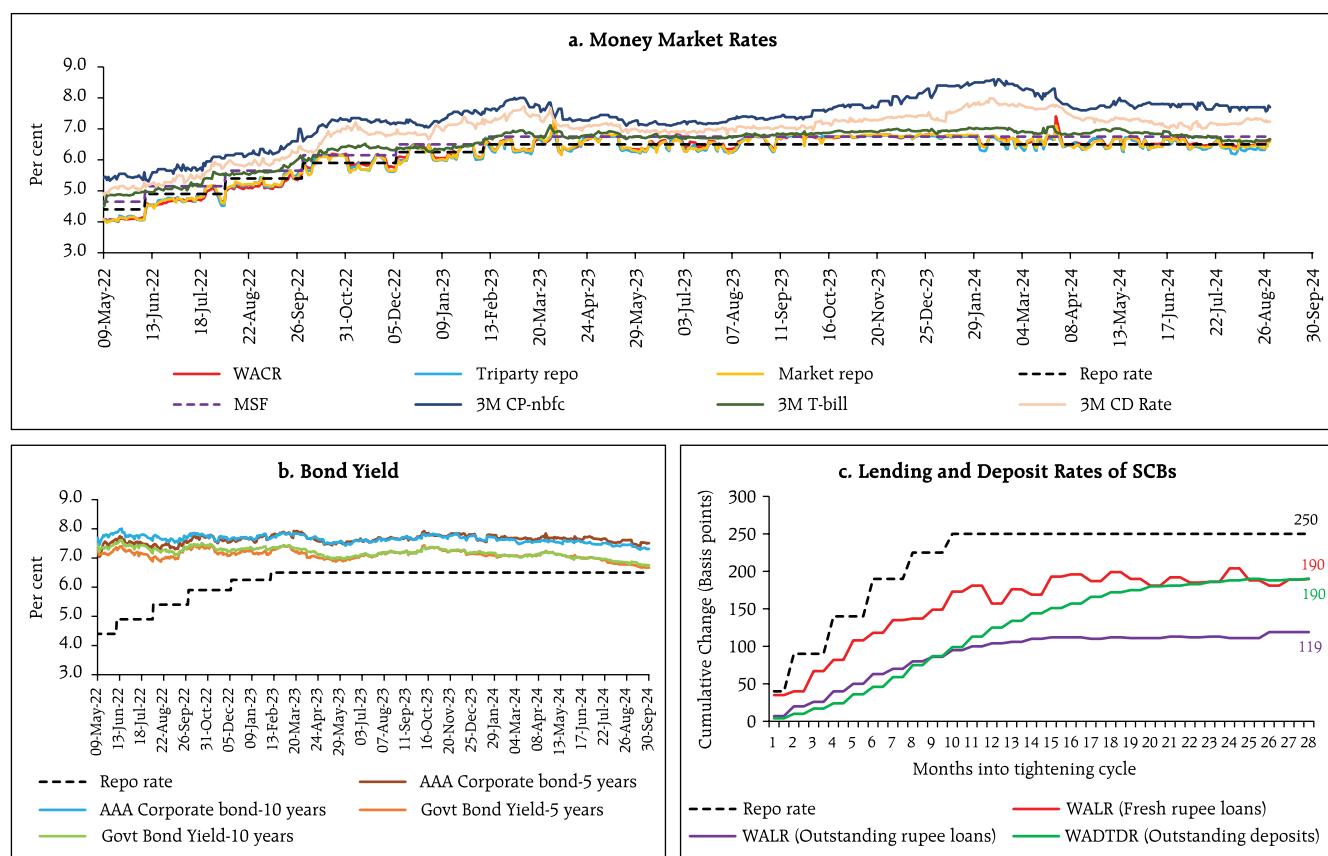
II.3 Current Tightening Cycle (May 2022 onwards)

Amidst inflationary pressures emanating from heightened geopolitical tensions due to the war in Ukraine, a generalised hardening of global commodity prices, supply chain disruptions, and volatility in global financial market, the Reserve Bank moved into tightening mode beginning May 2022. Responding to the ensuing inflation surge, the MPC increased the policy repo rate cumulatively by 250 bps between May 4, 2022 to February 8, 2023 and adopted a calibrated and cautious approach thereafter to contain rising inflation. The stance of monetary policy was also altered to withdrawal of accommodation in June 2022. In its liquidity management operations, the RBI introduced a standing deposit facility (SDF) in April 2022 at 25 bps below the repo rate as the new floor of

the LAF corridor. The width of the corridor was thus restored to its pre-pandemic configuration of 50 bps. In consonance with the monetary policy stance, liquidity management operations were aimed at balancing out the level of liquidity in the banking system.

Money market interest rates rose broadly in tandem with the policy repo rate hikes, the increase in CRR and the decline in surplus liquidity. These rates increased in the range of 236 – 325 bps during May 4, 2022 to September 30, 2024. The yields on G-sec hardened in the initial phase of tightening, taking cues from global developments and the domestic monetary policy stance. Sovereign yields softened, however, reflecting positive sentiment on the inclusion of Indian G-sec in global bond indices, moderation in headline inflation and fiscal consolidation (Chart 3a and 3b).

Chart 3: Monetary Transmission during May 2022 to September 2024 Episode



Note: The tightening phase represents the period May 4, 2022 to Sept 30, 2024. Data on lending and deposit rates are up to August 2024.

Sources: Bloomberg; and RBI.

The pace of monetary transmission to lending and deposit rates of SCBs has strengthened in recent years, reflecting the RBI's sustained efforts to impart transparency and flexibility to SCBs' interest rate structure, including the introduction of EBLR for floating rate loans in October 2019. The WALR on fresh rupee loans rose by 190 bps while that on outstanding loans rose by 119 bps during May 2022 to August 2024. In the case of deposits, the WADTDRs on fresh and outstanding deposits rose by 243 bps and 190 bps, respectively, during the same period (Chart 3c).

III. Quantitative Assessment of Monetary Policy Transmission

Monetary policy impulses transmit through changes in financial market variables (the first leg of transmission), which subsequently gets propagated to the real sector in terms of growth and inflation (last leg of transmission). From this perspective, this section provides an empirical assessment of the first and last leg of transmission.

III.1 Transmission to Financial Markets

Assessing the strength of monetary policy transmission in the first leg is complicated by monetary policy's simultaneous and endogenous response to economic developments. In this context, markets anticipate the central banks' policy actions in advance and adjust their behaviour even before actual policy announcements. Sometimes, however, central bank actions can result in monetary policy "surprises", which can be utilised to evaluate the impact of monetary policy transmission to financial market variables.

Overnight indexed swap (OIS) rates² are useful in identifying the "surprise" component of policy announcement, with several advantages. First, counterparty risk is minimal in OIS contracts since

they involve only an exchange of interest and not notional principal amounts (Finlay and Olivan, 2012). Second, OIS contracts do not involve any initial cash flow; only net payments are exchanged, thus minimising liquidity risk. Taking cognizance of these features, OIS rates have been used to decipher market expectations on future monetary policy (Christensen and Rudebusch, 2012; Woodford, 2012; Güneş and Mohanty, 2018; Altavilla *et al.*, 2019; Lloyd, 2021). Using the 2-month³ OIS rates, in particular, the monetary policy "surprises" can be estimated (John *et al.*, 2023a; Lloyd 2018, 2021).

It is observed that majority of monetary policy announcements are well anticipated by the market (Table 1). 9 out of 49 monetary policy announcements since the implementation of the flexible inflation targeting (FIT) framework in India⁴ had a surprise component of 10 bps (in absolute terms) or above in the announced policy rate changes. The most noteworthy "surprise" was the off-cycle announcement made on May 4, 2022, which completely surprised markets.

Two alternate empirical approaches are used to estimate the impact of policy "surprises" on the financial market variables. In the first approach, a 5-day window-based event study (ES) regression analysis around the policy announcement days since October 2016 is carried out (Table 2).

The regression results suggest that monetary policy changes affect shorter-term rates more aggressively than long-term rates. Overnight call money rates are affected by the policy rate, irrespective of whether they are anticipated or not. Anticipated changes do not affect the long-term

² An OIS is an interest rate derivative contract in which two entities agree to swap/exchange a fixed vis-à-vis a floating interest rate payment based on a notional principal amount.

³ Since India has a bi-monthly monetary policy cycle, 2-month OIS rate ensures that each window contains one and only one monetary policy announcement.

⁴ The first meeting after the constitution of the first MPC and the formal introduction of FIT was on October 4, 2016.

Table 1: Monetary Policy Surprises (bps)

Policy Date	Δ Policy	Surprise	Policy Date	Δ Policy	Surprise			
2016-17								
August 09	0	9	April 07	0	-3			
October 04	-25	-10	June 04	0	-5			
December 07	0	7	August 06	0	-6			
February 08	0	-1	October 08	0	-4			
2017-18								
April 06	0	-7	December 08	0	-7			
June 07	0	2	February 10	0	-17			
August 02	-25	-6	2022-23					
October 04	0	-2	April 08**	0	0			
December 06	0	-2	May 04	40	40			
February 07	0	-5	June 08	50	-2			
2018-19			August 05	50	1			
April 05	0	-4	September 30	50	15			
June 06	25	3	December 07	35	-12			
August 01	25	5	February 08	25	0			
October 05	0	-15	2023-24					
December 05	0	-5	April 06	0	-1			
February 07	-25	-8	Jun 08	0	6			
2019-20			August 10	0	8			
April 04	-25	1	October 06	0	8			
June 06	-25	0	December 08	0	7			
August 07	-35	-1	February 08	0	5			
October 04	-25	6	2024-25					
December 05	0	10	April 05	0	4			
February 06	0	-5	June 07	0	-1			
2020-21			August 08	0	-2			
March 27*	-75	-24						
May 22	-40	0						
August 06	0	7						
October 09	0	-12						
December 04	0	-8						
February 05	0	-4						

Note: *: There was an additional 15 bps reduction in the reverse repo rate making the LAF corridor asymmetric.

**: Corridor width was restored by introducing Standing Deposit Facility (SDF) at 25 bps below the policy repo rate.

Policy dates where surprises were more than or equal to absolute 10 bps are shaded

Sources: John et al. (2023a); and Authors' estimate.

rates instantaneously, perhaps because they have already been factored in by the market even before the policy announcement. Policy surprises, however, significantly impact all the financial market rates (G-sec yields; corporate bond yields; the exchange rate; and stock market returns) in the expected

Table 2: Event Study Regression Estimates: Impact of Policy Surprises on Financial Market Variables

Independent Variables	Δ Policy	Anticipated	Surprise
Dependent Variables			
Δ WACR	0.784***	0.776***	0.822***
Δ G-Sec3Yr	0.292***	0.152*	0.931***
Δ G-Sec5Yr	0.246***	0.107	0.879***
Δ G-Sec10Yr	0.151**	0.0493	0.616***
Δ CB 3Yr	0.262***	0.112	0.951***
Δ CB 5Yr	0.245***	0.107	0.876***
Δ CB 10Yr	0.202***	0.110	0.625***
Δ INR-USD	-0.0878	0.275	-1.741**
Δ NIFTY	-1.082	-0.497	-3.749*

Note: *, **, ***. Significant at 10, 5 and 1 per cent respectively

WACR: Weighted average overnight call money rate

G-sec: Government Securities rates

CB: Corporate bond rates

Sources: John et al. (2023a); and Authors' estimate.

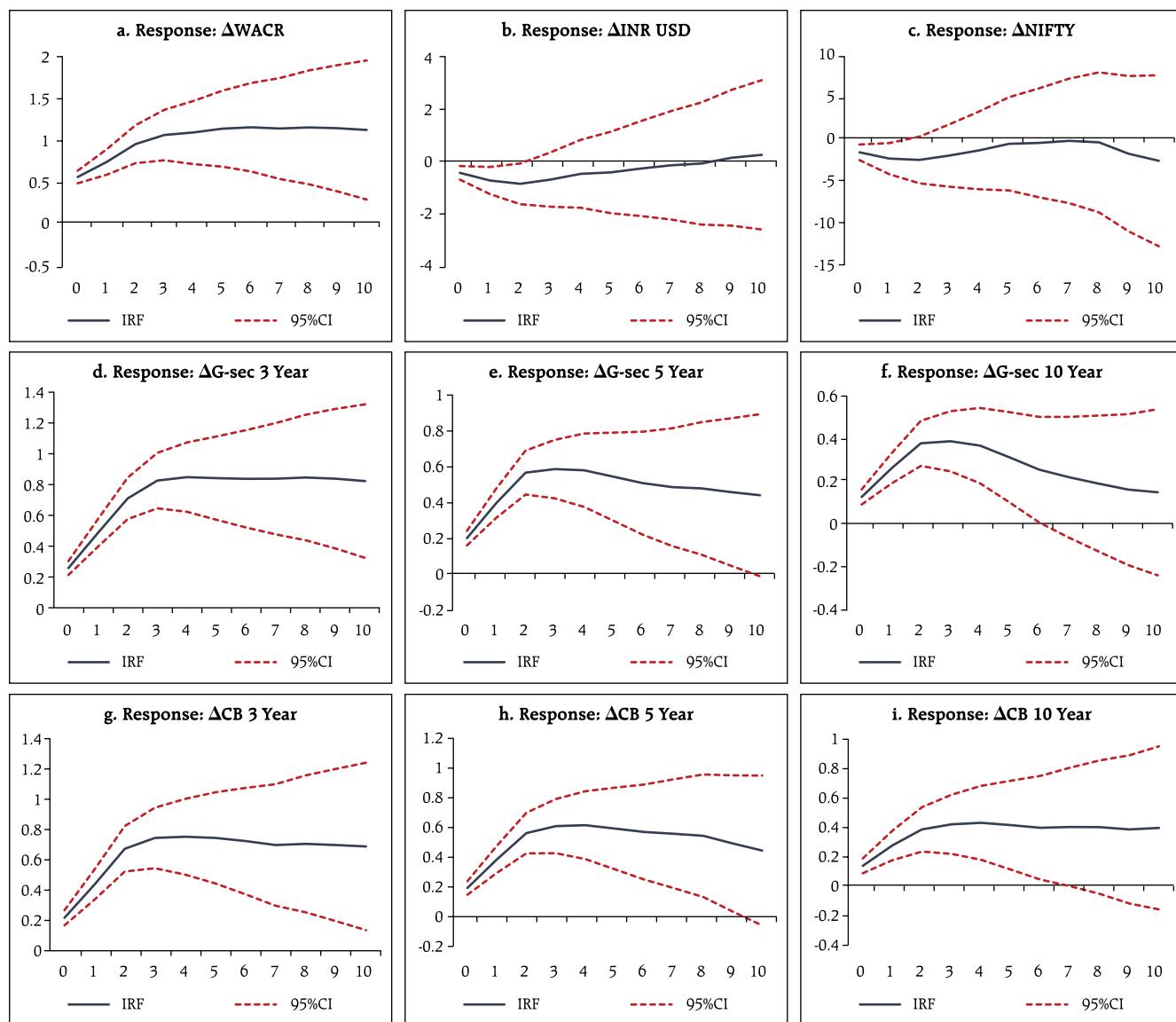
direction. G-sec and corporate bond yields positively react to the monetary policy "surprise", while the exchange rate appreciates, and stock market returns diminish. In case of G-sec and corporate bond yields, the impact is found to be higher for shorter tenure interest rates.

In the second approach, we use the local projection model (Jorda, 2005) to estimate the impact of monetary policy "surprises" in a time series framework using daily data from October 2016.⁵ This approach also corroborates the findings from the event study (Chart 4). Monetary policy "surprises" affect the financial market variables significantly and in the expected direction. The effect on yields is found to wane beyond the three-year tenure in case of G-sec and corporate bond yields. Policy surprises have a relatively lower but significant pass-through to the exchange rate and equity prices.

⁵ The advantages of local projections are several: (1) they can be estimated by simple regression with standard packages; (2) they are more robust to misspecification; (3) joint or point-wise analytic inference is simple; and (4) they easily accommodate experimentation with highly nonlinear and flexible specifications that may be impractical in a multivariate context (Jorda, 2005).

Chart 4: Impact of Policy Rate "Surprises" on Financial Market Variables from Local Projection Model

Impact of 1 unit shock of "Surprise" on cumulative change in financial market variables



Note: IRF- Impulse response function; CI: Confidence interval; CB: Corporate bond yields; G-Sec: Government securities yields.
x-axes represent days and y-axes represent percentage points.

Source: Authors' estimate.

III.2 Impact on Macroeconomic Variables

The impact of the policy rate on the real economy is assessed through inflation expectations (IE) and aggregate demand. Monetary policy affects the real sector with long and variable lags; hence, the impact of easing and tightening cycles is usually intertwined. Therefore, we use macro level analysis to identify the average impact of a policy rate change.

The impact on inflation expectations can be estimated by using the dynamic multiplier of the policy rate on inflation expectations (IE) generated from an IE formation regression equation (Patra *et al.*, 2024). The one-year ahead IE from household inflation expectations survey is regressed on food inflation (representing adaptive expectations), the monetary policy framework (represented by inflation target or

Table 3: Regression Coefficients

Variables	Coefficient	p-value
IE (-1)	0.44	0.000
Food Inflation	0.12	0.047
Target	0.65	0.006
Repo	-0.31	0.097
Constant	4.00	0.000

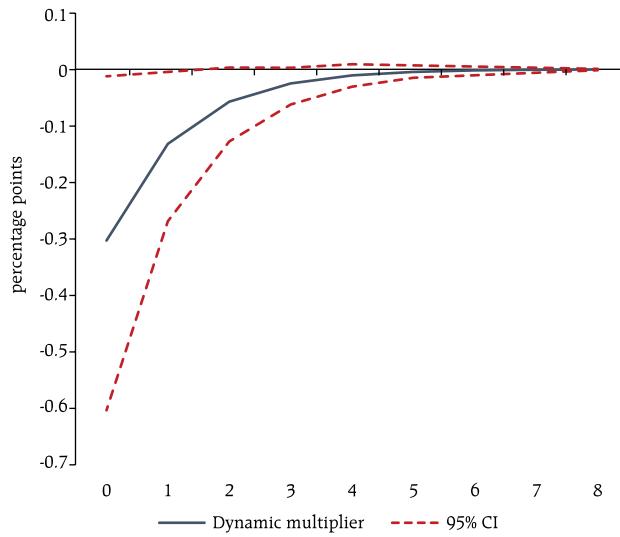
Diagnostics: Adjusted R²: 0.740; Breusch-Godfrey LM test for autocorrelation in errors p-value: 0.793.

Sources: NSO; RBI; and Patra *et al.* (2024).

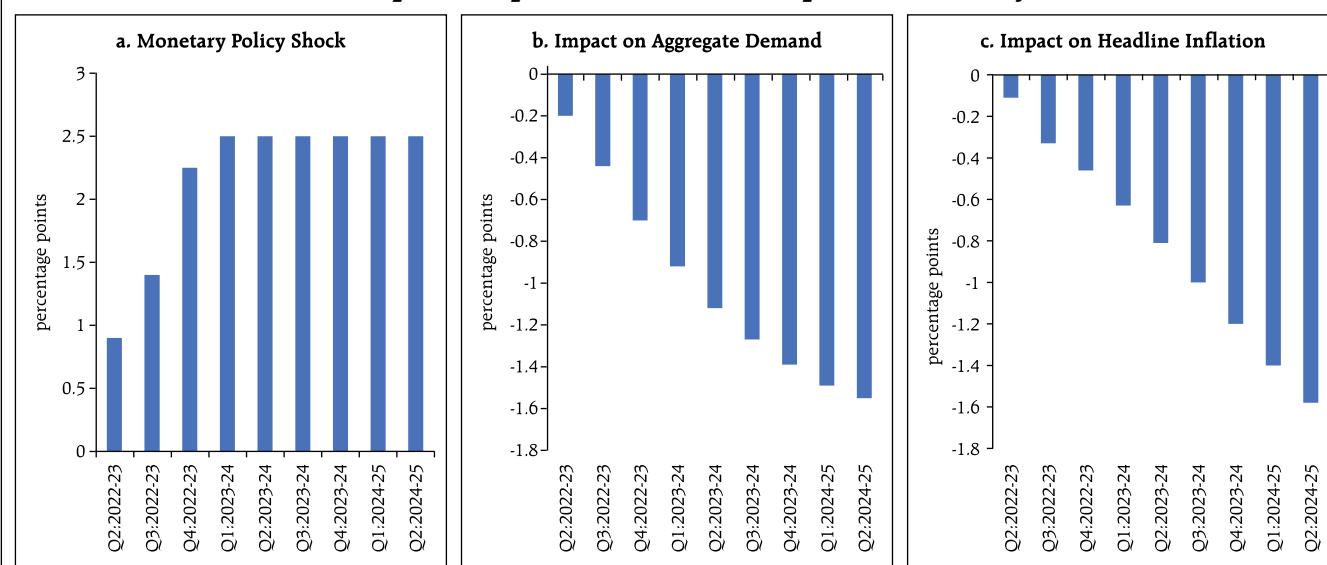
commitment to the framework) and the policy repo rate, by using quarterly data from Q1:2012-13 to Q1:2024-25. Monetary policy has a significant negative impact on inflation expectations, while adaptive expectations (represented by food inflation) have a statistically significant positive impact (Table 3).

The long-run elasticity of the policy rate on IE is 0.70. This shows that an increase in the policy rate leads to anchoring of IE. The dynamic multiplier suggests that policy rate tightening impacts inflation expectations up to 2 quarters (Chart 5).

The macroeconomic impact of monetary policy on aggregate demand and inflation is estimated by using the RBI's Quarterly Projection Model (QPM), focussing on the recent monetary policy tightening

Chart 5: Dynamic Multiplier (Shock: Policy Rate, Response: IE)

cycle from May 2022. QPM belongs to a genre of New-Keynesian open economy, calibrated, gap model featuring several India specific features (John *et al.*, 2023b). The impulse response generated from QPM suggest that the 250 basis points increase since May 2022 has negatively contributed to aggregate demand and headline inflation by 160 bps each till Q2:2024-25, working through various channels of monetary policy transmission (Chart 6).

Chart 6: Impulse Response Functions (250 bps Shock to Policy Rate)

IV. Conclusion

Our findings on monetary policy transmission in India suggest that monetary policy changes affect short term interest rates more than long-term rates. While anticipated policy changes do not have any instantaneous impact on long-term rates, policy "surprises" significantly impact all market segments and across tenors. Policy signals tend to wane, however, beyond the three-year tenure. Policy "surprises" are found to have a relatively lower but significant pass-through to the exchange rate and equity prices. In terms of the impact of the policy rate tightening on the real economy, a significant negative impact on inflation expectations is observed. The long-run elasticity of the policy rate with respect to inflation expectation reveals that an increase in policy rate anchors expectations effectively. The macroeconomic impact of monetary policy on aggregate demand and inflation indicate that the 250 basis points increase since May 2022 has negatively contributed to aggregate demand and headline inflation by 160 bps each till Q2:2024-25, working through various channels of policy transmission.

References:

- Altavilla, C., Brugnolini, L., Gürkaynak, R. S., Motto, R., and Ragusa, G. (2019). Measuring Euro Area Monetary Policy, *Journal of Monetary Economics*, 108, 162-179.
- Bernanke, B. S., and M. Gertler (1995). Inside the Black Box: The Credit Channel of Monetary Policy Transmission, *Journal of Economic Perspectives*, vol. 9, pp. 27-48.
- Chamon, M. M., Hofman, M. D. J., Magud, M. N. E., and Werner, A. M. (2019). Foreign Exchange Intervention in Inflation Targeters in Latin America, International Monetary Fund.
- Christensen, J. H., and Rudebusch, G. D. (2012). The Response of Interest Rates to US & UK Quantitative Easing. *The Economic Journal*, 122(564), F385-F414.
- Finlay, R., and Olivan, D. (2012). Extracting Information from Financial Market Instruments. *RBA Bulletin*, March.
- Güneş, K., and Mohanty, M. (2018). Do Interest Rates Play a Major Role in Monetary Policy Transmission in China?, *BIS Working Papers* 714, Bank for International Settlements.
- John, J., Talwar, B. A., Sachdeva, P. and Bhattacharyya, I. (2023a). Reading the Market's Mind: Decoding Monetary Policy Expectations from Financial Data, *RBI Bulletin*, November.
- John, J., Kumar, D. George, A. T., Mitra, P., Kapur, M., and Patra, M. D. (2023b). A Recalibrated Quarterly Projection Model (QPM 2.0) for India, *RBI Bulletin*, February.
- Jordà, Ò. (2005). Estimation and Inference of Impulse Responses by Local Projections, *American Economic Review*, 95(1), 161-182.
- Jung, A. and Kühl, P (2021). Can Central Bank Communication Help to Stabilise Inflation Expectations? *ECB Working Paper Series*. No 2547, May.
- Kumar, A., Prakash, A., and Latey, S. (2022). Monetary Transmission to Banks' Interest Rates: Implications of External Benchmark Regime, *RBI Bulletin*, April. https://rbi.org.in/Scripts/BS_ViewBulletin.aspx?Id=20939
- Lloyd, S.P. (2018). Overnight Index Swap Market-based Measures of Monetary Policy Expectations, *Bank of England Working Paper* 709.
- Lloyd, S. P. (2021). Overnight Indexed Swap-implied Interest Rate Expectations, *Finance Research Letters*, 38, 101430.
- Park, K. (2023). Central Bank Credibility and Monetary Policy, *International Journal of Central Banking*, June.

Patra, M. D. (2022). Lost in Transmission? Financial Markets and Monetary Policy, *RBI Bulletin*, November. https://rbi.org.in/Scripts/BS_ViewBulletin.aspx?Id=21395

Patra, M. D., John, J. and George. A. T. (2024). Are Food Prices Spilling Over?, *RBI Bulletin*, August.

Reserve Bank of India (2018-19). *Annual Report*.

Woodford M. D (2003). Interest and Prices: Foundations of a Theory of Monetary Policy, Princeton University Press.

Woodford, M. D. (2012). Methods of Policy Accommodation at the Interest-rate Lower Bound, Proceedings - Economic Policy Symposium - Jackson Hole, Federal Reserve Bank of Kansas City, pages 185-288.

Annex**Table A1: Monetary Transmission across Tightening Episodes (in bps)**

	15 Jul-2013 to 14 Jan-2015			6 Jun-2018 to 6 Feb-2019	Current Tightening Episode	
	15 Jul-2013 to 14 Jan-2015	15 Jul-2013 to 19 Sep-2013	20 Sep-2013 to 14 Jan-2015		8 Apr-2022 to 30 Sep-2024	4 May-2022 to 30 Sep-2024
Repo Rate	75	0	75	50	250	250
Reserve Repo/SDF	75	0	75	50	290	250
MSF	75	200	-125	50	250	250
Money Market Rates						
WACR	95	312	-217	53	341	304
Triparty Repo	216	406	-190	64	328	288
Market Repo	127	321	-194	51	337	293
3M T Bill	85	244	-159	7	256	236
3M CD Rate	51	5	46	-74	347	319
3M CP (NBFCs)	47	195	-148	-38	342	325
Bond Market Yields						
5-Yr G-sec	9	76	-66	-63	27	-16
5-Yr AAA Corp	-27	63	-90	-7	104	66
10-Yr G-sec	24	66	-42	-48	-16	-37
10-Yr AAA Corp	-27	55	-82	1	16	3
Interest Rates of Banks						
	July 2013 to Dec 2014			Jun 2018 to Jan 2019	Current Tightening Episode	
	July 2013 to Dec 2014	July 2013 to Sep 2013	Sep 2013 to Dec 2014		April 2022 to August 2024	May 2022 to August 2024
WALR-Fresh rupee loans	5	22	-17	55	178	190
WALR- Outstanding rupee loans	-28	5	-33	-1	117	119
WADTDR- Outstanding deposits	-9	8	-17	20	190	190
WADTDR- Fresh deposits	-	-	-	-	234	243

Sources: Bloomberg; and RBI.

Nowcasting Food Inflation in India: Leveraging Price and Non-Price Signals through Machine Learning

by Nishant Singh and Abhiruchi Rathi ^

The significance of food items in India's Consumer Price Index (CPI) in terms of their weight and price volatility makes accurate forecasting of food inflation crucial for headline inflation projections. Nowcast, which is the current-period inflation projection, guides short- and medium-horizon forecasts. Given the technology-driven surge in data availability, this study investigates predictive power of high frequency price and non-price indicators for nowcasting food inflation in India. Furthermore, employing machine learning (ML) techniques, this study explores their utility over traditional benchmark models. Empirical findings indicate that expanding the information set improves nowcast accuracy, which is further enhanced by employing regularisation and ML methods.

Introduction

The Reserve Bank of India Act provided a statutory basis for flexible inflation targeting (FIT)¹ in 2016 and entrusted the central bank to conduct monetary policy with the primary objective of maintaining price stability while keeping in mind the objective of growth. Given the typical monetary transmission lags, inflation forecasts act as an intermediate target for the central bank in a FIT framework, which guide monetary policy actions and stance. Thus, accurate forecasts of inflation (as well as that of economic activity) play a key role in the successful pursuit

of FIT and for aligning inflation to the target on a durable basis. In India, the food and beverages group has a high share (45.86 per cent) in the Consumer Price Index-Combined (CPI-C) basket and its prices exhibit large volatility driven by supply-side shocks. At the same time, food prices carry important macroeconomic implications as their movements strongly impact the welfare of the poor (Sekhar, et al., 2018) and help in monitoring developments around food security (Cachia, 2014). After moderating since 2014 on improvement in supply chain dynamics (Bhoi et al., 2019), CPI food inflation² witnessed an uptick in both mean and volatility starting 2019-20 due to the resurgence of supply disruptions driven by weather-related disturbances, the COVID-19 pandemic and geopolitical conflicts.

Given the significant impact of the food and beverages group (hereafter referred to as 'food') on headline inflation due to its high weight in the CPI basket and the associated large volatility, it is of utmost significance to have systems in place to generate reliable forecasts of food inflation. Comparision of cross-country headline inflation forecast performance suggests that countries with a larger share of food in their CPI baskets tend to experience higher forecast errors (RBI, 2020), highlighting the challenging nature of inflation forecasting in India and reiterating the significance of accurate food inflation forecasts.

An important component of the forecasting exercise is nowcasting, which is to predict inflation in the current period (month or quarter), before the official data are published (Clark, et al., 2022). These nowcasts are not only of interest on their own but also act as important inputs to forecasts at short- and medium-horizons (Krüger et al., 2017; Faust and Wright, 2013). However, studies focusing on improving food inflation nowcasts are relatively scarce (Macias, et al., 2023), which necessitates increased attention in this area.

[^] Nishant Singh and Abhiruchi Rathi are Managers in the Department of Economic and Policy Research (DEPR), Reserve Bank of India (RBI), Mumbai. The authors are thankful to Binod Bihari Bhoi for his valuable suggestions. The views expressed in the article are those of the authors and do not represent the views of the RBI.

¹ The inflation target under the FIT framework has been set at 4 per cent with a tolerance band of +/- 2 per cent in terms of headline inflation, measured by the year-on-year (y-o-y) per cent change in the all-India Consumer Price Index-Combined (CPI-C) series with base year 2012=100.

² Food inflation is measured by year-on-year (y-o-y) per cent change in the all-India Consumer Price Index-Combined (CPI-C) series (base year 2012=100) of the Food and Beverages group.

Due to the sensitivity of food prices to a multitude of domestic and international factors and its changing statistical properties, the task of capturing large and unanticipated movements in food prices using traditional univariate modelling methods has become challenging. This makes a case for exploring alternative, yet relevant, information which may be available at higher frequencies than traditionally used sources, and evaluating non-traditional methods of leveraging such information to extract real-time indication of the direction and magnitude of price movements.

The recent technological advancements, rise of digitalisation, and more particularly, the emergence of high frequency information from various sectors of the economy have facilitated better understanding of food price dynamics in the Indian context. While some recent studies have employed models using high-frequency price information to predict short-term food inflation (Yadav and Das, 2023; Pratap et al., 2022), there is plenty of other price and non-price information available which, when aggregated and utilised along with price information, could better reflect the supply-side dynamics impacting food prices and CPI food inflation. A potential set of such price and non-price information includes high-frequency retail and wholesale/*mandi* food prices, domestic and international commodity prices, weather-related information, reservoir levels, information on crop sowing, production and market/*mandi* arrivals, wage rates, exchange rate movements (INR/USD), internet-search trends among public with regard to food prices³, and government policies and interventions. Hence, nowcasting food inflation calls for keeping a track of such evolving information on a regular basis.

Forecast errors can be large around turning points or high inflation episodes since during such phases the time series properties of inflation and its relationship with key macroeconomic variables may turn unstable

³ To capture this, the study considers information from Google Trends data as an input in the empirical exercise. Information from Google Trends can reflect consumer sentiment and has usefulness in predicting price movements (Seabold and Coppala, 2015).

(Andreas Joseph et al., 2024). In such circumstances, the widely used traditional linear econometric models including autoregressive integrated moving average (ARIMA), seasonal ARIMA (SARIMA), and linear regression, which assume linear and time-invariant relationships, could miss out potential non-linearities and changing relationships (Binner et al., 2005). Hence, not only leveraging alternative information across sectors might be useful to detect price movements and turning points early on, but employing alternative techniques for capturing the relationships in the data may further help in better nowcasting. Therefore, leveraging ML models may add value to the nowcasting exercise, given their suitability in dealing with large heterogeneous data and capturing changing relationships (Chakraborty and Joseph, 2017). On high-dimensional data, employing regularisation or shrinkage methods may also help in enhancing the modelling performance (Joseph et al., 2024; Richardson et al., 2021). Therefore, besides traditional linear techniques, this study also explores regularisation (shrinkage) techniques such as ridge regression (Hoerl and Kennard, 1970), Machine Learning (ML) techniques including Deep Learning (DL) which capture potential non-linearities (Singh and Bhoi, 2022; Chakraborty and Joseph, 2017; LeCun et al., 2015) and Support Vector Regression (SVR) which reduces overfitting and is known to perform well on high-dimensional data (Noble, 2006; Drucker et al., 1996).

The studies on nowcasting food inflation in India are scarce and those leveraging information other than retail and wholesale prices are even rare. Therefore, this study attempts to contribute to the existing literature by investigating the predictive power of large alternative information (big data) using alternative nowcasting techniques and methods (data science) including ML and regularisation to potentially enhance the accuracy of food inflation nowcasts. For the empirical exercise, the study segregates the set of all the techniques into three broad categories i.e., Univariate Linear, Multivariate

Linear, and Multivariate ML-based to examine if an increasing level of sophistication of both data coverage and model complexity enhances the nowcast performance. Different nowcast combinations have also been derived to investigate if they improve upon the individual models, drawing from the literature, suggesting potential improvements in accuracy over individual models (John *et al.*, 2020; Stock and Watson, 2004).

The rest of the study is organised into five sections. Section II provides stylised facts on food inflation in India. Section III reviews the relevant literature. Section IV describes the methodology and empirical strategy, followed by results in Section V. Section VI concludes the paper.

II. Stylised Facts on Food Inflation in India

The food group has a substantial weight in India's CPI (Table 1). Food inflation in India recorded a declining trend from 2014 through the first half of 2019. While improved supply conditions relative to demand have been underscored as the primary driving force behind this moderation, the enhancements in supply chain dynamics were also a contributing factor to this trend (Bhoi *et al.*, 2019). However, during 2019-21,

Table 1: CPI Inflation in India
Period: January 2014 – December 2023

CPI Group	CPI Weight	Mean	Standard Deviation	Skewness	Kurtosis
Food	45.86	5.1	3.0	-0.1	-0.6
Fuel	6.84	5.4	3.6	0.3	-0.1
Core	47.30	5.2	0.8	0.1	-0.8
Headline	100	5.1	1.5	-0.1	-0.7

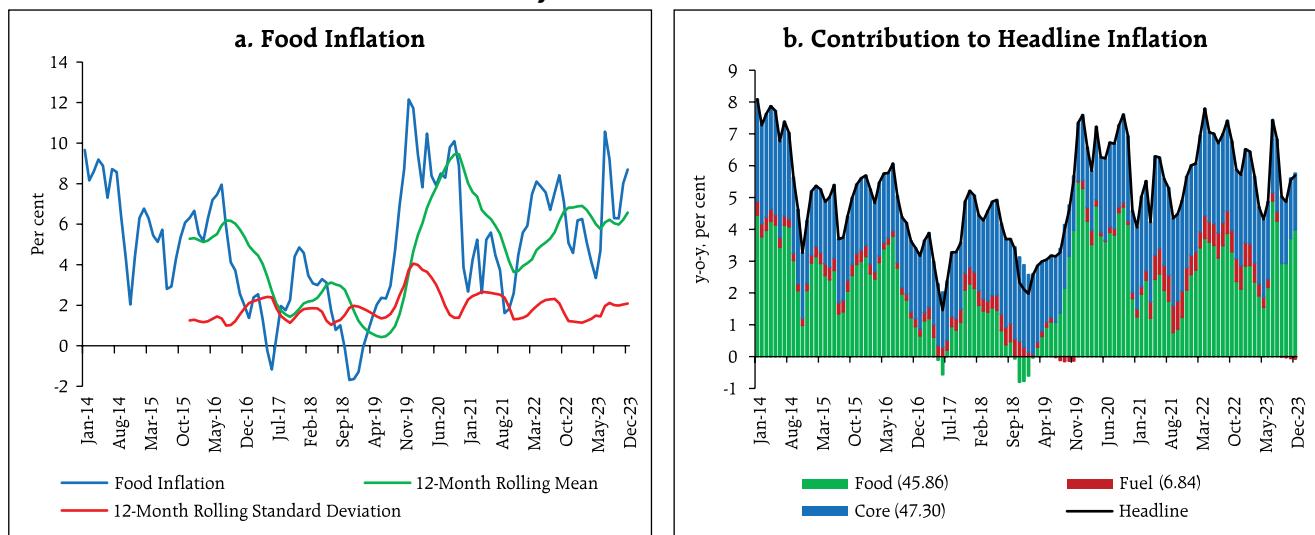
Note: Core group refers to CPI headline excluding food and fuel groups.

Sources: National Statistics Office (NSO), Ministry of Statistics and Programme Implementation (MoSPI), Government of India (GoI), and RBI staff estimates.

food inflation and its contribution (around 13 per cent during 2017-19 and 53 per cent during 2019-21) to headline inflation increased sharply (Chart 1a and 1b) on account of rain-induced food price pressures and pandemic-driven supply disruptions. With the easing of global supply chain disturbances, food inflation moderated in 2021-22. However, the moderation was short-lived as the conflict in Europe led to a renewed spike in global food and energy prices (IMF, 2022), which coupled with weather-related disturbances, kept food inflation largely elevated since 2022.

CPI food momentum⁴ has also witnessed some statistical changes such as decline in the correlation with its same season lag (12th lag) over time (Chart 2a).

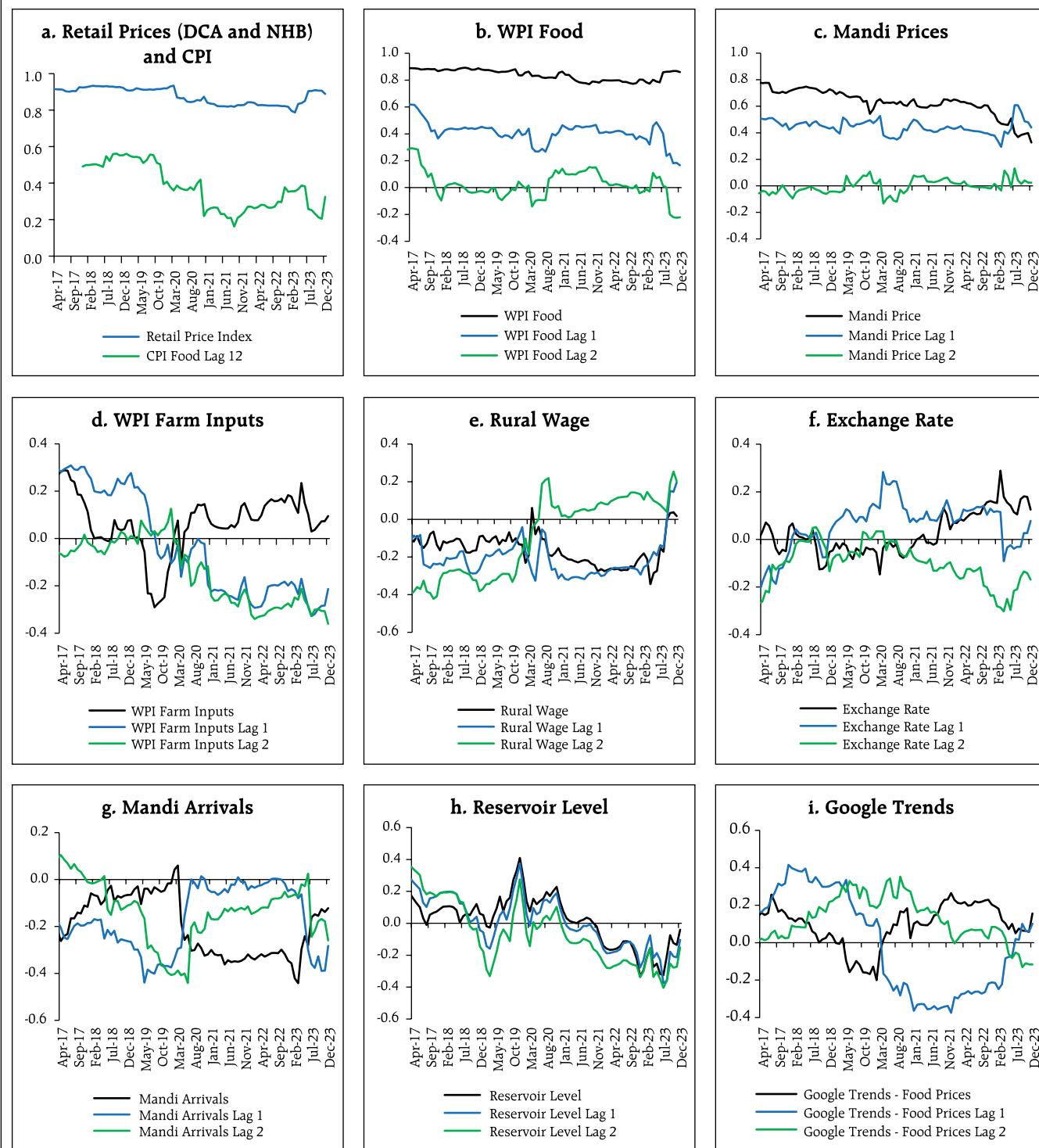
Chart 1: Summary Statistics of Food Inflation in India



Note: Figures in parentheses indicate weights in CPI. Core group refers to CPI headline excluding food and fuel groups.

Sources: NSO, MoSPI; and RBI staff estimates.

⁴ Monthly momentum refers to month-on-month (m-o-m) change (in per cent).

Chart 2: Rolling Correlations of CPI Food with Some Alternative Variables

- Notes:**
- Variables in the chart are in the momentum form except for reservoir level (per cent deviation from Long Period Average (LPA)).
 - Y-axis represents correlation coefficient. Rolling correlations are based on 36-month window.
 - To construct the retail price index (RPI), retail prices of 22 essential commodities from Department of Consumer Affairs (DCA) and 11 commodities from National Horticulture Board (NHB) were converted to indices using average prices in 2012 (CPI base year) as the base, and then aggregated using corresponding CPI weights. For information on other variables, please refer to Table A2.
 - The exchange rate is expressed in terms of INR per USD. Google Trends index corresponds to the term "Food Prices" for the Indian region.
- Source:** RBI staff estimates.

attenuating the univariate modelling methods for nowcasting, which calls to explore additional high frequency information to better capture food inflation dynamics. Information other than retail and wholesale prices may potentially provide additional real-time information about the supply-side dynamics translating into retail price changes, acting as early/leading indicators, more particularly, for food items on which price-related information is not available. The relationships between food inflation and some associated variables have also undergone changes over time, as reflected in correlation with the variables and their lags (Chart 2), suggesting the presence of non-linearities. While linear models may fail in capturing these changing relationships, non-traditional methods and techniques such as ML can be employed to capture non-linearities, as discussed earlier.

III. Literature Review

Nowcasting exercises are particularly pertinent for macroeconomic variables which are available at low frequencies, often at a quarterly basis, as in the case of Gross Domestic Product (GDP). Data for these variables are typically released with significant lags, prompting the need for nowcasts - early estimates derived by leveraging more readily available and frequently updated data sources (Banbura *et al.*, 2010). With inflation data commonly available on a monthly basis, nowcasting, particularly for food inflation, has been relatively less explored globally, especially given its relatively low weight in the CPI baskets in major advanced economies. In emerging and developing economies with large share of food in the CPI basket, nowcasting of food inflation can substantially strengthen the conduct and formulation of monetary policy.

Several studies suggest the importance of high frequency information for the inflation nowcasting exercise. According to Silva *et al.* (2024), daily food prices carry significance in nowcasting food price inflation. Beck *et al.* (2022) leverage household

scanner data on product-level prices and quantities to nowcast German inflation, demonstrating that this granular information yields timely insights into inflation dynamics early in each month. According to Yadav and Das (2023), an approach using dynamic factors and mixed frequency models on daily crowd-sourced food prices outperforms the conventional approaches in nowcasting inflation. Macias *et al.* (2023) find that employing an extensive dataset of food and non-alcoholic beverages prices scraped from webpages of major online retailers enhances the accuracy of food inflation nowcasts. Leveraging the Google Trends database, Seabold and Coppola (2015) find that integrating an internet search index improves the nowcasting of prices in Central America. Modugno (2013) shows that the inclusion of high frequency data on energy and raw material prices enhances the performance of inflation nowcasts. Knotek and Zaman (2017) also explored nowcasting inflation using real-time data in the US.

Recent literature has also highlighted the use of alternative nowcasting techniques within ML for their ability to process unstructured data and capture strong non-linearities (Desai, 2023; Goulet Coulombe *et al.*, 2022), as well as shrinkage and regularisation techniques which perform well on high-dimensional data by reducing overfitting and improving generalisation. Joseph *et al.* (2024) explore the effectiveness of dimensionality reduction techniques such as principal component analysis (PCA), shrinkage methods such as ridge regression, and ML models such as support vector machines (SVM) and neural networks in forecasting UK inflation and find that ridge regression and other shrinkage methods perform best when using high-dimensional data, and that combining large and relevant information set along with effective penalisation enhances model performance. Using Euro area inflation data, Aliaj *et al.* (2023) find that lasso regression, another popular regularisation technique, outperforms standard methods in nowcasting Euro area inflation.

IV. Methodology, Data and Empirical Strategy

Food inflation (y-o-y) in India is non-stationary in nature. However, CPI food momentum is found to be stationary (Table A1), and therefore is used as the target variable for the empirical work in this study (Table 2). All the empirical work in this paper is based on monthly data. Nowcasts have been generated on an expanding sample basis to control for sample period bias. Model specification for each technique is fixed using data till December 2022, after which the selected models are trained on an expanding sample basis by adding one successive month of realised data at a time to generate 12 monthly nowcasts. ML models generally require a testing data set⁵ to assess the accuracy of trained models and choose the optimal model based on minimum error⁶ obtained on the testing data set, which is kept as 12 months for each sample.

In this paper, alternative nowcasting techniques have been employed for a broad comparison of their nowcast performance. The set of all techniques is divided into three broad categories *i.e.*, Univariate Linear, Multivariate Linear and Multivariate

ML-based (Table 3) to assess if the increasing level of sophistication in terms of data coverage and model complexity improves the nowcast performance.

While Deep Learning (DL) has been employed to capture the possible non-linearities in the data, ridge regression⁷ and SVR⁸ have been used to investigate if their suitability to high-dimensional data enhances the nowcast accuracy.

The study considers both price and non-price indicators to capture variation in food inflation (Table A2). Retail prices, wholesale/*mandi* prices, domestic and international commodity prices, Wholesale Price Index (WPI)-based input prices, rural wages, rainfall deviation, reservoir levels, market arrivals, exchange rate, and Google Trends data are considered. The empirical work considers all the explanatory variables in both contemporaneous and lagged forms to capture their immediate and lagged impact for nowcast generation, except WPI and rural wages considering the lag in their data release, as detailed in Table A3 of the Appendix.

After finalising the set of variables and their appropriate lag structure (based on AIC), the principal

Table 2: Details of the Methodology Used in the Study

Item	Traditional Techniques	ML Techniques
Study Period	Jan 2014 – Dec 2023	Jan 2014 – Dec 2023
Model Identification Period	Jan 2014 – Dec 2022	Jan 2014 – Dec 2022
Target Variable	CPI Food momentum	CPI Food momentum
Test Data Size	-	12 months
Model Building Period	Training Period	Training + Testing Period
First Sample Training Period	Jan 2014 – Dec 2022	Jan 2014 – Dec 2021
First Sample Testing Period	-	Jan 2022 – Dec 2022
Nowcast Period	Jan 2023 – Dec 2023	Jan 2023 – Dec 2023

⁵ Testing data is a dataset, different from training dataset, on which trained models are tested to assess their prediction accuracy.

⁶ Root Mean Squared Error (RMSE) and Mean Absolute Error (MAE) have been used as measures of error for nowcast performance comparison in the study.

⁷ The ridge regression - a popular regularisation technique, reduces model complexity in presence of large number of variables by shrinking the coefficients of each by imposing a penalty on their size in the form of a regularisation (L2), where the penalty is applied on the squared magnitude of the coefficients (Richardson *et al.*, 2021). This approach not only helps in stabilising the model by reducing its sensitivity to outliers, but also improves its generalisation performance, making it useful when dealing with high-dimensional data and multicollinearity.

⁸ Support Vector Regression (SVR) – a popular ML technique, is less susceptible to outliers, compared to linear regression, as it introduces an epsilon-insensitive region, a tube around the regression line where residuals are disregarded, which allows it to fit a more robust line by ignoring small deviations, reducing overfitting as its loss function penalises only residuals outside this insensitive region (Drucker *et al.*, 1996).

Table 3: Alternative Techniques Used in the Study

Technique	Type
Random Walk	Univariate Linear
ARIMA and SARIMA	Univariate Linear
Linear Regression	Multivariate Linear
ARIMAX and SARIMAX	Multivariate Linear
Ridge Regression	Multivariate Linear
Artificial Neural Network (ANN)	Multivariate ML-based
Support Vector Regression (SVR)	Multivariate ML-based

Note: For description on models other than ridge regression and SVR, please refer to Singh and Bhoi, 2022.

component analysis (PCA) technique has been employed on all explanatory variables except retail prices⁹, for dimensionality reduction to generate maximum principal components (PCs) (Table A3). Thereafter, forward selection¹⁰ (FS) technique has been employed to shortlist the most relevant PCs based on the training data using a significance level of 10 per cent as the threshold. The list of input variables before and after conducting PCA is given in the Annex (Table A4). While the ridge regression is allowed to leverage raw data of all the 35 predictors due to its regularisation (shrinkage) capability, the other models consider the shortlisted principal components as explanatory variables (Table A5).

Seasonal adjustment has not been performed on the data as (1) the paper concentrates only on nowcast accuracy and not impact evaluation and (2) seasonal adjustment results in loss of some information, even when conducted properly (IMF, 2017).

V. Results

As the inflation nowcasts are in month-on-month (m-o-m) momentum form, they are converted into year-on-year (y-o-y) numbers for like-for-like comparison with the actual CPI food inflation rates (y-o-y). Both root mean squared error (RMSE) and mean absolute error (MAE) of nowcasts have been calculated

for performance comparison across models. Relative RMSE, calculated considering Random Walk as the base model, is also compared (Chart 3). As 2023Q3 witnessed substantial food price shocks, nowcasts excluding Q3 are also calculated for a more robust comparison.

The results indicate that expanding the information set as well as increasing model complexity improves the accuracy of nowcasts based on data for 2023 (Table 4, Chart 3). The precision notably increases when retail and wholesale food price information are incorporated as compared to scenarios where only univariate models (no alternative information) are employed, producing temporally lagged (seemingly right-shifted) nowcasts due to the presence of significant immediate sequential lags in the autoregressive models (Chart A1). However, within multivariate linear models (linear regression and SARIMAX), inclusion of information other than retail and wholesale prices does not provide performance gains as traditional linear models may not perform well on higher dimensions and capture potential non-linearities in the data. This deficiency is addressed by employing regularisation and ML techniques which provide significant improvement in the prediction accuracy.

Within ML models, while SVR enhances the accuracy by generating robust estimates for high-dimensional data (characterised by noise and heterogeneity among predictor variables), ANN further enhances the nowcast performance due to its ability to capture non-linearities. However, ridge regression, a linear model, provides maximum performance gains as its regularisation (shrinkage) feature stabilises the coefficients by reducing overfitting and multicollinearity commonly associated with high-dimensional data. These results indicate that

⁹ Given the strong association of retail price information with CPI food in contemporaneous form, it has been independently used and not included under PCA.

¹⁰ Forward selection (FS) is a variable selection technique which starts with no variables in the model and adds variables one by one till a threshold (say, significance level of 10 per cent) beyond which no further improvement occurs. The order of selection is based on statistical significance and sequential addition to explanation power.

Table 4: Performance Comparison of Alternative Models

Comparison vis-à-vis Actual Food Inflation (y-o-y)						Nowcast Period: Jan 2023 – Dec 2023
Model Type	Model	RMSE		MAE		Complexity
		Full Sample	Excluding 2023Q3	Full Sample	Excluding 2023Q3	
Univariate Linear	Random Walk	2.15	1.09	1.54	0.93	No Alternative Information
	ARIMA	1.61	0.67	1.07	0.52	
	SARIMA	1.57	0.76	1.07	0.64	
Multivariate Linear	LR	0.73	0.51	0.54	0.39	Retail and Wholesale Price Information
	SARIMAX	0.68	0.53	0.55	0.43	
	Ridge	0.63	0.41	0.49	0.35	
	LR	0.77	0.65	0.62	0.54	Full Information
	SARIMAX	0.73	0.63	0.60	0.51	
	Ridge	0.55	0.40	0.45	0.33	
Multivariate ML-based	ANN	0.60	0.47	0.51	0.38	Full Information + ML
	SVR	0.68	0.51	0.52	0.41	
Combinations	Ridge(PI) + ANN	0.59 ^	0.41	0.47 ^	0.33 ^	
	Ridge(FI) + ANN	0.55	0.40	0.44 ^	0.31 ^	

Notes: 1. MAE: Mean Absolute Error; LR: Linear Regression; PI: Price Information (retail and wholesale); FI: Full Information.

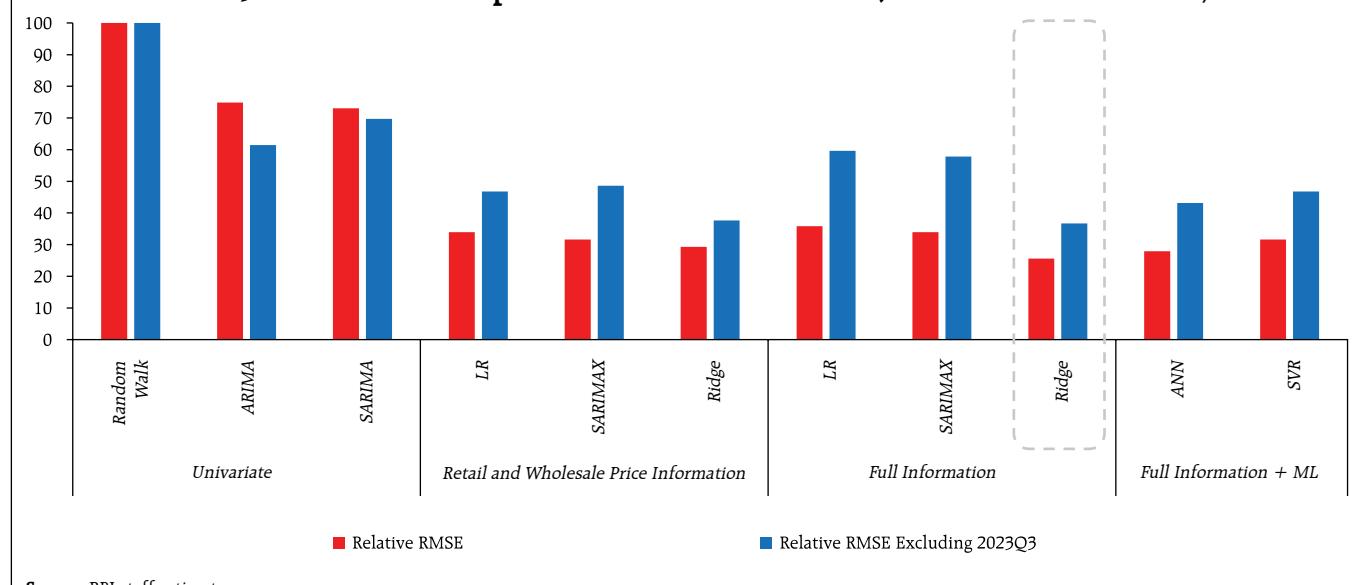
2. All models include a seasonal lag (12th lag) of target variable as an explanatory variable.

3. Combinations are based on RMSE-weighted average of nowcasts. ^ indicates improvement with nowcast combination if RMSE (Combination) < Minimum (RMSEs of individual models).

Source: RBI staff estimates.

inclusion of additional information help in explaining variations in food inflation, enhancing the nowcasting performance over traditional linear benchmarks. Using the best performing models, RMSE-weighted

combination nowcasts are also calculated which provide additional performance gains over those obtained from the individual models, suggesting maximum performance using the combination

Chart 3: Performance Comparison of Alternative Models (Relative to Random Walk)

of ridge and ANN models, underscoring the effectiveness of regularisation coupled with capturing of non-linearities in the data used. The RMSE of the combination of Ridge (FI) and ANN - at 0.55 is almost one-fourth of the baseline random walk model and almost one-third of the traditional univariate time-series models, suggesting sizeable nowcasting gains from the augmented modelling approach adopted in this paper.

VI. Conclusion

This study investigates the effectiveness of leveraging alternative information and modelling techniques in improving food inflation nowcasting in India. The empirical findings demonstrate that expanding the input information set and going beyond conventional univariate modelling to include additional high frequency price and non-price indicators significantly improves nowcast precision by capturing complex supply-side dynamics influencing food prices in India. Moreover, the study highlights the advantages of employing alternative modelling approaches including regularisation (shrinkage) and ML-based techniques over traditional linear models, which are known to excel in processing high-dimensional data, reducing overfitting, accounting for non-linearities and therefore, enhancing the predictive performance. The results also indicate that combining diverse models further boosts the accuracy of nowcasts, advocating for the adoption of an ensemble approach in predictive modelling exercises.

The insights obtained from this study can, therefore, provide valuable support for informed policymaking in an environment of recurrent and large volatile food price dynamics in India. Future research could explore the integration of additional unstructured data sources, employing more advanced deep learning architectures, and investigating the feasibility of extending this framework to other components of inflation.

References

- Aliaj, T., Ciganovic, M., and Tancioni, M. (2023). Nowcasting Inflation with Lasso-Regularized Vector Autoregressions and Mixed Frequency Data. *Journal of Forecasting*, 42(3), 464-480.
- Banbura, M., Giannone, D., and Reichlin, L. (2010). Nowcasting Working Paper Series, No. 1275, European Central Bank.
- Beck, G. W., Carstensen, K., Menz, J. O., Schnorrenberger, R., and Wieland, E. (2023). Nowcasting Consumer Price Inflation Using High-Frequency Scanner Data: Evidence from Germany. Deutsche Bundesbank Discussion Paper No. 34/2023.
- Bhoi, B. B., Kundu, S., Kishore, V., and Suganthi, D. (2019). Supply Chain Dynamics and Food Inflation in India. *RBI Bulletin*, Vol. 73(10), 95-111.
- Binner, J. M., Bissoondial, R. K., Elger, T., Gazely, A. M., and Mullineux, A. W. (2005). A Comparison of Linear Forecasting Models and Neural Networks: An Application to Euro Inflation and Euro Divisia. *Applied Economics*, Vol. 37(6), 665-680.
- Cachia, F. (2014). Nowcasting Regional Consumer Food Inflation. Food and Agriculture Organisation of the United States Working Paper Series, ESS/14-07.
- Chakraborty, C., and Joseph, A. (2017). Machine Learning at Central Banks. Bank of England Staff Working Papers, No. 674.
- Clark, T. E., Leonard, S., Marcellino, M., and Wegmüller, P. (2022). Weekly Nowcasting US Inflation with Enhanced Random Forests. Federal Reserve Bank of Cleveland.
- Desai, A. (2023). Machine Learning for Economics Research: When What and How? Staff Analytical Note 2023-16, Bank of Canada.
- Drucker, H., Burges, C. J., Kaufman, L., Smola, A., and Vapnik, V. (1996). Support Vector Regression Machines. *Advances in Neural Information Processing Systems*, 9.

- Faust, J., and Wright, J. H. (2013). Forecasting Inflation. *Handbook of Economic Forecasting*, Vol. 2 (Elsevier), 2–56.
- Goulet Coulombe, P., Leroux, M., Stevanovic, D., and Surprenant, S. (2022). How is Machine Learning Useful for Macroeconomic Forecasting? *Journal of Applied Econometrics*, 37(5), 920-964.
- Hoerl, A. E., and Kennard, R. W. (1970). Ridge Regression: Biased Estimation for Nonorthogonal Problems. *Technometrics*, 12(1), 55-67.
- IMF. (2022). Countering The Cost-Of-Living Crisis. World Economic Outlook, October 2022, International Monetary Fund (IMF).
- John, J., Singh, S., and Kapur, M. (2020). Inflation Forecast Combinations – The Indian Experience. Reserve Bank of India Working Paper Series WPS (DEPR): 11/2020.
- Joseph, A., Potjagailo, G., Chakraborty, C., and Kapetanios, G. (2024). Forecasting UK Inflation Bottom Up. *International Journal of Forecasting*.
- Knotek, E. S., and Zaman, S. (2017). Nowcasting US Headline and Core Inflation. *Journal of Money, Credit and Banking*, 49(5), 931-968.
- Krüger, F., Clark, T. E., and Ravazzolo, F. (2017). Using Entropic Tilting to Combine BVAR Forecasts with External Nowcasts. *Journal of Business and Economic Statistics*, 35(3), 470–485.
- LeCun, Y., Bengio, Y., and Hinton, G. (2015). Deep Learning. *Nature*, 521(7553), 436-444.
- Macias, P., Stelmasiak, D., and Szafranek, K. (2023). Nowcasting Food Inflation with a Massive Amount of Online Prices. *International Journal of Forecasting*, Vol. 39, Issue 2, April–June 2023, 809-826.
- Modugno, M. (2013). Now-casting Inflation Using High Frequency Data, *International Journal of Forecasting*, Vol. 29, Issue 4, 2013, 664-675.
- Noble, W. S. (2006). What is a Support Vector Machine? *Nature Biotechnology*, 24(12), 1565-1567.
- Pratap, B., Ranjan, A., Kishore, V., and Bhoi, B. B. (2022). Forecasting Food Inflation Using News-based Sentiment Indicators. *Reserve Bank of India Occasional Papers*, 42(2).
- RBI. (2020). Monetary Policy Report, April.
- Richardson, A., Van Florenstein Mulder, T., and Vehbi, T. (2021). Nowcasting GDP Using Machine-Learning Algorithms: A Real-Time Assessment. *International Journal of Forecasting*, 37(2), 941-948.
- Seabold, S. and Coppola, A. (2015). Nowcasting Prices Using Google Trends: An Application to Central America, Policy Research Working Paper Series 7398, The World Bank.
- Sekhar, C. S. C., Roy, D., and Bhatt, Y. (2018). Food Inflation and Volatility in India: Trends and Determinants. *Indian Economic Review* (2018) 53:65–91.
- Silva e Silva, L., Mongeau Ospina, C. A., and Fabi, C. (2024). Food Price Inflation Nowcasting and Monitoring. *Statistical Journal of the IAOS*, Vol. 40, No. 2, 325-339.
- Singh, N., and Bhoi, B. B. (2022). Inflation Forecasting in India: Are Machine Learning Techniques Useful? *Reserve Bank of India Occasional Papers*, Vol. 43, No. 2: 2022, 46-88.
- Stock, J. H., and Watson, M. W. (2004). Combination Forecasts of Output Growth in a Seven-Country Data Set. *Journal of Forecasting*, 23(6), 405-430.

Annex

Table A1: Stationarity Tests

Variable	ADF Test Statistic	P-value	Result
Food Inflation (y-o-y)	-2.19	0.21	Non-stationary
CPI Food momentum (m-o-m)	-6.20***	0.00	Stationary

Notes: 1. Estimates are based on data for January 2014–December 2022.

2. *: P < 0.10; **: P < 0.05; ***: P < 0.01

Source: RBI staff estimates.

Table A2: Description of Input Information

Information	Sources
Retail Prices	DCA, MCE, GoI; NHB, MAFW, GoI
Wholesale and Mandi Prices	WPI; Agmarknet, MAFW, GoI
International Prices	IMF
WPI Input Prices	WPI, MCI, GoI
Rural Wages	Labour Bureau, MLE, GoI
Rainfall	IMD, GoI
Reservoir Level	CMIE
Market/mandi Arrivals	Agmarknet, MAFW, GoI
Oil/Energy Prices	MoPNG, GoI; IMF
Exchange Rate	FBIL
Google Trends	Google

Note: GoI: Government of India; DCA: Department of Consumer Affairs; MCE: Ministry of Consumer Affairs; NHB: National Horticulture Board; MAFW: Ministry of Agriculture and Farmers Welfare; WPI: Wholesale Price Index; MCI: Ministry of Commerce and Industry; IMF: International Monetary Fund; MLE: Ministry of Labour and Employment; IMD: Indian Meteorological Department; CMIE: Centre for Monitoring Indian Economy; MoPNG: Ministry of Petroleum and Natural Gas; FBIL: Financial Benchmarks India Pvt. Ltd.

Table A3: Selected Principal Components and Variable Importance

Wholesale/Mandi Price Variables	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6
Mandi Price mom _t	0.28				0.01	
Mandi Price mom _{t-1}		0.15			0.22	
Mandi Price mom _{t-2}			0.25		0.28	
WPI Food mom _{t-1}			0.10		0.31	
WPI Food mom _{t-2}		0.22			0.18	
Other Variables	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6
Exchange Rate mom _t	0.02	0.00	0.00	0.13	0.01	0.02
Exchange Rate mom _{t-1}	0.00	0.03	0.07	0.01	0.00	0.00
Exchange Rate mom _{t-2}	0.06	0.02	0.08	0.03	0.00	0.11
Google Trends mom _t	0.03	0.16	0.01	0.09	0.19	0.08
Google Trends mom _{t-1}	0.04	0.24	0.00	0.02	0.00	0.04
Google Trends mom _{t-2}	0.08	0.04	0.04	0.02	0.08	0.01
IMF Agricultural Raw Materials mom _t	0.02	0.01	0.00	0.01	0.01	0.04
IMF Agricultural Raw Materials mom _{t-1}	0.00	0.02	0.01	0.03	0.00	0.00
IMF Agricultural Raw Materials mom _{t-2}	0.00	0.00	0.01	0.00	0.06	0.01
IMF Food and Beverages mom _t	0.04	0.05	0.01	0.03	0.01	0.07
IMF Food and Beverages mom _{t-1}	0.00	0.02	0.00	0.00	0.02	0.08
IMF Food and Beverages mom _{t-2}	0.01	0.00	0.01	0.00	0.07	0.01
Mandi Arrivals mom _t	0.12	0.09	0.00	0.10	0.01	0.01
Mandi Arrivals mom _{t-1}	0.01	0.12	0.12	0.00	0.01	0.00
Mandi Arrivals mom _{t-2}	0.17	0.00	0.12	0.07	0.01	0.06
Oil Price mom _t	0.01	0.04	0.02	0.05	0.15	0.09
Oil Price mom _{t-1}	0.03	0.00	0.08	0.00	0.02	0.15
Oil Price mom _{t-2}	0.02	0.00	0.01	0.00	0.01	0.00
Rainfall Deviation _t	0.00	0.00	0.25	0.00	0.01	0.00
Rainfall Deviation _{t-1}	0.03	0.03	0.01	0.25	0.08	0.10
Rainfall Deviation _{t-2}	0.01	0.03	0.05	0.02	0.05	0.05
Reservoir Deviation _t	0.01	0.00	0.00	0.00	0.01	0.01
Reservoir Deviation _{t-1}	0.03	0.00	0.00	0.00	0.00	0.00
Reservoir Deviation _{t-2}	0.04	0.00	0.01	0.01	0.01	0.02
Rural Wage mom _{t-2}	0.07	0.00	0.09	0.02	0.05	0.00
WPI Farm Inputs mom _{t-1}	0.00	0.03	0.00	0.03	0.07	0.00
WPI Farm Inputs mom _{t-2}	0.09	0.03	0.00	0.03	0.04	0.04
WPI Industrial Inputs mom _{t-1}	0.01	0.01	0.00	0.01	0.01	0.00
WPI Industrial Inputs mom _{t-2}	0.05	0.03	0.00	0.05	0.03	0.00

Note: Each cell quantifies the importance of the variable in each PC. Higher importance within each PC is shown with darker shade of green.

Source: RBI staff estimates.

Table A4: List of Final Input Variables

S.No.	Before PCA		After PCA and FS	
	Input Variables (m-o-m, per cent)	Contemporaneous + Lags	Final Variables	
1	Retail Price Index (RPI)	1	Retail Price (DCA and NHB) Index Momentum	
2	WPI Food	2	2 Principal Components	
3	Mandi Price Index	3		
4	WPI Farm Inputs Index	2	6 Principal Components	
5	WPI Industrial Inputs Index			
6	Rural Wages	1		
7	Absolute Rainfall Deviation from LPA (per cent)	3		
8	Reservoir Level Deviation from LPA (per cent)			
9	Market Arrivals Index			
10	IMF Food and Beverages Index	3	6 Principal Components	
11	IMF Agricultural Raw Materials Index			
12	Oil Price			
13	Exchange Rate			
14	Google Trends Index	35	9	
	Total			

Notes: 1. All variables are in month-on-month (m-o-m) per cent change form, except for absolute rainfall deviation from LPA (per cent) and reservoir level deviation from LPA (per cent).
 2. FS: Forward Selection; LPA: Long Period Average.
 3. Google Trends Index corresponds to the term "Food Prices" for the Indian region.

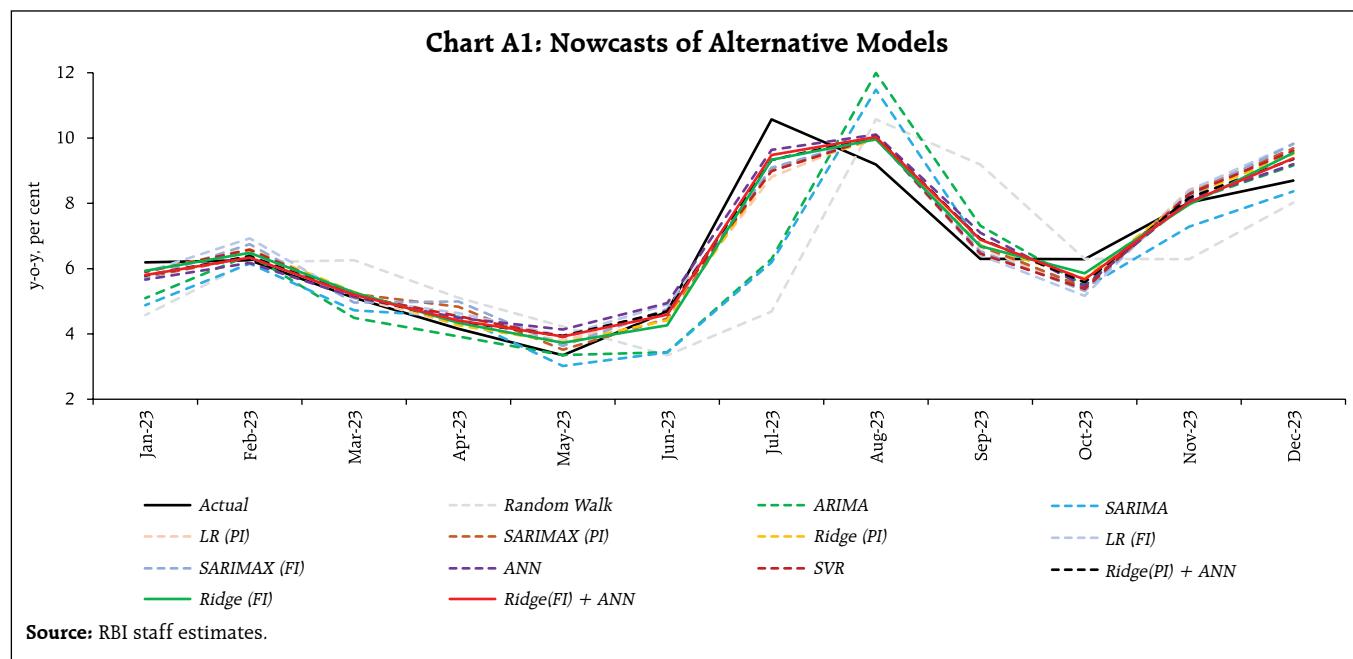
Table A5: Detail on Alternative Nowcasting Models

Dependent Variable: $Y = CPI\ Food\ momentum$					
Model Type	Complexity	Model	Explanatory Variables and Model Structure	R ²	AIC
Univariate Linear	No Alternative Information	ARIMA	C. (p,d,q) = (4,0,2)	0.43	2.79
		SARIMA	C. (p,d,q)(P,D,Q) = (1,0,2)(1,0,1)	0.50	2.77
	Retail and Wholesale Price Information	LR	C. CPI Food Momentum _{t,12'} , RPI Momentum _{t'} PCs capturing WPI and mandi food prices	0.79	1.63
		SARIMAX	C. (p,d,q)(P,D,Q) = (1,0,1)(0,0,0), RPI Momentum _{t'} PCs capturing WPI and mandi food prices	0.81	1.65
		Ridge	C. RPI Momentum _{t'} , WPI and mandi food price variables Method = K-Fold	0.81	-
	Multivariate Linear	LR	C. CPI Food Momentum _{t,12'} , RPI Momentum _{t'} PCs capturing WPI and mandi food prices and rest of information	0.85	1.45
		SARIMAX	C. (p,d,q)(P,D,Q) = (1,0,1)(0,0,0), RPI Momentum _{t'} PCs capturing WPI and mandi food prices and rest of information	0.88	1.47
		Ridge	C. all variables capturing food prices and rest of information Method = K-Fold	0.88	-
Multivariate ML-based	Full Information + ML	ANN	C. CPI Food Momentum _{t,12'} , RPI Momentum _{t'} PCs capturing WPI and mandi food prices and rest of information Hyperparameters: 1 hidden layer with 3 nodes, Activation function = Sigmoid, Learning Rate = 0.005, Runs = 1000	-	-
		SVR	C. CPI Food Momentum _{t,12'} , RPI Momentum _{t'} PCs capturing WPI and mandi food prices and rest of information Hyperparameters: Kernel = Linear C (regularisation parameter) = 0.1 Epsilon = 0.01	-	-

Notes: 1. 'p', 'd' and 'q' refer to the autoregressive, differencing and moving average orders, while 'P', 'D' and 'Q' are seasonal autoregressive, seasonal differencing and moving average orders; 'X' refers to the set of exogenous variables.

2. C: Constant; AIC: Akaike Information Criterion; 'X_{t,n}' refers to nth lag of variable X.

Source: RBI staff estimates.



How Indian Banks are Adopting Artificial Intelligence?

by Shobhit Goel, Dirghau K. Raut,
Madhuresh Kumar and Manu Sharma ^

Artificial Intelligence (AI) is being increasingly adopted in the banking and financial services industry, with multiple use cases including fraud detection, customer segmentation, and chat automation. This article attempts to construct a quantitative measure of AI adoption in the Indian banking system using a text-mining approach. It also attempts to identify the impact of bank-specific characteristics in driving AI adoption using a panel fixed effects model. The results indicate that AI adoption is gaining momentum led by private banks, with asset size and CRAR influencing the rate of adoption.

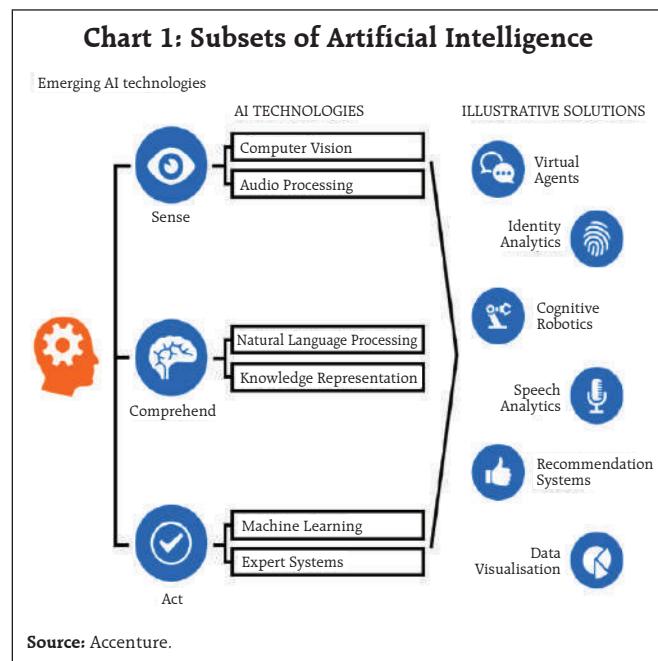
Introduction

The banking and financial sector has a long and storied history of adapting to and adopting technological innovations, starting from the invention of paper currency in the 7th century AD to the introduction of the internet and mobile banking in the 21st century. In each case, the industry initially faced scepticism and challenges in embracing these new technologies, but eventually, they became integral to its functioning and productive efficiencies.

Artificial Intelligence (AI) today can be broadly defined as the branch of computer science that aims to create machines and systems that can perform tasks which normally require human intelligence, such as reasoning, learning, decision-making, and natural language processing (Holden, 1991; McCarthy, 1960, 1989, 2007; Russell and Norvig, 2010). While terms

like machine learning, deep learning, unsupervised learning, and neural networks are often used in conjunction with artificial intelligence, they can be viewed as subsets of the broad field of AI (Chart 1)¹. The rapid rise in computing power combined with the rise of unstructured data has supported the development of machine learning and other AI systems. Further, the rise of smart devices powered by AI and the Internet of Things (IoT) has in turn created new swathes of data which can be used to create the next generation of AI solutions.

Artificial intelligence (AI) and machine learning (ML) have gained prominence, especially with advancements in generative AI models based on large language models (LLMs). The adoption of AI and related technologies in the banking, financial services, and insurance (BFSI) sector is rapidly transforming the landscape of financial services both globally and in India (RBI, 2023). The banking sector is integrating AI into banking operations to enhance efficiency, accuracy, and customer experience, paving the way for a more innovative and customer-centric financial ecosystem (BIS, 2024).



[^] The authors are from the Department of Economic and Policy Research, Reserve Bank of India. The authors would like to thank Dr. Snehal Harwadkar and Sonali Goel for providing data and inputs for the article. The authors are also thankful to Shri Rajib Das and Dr. Sarat Dhal for their useful comments on the paper. The views expressed are those of the authors and do not represent the views of the Reserve Bank of India.

¹ A glossary of terms commonly associated with AI is provided in Annex 1.

The potential adoption and usage of the AI models has necessitated policy discussion and research around multiple macro financial and other issues including, quantitatively measuring the adoption of these technologies, identifying the factors driving their adoption, and evaluating the impact of these technologies. While there exists literature on the adoption of AI it is mostly qualitative in nature. This paper attempts to provide a quantitative measure of the pace of adoption of AI in Indian banks. It employs text-mining techniques to analyse 32 Indian commercial banks' annual reports² for eight years from FY 2015-16 to FY 2022-23 to identify their adoption and usage of AI and related technologies and their growth in recent years. It then explores the role of bank's financial health in influencing AI adoption by utilising a fixed effects panel data model.

The rest of the paper is divided into four sections. Section II provides stylised facts such as applications and business drivers of AI and its potential value creation in the banking sector. Data sources and methodology are explained in Section III while outcomes of text mining and empirical results on drivers of AI adoption are provided in Section IV. Section V concludes the article.

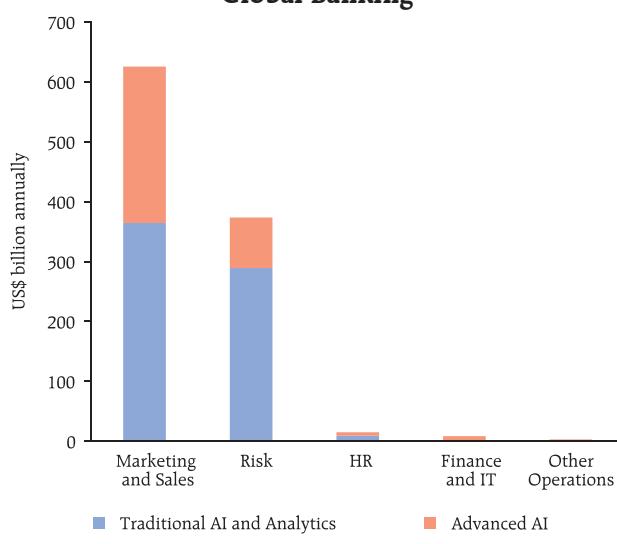
II. Artificial Intelligence and the Financial Sector

The digital age has witnessed a monumental shift in the pace and scale of innovation, with convergence of big data, advanced algorithms, and computational power. This rapid evolution of deep learning, machine learning, and other AI technologies has been accompanied by its increasing adoption and integration in the financial sector. While some view it as a natural evolution in this era marked by the

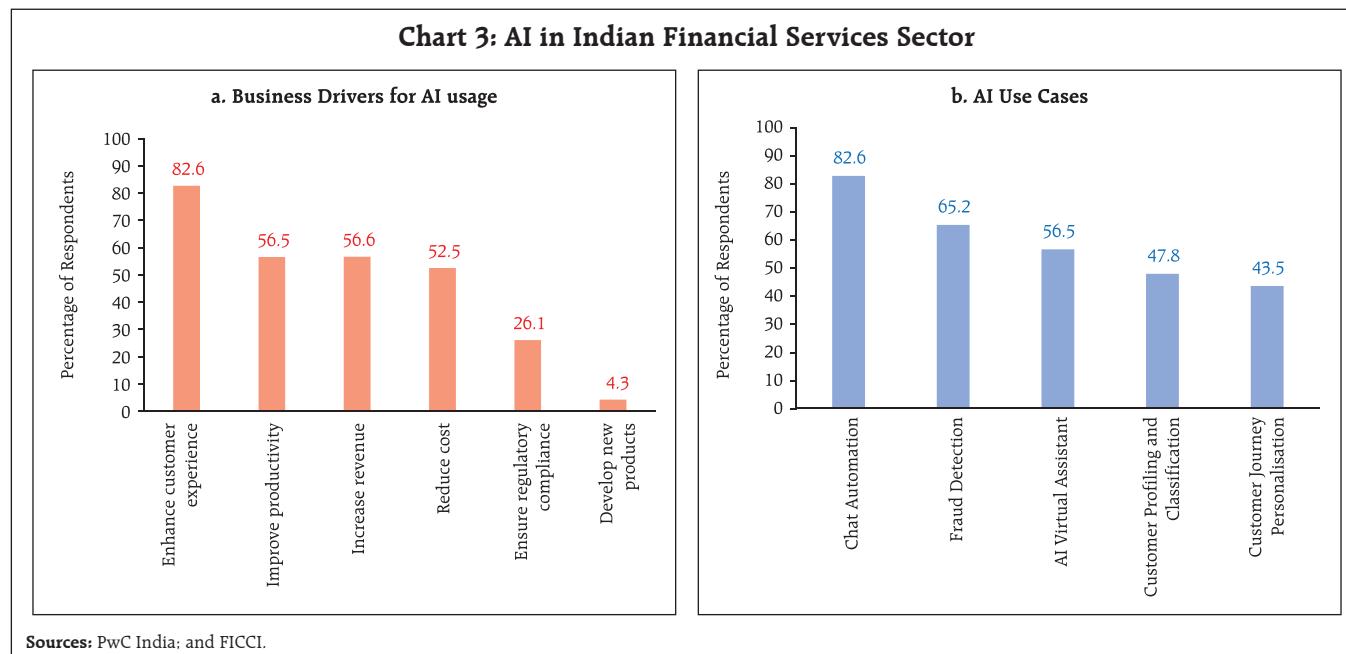
banking sector and the broader financial industry's relentless pursuit of efficiency, innovation, and enhanced decision-making capabilities, others have argued that the adoption of these technologies has become a necessity as the wider economy has embraced them. The banking industry is realising the potential of not only the traditional data analytics and machine learning but it is increasingly recognising the role of new and emerging advanced AI technologies like deep neural networks and large language models to derive value in traditional areas like marketing and sales, risk management, finance, and IT. According to McKinsey (2021), the potential for value creation through AI and related technologies in global banking is more than US\$1 trillion annually mainly in the domain of marketing and sales, and risk management (Chart 2).

From the broader business drivers' standpoint, within the Indian financial sector, the improvement of customer experience, revenue augmentation, and the creation of new products – all of which can be broadly seen as endeavours in the realm of marketing and sales – stand out as significant motivation for

Chart 2: Potential Value of AI and Analytics for Global Banking



² All 12 public sector banks and 20 out of 21 private sector banks have been considered for analysis. The banks under consideration account for 100 per cent of total assets in the case of public sector banks and 99.3 per cent of total assets in the case of private sector banks



the utilisation of AI (Chart 3a). Indian banks are increasingly focusing on deployment of AI-driven chatbots and virtual assistants to enhance customer experience and provide personalised service (Chart 3b) (PwC India and FICCI, 2022). These technologies provide customers with instant responses to queries, streamline account management, and offer personalised financial advice (Alt *et al.*, 2021; Boukherouaa *et al.*, 2021; Goudarzi *et al.*, 2018; Orçun Kaya, 2019). AI technologies are reshaping traditional banking and expanding financial services to the underserved populations. Mobile banking apps, AI-driven credit scoring, and blockchain-based solutions are examples of some of the powerful and enabling vehicles of greater financial inclusion by extending access to banking services to previously unbanked or underbanked individuals (Bazarbash, 2019; Gensler and Bailey, 2021).

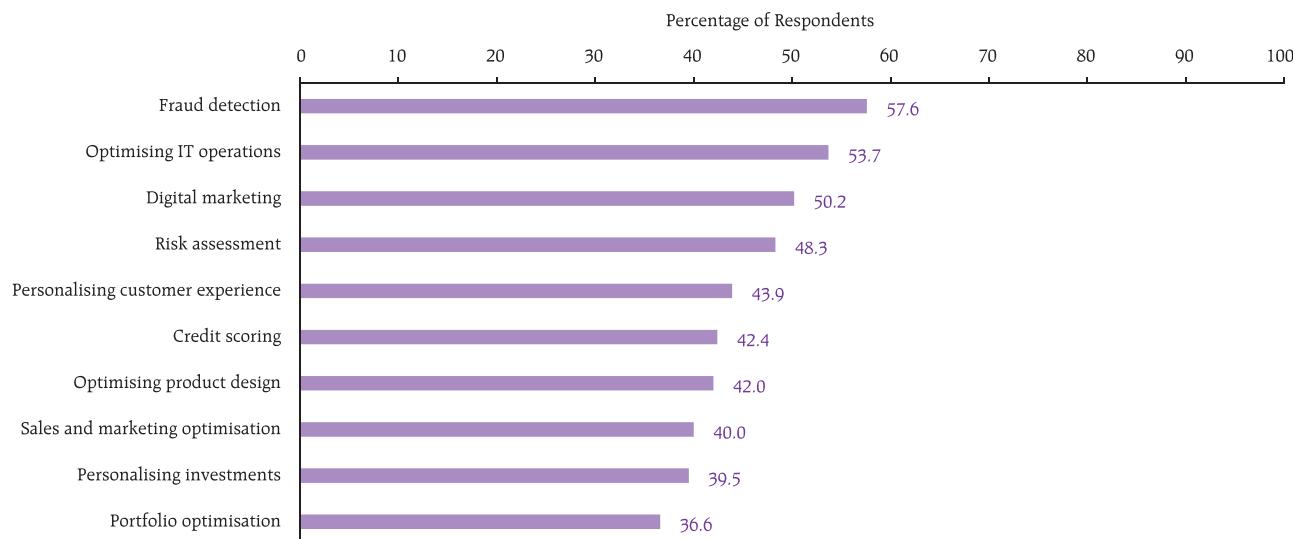
Banks and FIs are using Machine Learning (ML) algorithms as part of their proprietary trading desks, forex trading desks and even fixed income trading to deploy sophisticated trading strategies on a real-time basis, with the goal of increasing the profitability

of their trading operations. These strategies are increasingly driven by predictive analytics, sentiment analysis, and other AI-powered tools, with the potential to outperform traditional investment approaches (Boukherouaa *et al.*, 2021; Goudarzi *et al.*, 2018). Some of the areas for which banks are using AI to save cost are: conversational banking, anti-fraud and under-writing³.

Financial sector in India is also trying to leverage the AI tools for regulatory compliance. AI solutions could facilitate compliance by automating reporting, monitoring transactions for suspicious activities, better understanding of the regulatory requirements and ensuring adherence to evolving regulatory standards, reducing the risk of regulatory misconducts, penalties and fines (Boukherouaa *et al.*, 2021).

As seen earlier, AI solutions have huge potential to enhance risk management capabilities, by undertaking analysis of massive datasets, finding solutions not available earlier and getting better perspectives on

³ <https://www.businessinsider.in/finance/news/the-impact-of-artificial-intelligence-in-the-banking-sector-how-ai-is-being-used-in-2020/articleshow/72860899.cms>

Chart 4: Applications of AI by Banks

Source: The Economist Intelligence Unit Survey, 2022.

the real-time market conditions; thereby allowing for more accurate and timely business risk predictions, contributing to improved portfolio management, loan underwriting, and fraud detection. According to a survey of the IT executives in the banking sector globally, banks are deploying AI based applications for risk management, the most prominent of which are for fraud detection, optimising IT operations, risk assessment and personalising credit scoring (Chart 4).

AI-powered fraud detection systems can identify suspicious activities and transactions in real-time, thus offering a robust defense against financial crimes. Some experts argue that future of fraud detection has to be AI powered as financial transactions are increasingly occurring in the digital realm, making the battle against fraud more complex (Boukherouaa *et al.*, 2021; Goudarzi *et al.*, 2018; Milojević and Redzepagic, 2021; Orçun Kaya, 2019). With the growing volume of sensitive financial data, cybersecurity has become a paramount concern. Banks and FIs are increasingly adopting AI-powered cybersecurity tools for automated anomaly detection and predictive behavioural analysis

to identify potential threats and vulnerabilities (Aziz and Dowling, 2018; Donepudi, 2017; Goudarzi *et al.*, 2018; Milojević and Redzepagic, 2021; Orçun Kaya, 2019).

III. Data Sources and Methodology

Most of the existing literature on the impact of AI/ML on financial sector has limited quantitative information on the actual usage and adoption of artificial intelligence, machine learning and other automation technologies in the Indian banking sector. The existing literature has mainly adopted three broad approaches. The first approach has been a completely qualitative one, where analysis of academic journals, industry reports and leading business publications is undertaken to identify use cases of AI in the industry. However, the main shortcomings of this approach are: (1) Possibility of researchers' bias which can lead to an overemphasis on certain themes or findings, and underrepresentation of others; (2) Concerns over rigour and reliability of reports; (3) Limited ability to generalise findings and allow spatial and inter-temporal comparisons (Carter *et al.*, 2021; Rahman,

2016). The second approach has been to conduct surveys/questionnaires and provide qualitative overview of AI adoption or convert the responses into a quantitative metric. However, this approach too suffers from issues like (1) difficulty in capturing the complexity with adoption of a frontier technology like AI; (2) unreliability and bias as the respondent may not be aware of all aspects or use cases of technology within the firm and may also overstate and over emphasise their usage of AI to appear more innovative or may underestimate the response due to privacy concerns; (3) Comparison issues especially across time which is a very important aspect as technology adoption is a dynamic process and a firm's use of AI and other technologies can evolve rapidly (Carter *et al.*, 2021; *Survey Research and Questionnaires*, n.d.). The third approach has been to use a proxy variable as a measure of AI adoption including using some proportion of IT investment expenditure/capital expenditure/M&A expenditure of technology related firms. The main shortcomings of this approach are (1) these metrics measure not just AI based technologies but also other types of IT expenditure (2) expenditure may not directly lead to adoption as firms may fail

to successfully develop or operationalise a technology solution or may be utilising cost-effective open source technologies to develop solutions.

In view of this, we propose a text mining-based approach to measure the adoption of AI/ML and related technologies in the Indian banking sector. We perform text mining on the annual reports of the Indian banks as they are highly likely to reflect the usage and adoption of new-age technology like AI/ML. Further, the annual reports are a trustworthy and publicly available source of information and are also available across years thereby allowing for inter-temporal analysis.

We have adopted a dictionary-based approach after parsing the annual reports to extract individual words/phrases and evaluate the instances of usage of these words. While the earliest work utilised existing dictionaries like Harvard word dictionary, subsequent work created their own unique dictionaries according to the specific need. These text mining-based approaches have been used to measure otherwise hard to evaluate attributes like corporate governance, ESG activity and FinTech adoption (Table 1).

Table 1: Literature Utilising Text Analytics

Loughran <i>et al.</i> (2009)	Undertook text mining to examine the occurrence of ethics-related terms in firms' 10-K reports. Found that firms using ethics-related terms are more likely to be (i) "sin" stocks, (ii) the object of class action lawsuits and (iii) to score poorly on measures of corporate governance.
Shirata <i>et al.</i> (2011)	Adopted a text mining approach to analyse Japanese firms' financial reports and extracted key phrases/descriptions which could be able to predict bankruptcy.
Feng <i>et al.</i> (2013)	Undertook textual analysis of firms 10-K reports to create a word count based measure of industry competition. This measure is related to existing industry-level measures of disclosure (e.g., Herfindahl index), but provide additional insight into both across-industry variation and within-industry variation.
Baier <i>et al.</i> (2020)	Undertook textual analysis of firms' 10-K reports for measuring environmental, social and governance (ESG) activity of the firms. Undertook a word count based measure using a uniquely created dictionary for ESG related words.
Hong <i>et al.</i> (2023)	Constructed a new measure of FinTech adoption by firms, using a word count approach with a uniquely created dictionary for FinTech on firms' 10-K reports. Further, examined how product market competition affects FinTech adoption at the firm level and found that firms operating in more competitive environments have a higher incentive to adopt FinTech.
Sharma <i>et al.</i> (2024)	Undertook natural language processing (NLP) based text mining approach to analyse news articles, speeches, interviews and other publicly available documents for central banks and multi-lateral institutions. They further attempt to decipher the policy focus and priority of the central banks and multilateral institutions in the areas of FinTech and the shift in these trends over time.

The key step in performing a keyword and named entity matching is using a suitable dictionary which contains a list of words or phrases related to specific categories or concepts of interest. In line with existing literature, we started by using the popular dictionaries/glossary related to AI and ML including those by Google Vertex AI⁴, Google Developers⁵, IBM⁶, NHS AI Lab⁷ and Council of Europe⁸ (RBI, 2023). We utilise the popular LLM models of ChatGPT and Bard to create a dictionary of AI related terms pertaining to financial sector. The advantage of using LLM models to create a dictionary comes from the fact that LLM models have been trained on an extensive dataset and therefore better equipped to identify keywords related to AI in the context of financial sector. A comprehensive dictionary has been formulated by combining all these dictionaries. We have employed a combination approach for creating the dictionary where both keyword matching and named entity recognition are used. This approach is based on searching for presence of AI related keywords such as "artificial intelligence," "machine learning," "neural networks," "deep learning," "data science," and other relevant terms. We also match for named entities related to AI, like AI applications (e.g., natural language processing, computer vision), or AI-related organisations (e.g., ChatGPT). A higher frequency of AI-related keywords indicates a higher likelihood of deployment or focus on AI. Words which may be used in an alternate usage sense in financial sector have been removed along with terms which were found to have negligible mention in the test case to improve accuracy and parsimony gains, respectively.

As is the case with any empirical methodology, this methodology also has certain limitations

which need to be acknowledged⁹. The quantitative mentions of AI-related terms in the dictionary-based frequency measures may not account for the contextual meaning (Loughran and McDonald, 2016). The presence of AI related keywords may be indicating discussion about AI related opportunities and risks rather than its deployment (Chen *et al.*, 2023). On the other hand, it may fail to account for banks that have implemented AI extensively but have not emphasised it as frequently in their reports, leading to underestimation of AI adoption. Thus, the methodology captures banks discussion and focus on AI and related technologies (which could be the part of their preparedness/evaluation of these technologies before its deployment) and not just the deployment of these technologies.

Annual reports for 32 commercial banks^{10 11} for 8 years, starting from FY 2015-16 to FY 2022-23, were analysed. In the first step, the annual reports of the said banks were downloaded in portable document format (pdf). In the text pre-processing stage, these pdf files were checked for machine readability and made machine readable, wherever possible, using techniques like optical character recognition (OCR).

⁹ Alternative topic modelling algorithms, such as Latent Dirichlet Allocation (LDA) or Non-Negative Matrix Factorization (NMF) were attempted. However, in our case with banks annual reports which are geared toward topics related to financial sector with extremely limited space devoted to discussion around AI/ML and related technologies, these techniques did not provide useful results. Other approaches include Support Vector Machines (SVM) and Convolutional Neural Networks (CNN) can identify context and semantic patterns. However, as they require high amount of labelled data and were therefore not used. Recent studies have explored usage of transformers like BERT (Bidirectional Encoder Representations from Transformers), GPTs and other LLMs which excel in contextual understanding, but they not only require large datasets but also are extremely computationally extensive mechanisms. This combined with their black box kind of nature limited their suitability for this study.

¹⁰ Public Sector Banks witnessed mergers during the period under consideration. The acquiring entities annual reports which were available for the whole study period were considered. Thus, 12 public sector banks which existed post mergers have been included in the study.

¹¹ A total of 21 private sectors scheduled commercial banks were considered, including IDBI Bank which was categorised as a private sector bank in 2019. One private sector bank had to be excluded as its annual reports were not machine readable.

⁴ <https://cloud.google.com/vertex-ai/docs/glossary>

⁵ <https://developers.google.com/machine-learning/glossary>

⁶ <https://www.ibm.com/cloud/architecture/architecture/practices/cognitive-glossary/>

⁷ <https://nhsx.github.io/ai-dictionary>

⁸ <https://www.coe.int/en/web/artificial-intelligence/glossary>

The machine-readable pdfs were then processed individually, by extracting the text content from each page and storing it in a data-frame. In the next step, tasks such as lowercasing, removing special characters, tokenisation stop-word removal, and lemmatisation were performed to make the text suitable for dictionary matching. In the last step, keyword matching was done by checking each keyword for its presence in the text data, and the frequency of occurrence was recorded.

The key banking characteristics including total assets, CRAR (capital to risk weighted assets ratio), return to total assets, efficiency ratio, GNPA (gross NPAs to gross advances) ratio, NNPA (net NPAs to net advances) ratio and retail lending ratio (gross retail loans to gross advances) for both public and private sector banks have been outlined in Table 2. We find that there are considerable differences at aggregate level between private and public sectors in terms of these banking characteristics.

IV. Results

IV.1 Artificial Intelligence Adoption

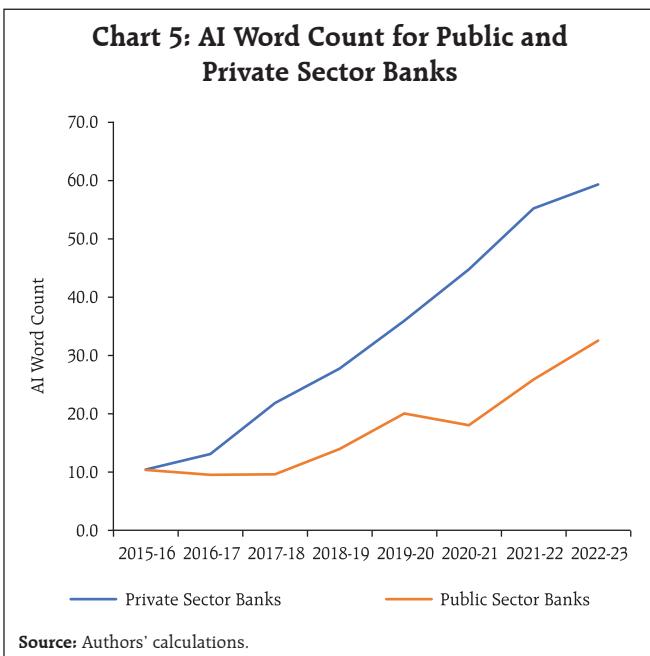
The results show that initially (FY 2015-16), public sector banks were proactively considering AI/ML and related technologies, showing a similar mention of AI related keywords (AI score) compared to their private sector counterparts. However, during the period from 2016 to 2021, the AI-related word count in the annual reports of private sector banks has picked up. This may be due to a combination of recognition of additional use cases of existing AI based technologies along with more agility in adopting the newer and advanced AI techniques and models.

The usage of AI related keywords in the annual reports of private sector banks increased by approximately six-fold in 2022-23 reports as compared to 2015-16 level. Even in case of public sector banks (PSBs), the emphasis on new age technologies like AI in their annual reports has increased more than 3

Table 2: Key Banking Characteristics of Public and Private Sector Banks in India

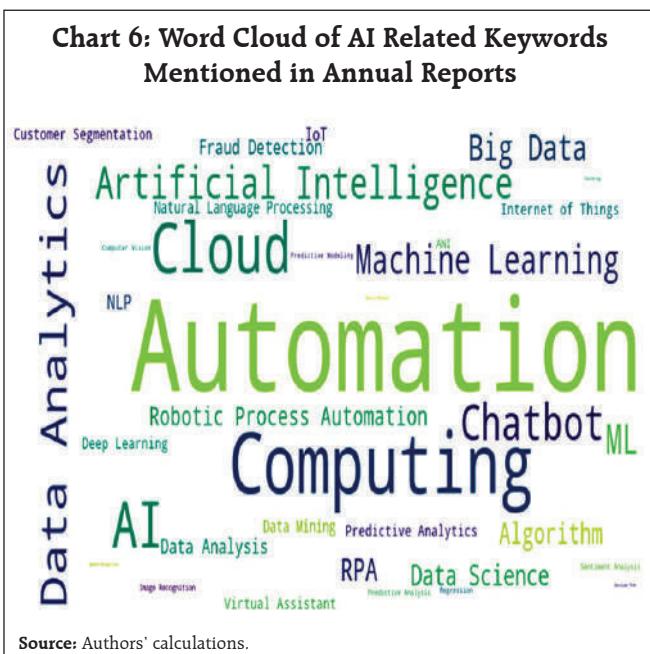
Year	Total Assets (in ₹ lakh crore)	Capital Ratio (CRAR)	Return on Total Assets (annualised)	Efficiency (Cost to Income Ratio)	Gross NPAs to Gross Advances (Per cent)	Net NPAs to Net Advances (Per cent)	Retail Lending Ratio (Per cent)
<i>Public Sector Banks</i>							
2015-16	81.01	11.82	-0.27	53.02	9.83	6.13	17.4
2016-17	88.15	12.14	-0.16	50.26	12.47	7.39	19.6
2017-18	91.79	11.66	-0.94	52.32	15.52	8.58	22.4
2018-19	93.73	12.20	-0.77	55.18	12.25	5.12	23.4
2019-20	99.88	12.85	-0.29	53.33	10.79	4.00	25.0
2020-21	109.13	14.04	0.29	51.46	9.36	3.23	26.8
2021-22	119.87	14.62	0.55	53.09	7.57	2.33	27.8
2022-23	130.39	15.53	0.75	51.77	5.22	1.34	29.2
<i>Private Sector Bank</i>							
2015-16	28.91	15.68	1.64	44.11	2.70	1.27	24.8
2016-17	34.39	15.53	1.45	43.19	3.51	1.84	25.5
2017-18	41.17	16.43	1.27	43.83	4.01	1.97	25.4
2018-19	51.17	16.07	0.82	46.60	4.81	1.89	26.8
2019-20	56.77	16.55	0.51	43.66	5.11	1.43	30.2
2020-21	63.45	18.42	1.22	41.50	4.74	1.41	31.7
2021-22	72.40	18.78	1.44	44.83	3.73	0.96	30.5
2022-23	83.01	18.61	1.60	48.38	2.17	0.55	35.2

Source: Database on India Economy, RBI.



times between 2015-16 and 2022-23 (Chart 5). In a few public-sector banks, the enthusiasm towards AI based technologies is broadly at par with their private sector peers, especially in recent years.

Further, the word cloud reveals interesting insights with most banks focussing on automation which may be due to a push for efficiency gains and



reduce human interventions (Chart 6). Data analytics is another major thrust area with possible usage in fraud detection and predictive analytics. While cloud computing and big data continue to be the major technologies which banks are employing, there is an increasing recognition of potential usage of the newer AI and ML technologies like Robotic Process Automation (RPA), Internet of Things (IoT) and Natural Language Processing (NLP).

IV.2 Drivers of AI Adoption

A panel fixed effect model was used to evaluate how the AI score, as measured by text analytics (explained above in section IV.1), may be influenced by bank-level characteristics like assets, capital to risk weighted assets ratio (CRAR), return on assets (RoA) and gross non-performing assets (GNPA). The data on bank specific variables has been taken from RBI's Database on Indian Economy. The choice of a fixed effects model was made as the time-invariant unobserved characteristics of each bank could influence both the AI adoption score and the bank-level characteristics. For instance, a bank's management quality or corporate culture could influence its AI adoption score. By using a fixed effects model, we can control for these unobserved characteristics and isolate the relationship between AI adoption and the observed bank-level characteristics. Before estimating the model, we performed two diagnostic tests: the Hausman test and the Redundant Fixed Effects test. The Hausman test is used to decide between a fixed effects model and a random effects model. The null hypothesis under this test is that the preferred model is random effects. However, in our case, we rejected the null hypothesis, suggesting that the fixed effects model is more appropriate. The Redundant Fixed Effects test checks whether the fixed effects (or individual-specific effects) in the model are significant. The null hypothesis of this test is that

these effects are redundant. Again, we rejected the null hypothesis, indicating that these fixed effects are significant and should be included in our model.

Estimation results of panel fixed models are provided in Table 3. In the baseline model (Model 1), AI score is regressed upon assets, capital position and dummies representing merger year and private-sector banks. In the subsequent estimation, we augment our model to include other banking indicators such as GNPA (Model 2), RoA (Model 3), and efficiency ratio (Model 4) and retail lending ratio (Model 5). The specification for the fully augmented model (Model 5) is as follows:

$$\begin{aligned} \text{AISCORE}_{it} = & \beta_0 + \beta_1 * \text{Ln}(Assets)_{it-1} + \beta_2 * \text{CRAR}_{it-1} + \beta_3 \\ & * \text{RoA}_{it-1} + \beta_4 * \text{GNPA}_{it-1} + \beta_5 * \text{EffRatio}_{it-1} + \\ & \beta_6 * \text{RetailLending}_{it-1} + \beta_7 * \text{MergerDummy}_{it} + \\ & \beta_8 * \text{PrivateDummy}_{it} + \alpha_i + \varepsilon_{it} \end{aligned}$$

In this equation **AISCORE**_{it} is the dependent variable. **Ln(Assets)**_{it-1} is the natural log of assets of a bank (in crores of rupees)¹² and has been mean-centered to account for the scale issue. Asset size can be viewed as proxy of size of banks and it can potentially influence adoption of technologies like AI as it affects the amount of resources available, risk taking capacity, exploitation of economies of scale, potential benefits and even executional challenges (Bordonaba-Juste *et al.*, 2012; Burke, 2005; Hall and Khan, 2003; Lee and Xia, 2006; Na *et al.*, 2023).

CRAR_{it-1} is capital to risk-weighted assets ratio and measures the capital adequacy, thus a proxy for the financial health of the banks which in turn indicates availability of capital to afford upfront costs of acquiring new technologies which can be significant in case of complex and capital intensive technologies like AI (Chhaidar *et al.*, 2023; Hall and Khan, 2003; Nugroho *et al.*, 2017).

¹² Due to merger of some PSBs during the study period, the assets of the merged banks have been spliced to remove the impact of merger on asset size.

RoA_{it-1} is return on assets expressed in percentage which is a measure of how productively the bank has been able to utilise its assets and thus a measure of its capital efficiency in general (Adhitya and Sembel, 2020; Chhaidar *et al.*, 2023; Doran *et al.*, 2022).

GNPA_{it-1} stands for gross non-performing assets. Banks with higher GNPA may derive greater benefits from utilising AI related technologies in credit underwriting and recovery process (Bazarbash, 2019; Chhaidar *et al.*, 2023; Doran *et al.*, 2022; Goudarzi *et al.*, 2018; Seth and Bhavika Gandhi, 2023). However, banks with higher GNPA could be more focussed on cleaning books and also have had to allocate more resources toward provisioning needs, thus reducing the resources available for investing in AI and related technologies. In model 2a, net non-performing assets (NNPA) has been taken instead of GNPA as an alternate specification.

EffRatio_{it-1} is efficiency ratio which represents the cost to income ratio for a bank. Efficiency ratio can be indirect proxy for measuring the potential benefits of using AI related technologies to reduce costs (Alt *et al.*, 2021; Boukherouaa *et al.*, 2021; Orçun Kaya, 2019).

RetailLending_{it-1} is the retail lending ratio which represents how retail centric is a bank. With a lot of AI technologies focussed towards improving the retail customer experience like creation of chatbots, wealth management solutions, recommendation models among others. It is possible that banks which have higher proportion of retail loans are more retail banking focussed and thus have higher adoption of AI and related technologies.

All the bank specific variables have been taken in lag form to account for the possibility that the impact of these variables on the AI adoption score may not be immediate, but rather delayed. Moreover, using lagged independent variables can also help mitigate potential endogeneity problems. **MergerDummy**_{it} takes value

1 for the bank in the year it has been merged and 0 otherwise, thus allows us to estimate the short-term impact of the merger¹³. **PrivateDummy_{it}** is the dummy variable taking value 1 for private sector banks and 0 otherwise, which allows to control for potential differences between these two categories. α_i represents the individual-specific (bank-specific) effects and ε_{it} is the error term. The subscript i represents the cross-section (i.e. bank) and t represents the time period.

We find consistent results across all the models considered (Table 3).

Across all models, we find that AI score is positively related to the asset size of the banks as evident from positive and statistically significant coefficient, suggesting higher adoption by larger

banks. This finding aligns with resource-based theory, which posits that organisations with greater resources are more inclined to invest in innovation and modern technologies like AI (Barney, 1991) and survey results showing higher AI adoption rate among banks having larger asset size¹⁴. Further, larger banks owing to their difficulties in coordination across verticals are likely to achieve higher net gains from adoption of such technologies and data integration, thereby increasing the motivation for adoption of AI. It may also be indicating that the adoption of technologies such as AI is relatively difficult for smaller banks due to larger fixed cost and absence of economies of scale.

Capital-to-risk weighted asset ratio (CRAR) which is a proxy for the capital adequacy of the bank and thus a reflection of the financial health of the bank,

Table 3: Factors Impacting Adoption of AI in Indian Banks

	Model 1	Model 2	Model 2a	Model 3	Model 4	Model 5
<i>Ln_assets</i>	49.34***	48.62***	49.09***	48.40***	48.72***	50.13***
CRAR	1.68***	1.78***	1.90***	1.88***	1.98***	1.98***
<i>GNPA ratio</i>		0.31		0.19	0.25	0.26
<i>RoA</i>				-0.79	-0.04	0.01
<i>Efficiency ratio</i>					0.17	0.20
<i>Retail Lending ratio</i>						-0.10
<i>Merger dummy</i>	-6.58	-6.70	-6.40	-6.70	-6.19	-6.50
<i>Private dummy</i>	20.51*	17.05	21.56*	17.23	17.06	18.14
<i>NNPA ratio</i>			0.62			
<i>Cross-Sections Included</i>	32	32	32	32	32	32
<i>Total Observations</i>	256	256	256	256	256	256
<i>Constant</i>	Included	Included	Included	Included	Included	Included
<i>R²</i>	0.76	0.76	0.76	0.76	0.76	0.76
<i>Adjusted R²</i>	0.72	0.72	0.72	0.72	0.72	0.72
<i>F-statistic</i>	19.49***	18.98***	19.03***	18.41***	18.05***	17.54***
<i>Akaike info</i>	8.39	8.39	8.39	8.40	8.40	8.40
<i>Schwarz</i>	8.88	8.90	8.90	8.92	8.94	8.96
<i>Hannan-Quinn</i>	8.58	8.60	8.60	8.61	8.61	8.62
<i>Durbin-Watson</i>	1.24	1.23	1.24	1.24	1.28	1.29

***, ** and * denotes statistical significance at 1 per cent, 5 per cent and 10 per cent probability level, respectively.

¹³ As only the acquiree banks were considered in the study for which AI score has been calculated for all years under consideration, a balanced panel was utilised.

¹⁴ <https://www.businessinsider.in/finance/news/the-impact-of-artificial-intelligence-in-the-banking-sector-how-ai-is-being-used-in-2020/articleshow/72860899.cms>

is positively related to AI score. This result resonates with the viewpoint that well-capitalized banks are better positioned to take the investment risks in new technology in terms of adequate capital buffers and confidence to pursue AI solutions.

Other bank specific indicators such as RoA, GNPA/NNPA, efficiency ratio and retail lending are not statistically significant for explaining AI score¹⁵. The merger dummy is also not found to be a statistically significant determinant of AI score of banks.

The coefficient for the dummy variable representing private sector banks though positive is only significant at 10 per cent level in Model 1 and 2a. This result needs to be seen in light of analytical findings where both private and public-sector banks broadly started at similar level of AI score in 2015-16 but then saw private sector banks AI score increase rapidly in the next 5 years. However, in the last 2 years, public sector banks also appear to have enhanced their AI adoption, as observed in their AI score, possibly reflecting the broad-based ongoing expansion of digital technologies in the Indian banking sector.

The greater adoption of AI in private sector banks could be due to a larger proportion of their clientele being better equipped to access digital services and more comfortable with usage of modern technology-based solution (ET BFSI, 2021; Malladi *et al.*, 2021). Also, private banks often cater to more financially aware and affluent customers and therefore could see higher potential for leveraging AI based solutions like customer segmentation, robo-advisory, robo-wealth management tools to cross-sell or provide other financial services. Further, private sector banks especially those with a smaller branch network, are much more likely to adopt AI based solutions to gain new customers or cross-sell different products, as it represents a more cost-effective solution. On the other hand, PSBs already have well established

offline channels, especially in rural and semi-urban areas. However, with the rapid advancements in AI, especially generative AI and LLM based models in last 2 years, which have been accompanied with public at large being able to access and thus subsequently draw comfort with AI based solutions, public sector banks also appear to be increasing their usage of AI based solutions.

V. Conclusion

While AI is being increasingly explored in every industry, its usage is expected to have a profound impact on various operations of banking and finance, including risk assessment, fraud detection, customer service, investment strategies, regulatory compliance, and more. As the capabilities of these technologies continue to grow, so does their influence on the decision-making processes. AI is expected to have the potential to reduce the inefficiencies, through automation by minimising errors in the human decision making and by providing cost effective solutions. It is also expected to make banking services accessible to the population at the bottom of the pyramid. While the integration of AI into banking and finance offers immense opportunities, it also presents challenges such as possibility of bias, lack of transparency, and issues surrounding the ethical use of data which requires an in-depth evaluation in view of its implications for financial sector and the overall economy. The recent policy initiatives by India including the National Strategy for Artificial Intelligence, IndiaAI Mission, AI for India 2.0 and Skill India AI Portal aim to reap the potential offered by AI and related technologies while being cognisance of the risks and challenges presented by it. The Reserve Bank of India has also recognised the potential of AI/ML and related technologies and encouraged the banks to appropriately adopt these technologies for conducting ongoing due diligence and effective monitoring for KYC/AML norms¹⁶.

¹⁵ Results of model incorporating staff expenses and Return on Equity (RoE) are not shown in the Table 2 but they can be made available on request/demand.

¹⁶ RBI Master Direction - Know Your Customer (KYC) Direction, 2016 (Updated as on January 04, 2024).

Text mining of annual reports of Indian banks during 2015-16 to 2022-23 reveals that both private and public-sector banks are increasingly emphasising on AI and related technologies; however, the pace of increase is higher for private banks. Automation, data analytics, cloud computing and big data are the major thrust areas, with increasing consideration for RPA, IoT and NLP like technologies by banks especially in recent years. Among different banking indicators, size and financial health of a bank is found to positively influence the bank's focus on AI, reflecting the impact of economies of scale and the availability of investment on the technological advancement.

References

- Adhitya, A., and Sembel, H. M. R. (2020). the Impacts of Mobile Banking Technology Adoption on the Financial Performance and Stock Performance of Big Banks in Indonesia. *South East Asia Journal of Contemporary Business, Economics and Law*, 22(1), 63–73.
- Alt, M.-A., Vizeli, I., and Săplăcan, Z. (2021). Banking with a Chatbot – A Study on Technology Acceptance. *Studia Universitatis Babes-Bolyai Oeconomica*, 66(1), 13–35. <https://doi.org/10.2478/subboec-2021-0002>
- Aziz, S., and Dowling, M. M. (2018). AI and Machine Learning for Risk Management. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3201337>
- Baier, P., Berninger, M., and Kiesel, F. (2020). Environmental, social and governance reporting in annual reports: A textual analysis. *Financial Markets, Institutions and Instruments*, 29(3), 93–118. <https://doi.org/10.1111/fmii.12132>
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99–120.
- Bazarbash, M. (2019). *FinTech in Financial Inclusion Machine Learning Applications in Assessing Credit Risk* (WP/19/109).
- BIS. (2024). *Digitalisation of finance* (Issue May). www.bis.org
- Bordonaba-Juste, V., Lucia-Palacios, L., and Polo-Redondo, Y. (2012). The influence of organizational factors on e-business use: Analysis of firm size. *Marketing Intelligence and Planning*, 30(2), 212–229. <https://doi.org/10.1108/02634501211211984/FULL-XML>
- Boukherouaa, E. B., Shabsigh, G., Deodoro, J., Farias, A., Iskender, E. S., Mirestean, A. T., and Ravikumar, R. (2021). *Powering the Digital Economy: Opportunities and Risks of Artificial Intelligence in Finance*. <https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2021/10/21/Powering-the-Digital-Economy-Opportunities-and-Risks-of-Artificial-Intelligence-in-Finance-494717>
- Burke, K. (2005). The Impact of Firm Size on Internet Use in Small Businesses. *Electronic Markets*, 15(2), 79–93. <https://doi.org/10.1080/10196780500083738>
- Carter, S. M., Shih, P., Williams, J., Degeling, C., and Mooney-Somers, J. (2021). Conducting Qualitative Research Online: Challenges and Solutions. *Patient*, 14(6), 711–718. <https://doi.org/10.1007/s40271-021-00528-w>
- Chen, J., Henry, E., and Jiang, X. (2023). Is Cybersecurity Risk Factor Disclosure Informative? Evidence from Disclosures Following a Data Breach. *Journal of Business Ethics*, 187(1), 199–224. <https://doi.org/10.1007/s10551-022-05107-z>
- Chhaidar, A., Abdelhedi, M., and Abdelkafi, I. (2023). The Effect of Financial Technology Investment Level on European Banks' Profitability. *Journal of the Knowledge Economy*, 14(3), 2959–2981. <https://doi.org/10.1007/s13132-022-00992-1>
- Donepudi, P. K. (2017). Machine Learning and Artificial Intelligence in Banking. *Engineering International*, 5(2).
- Doran, N. M., Bădîrcea, R. M., and Manta, A. G. (2022). Digitization and Financial Performance of Banking Sectors Facing COVID-19 Challenges in Central and

- Eastern European Countries. *Electronics (Switzerland)*, 11(21). <https://doi.org/10.3390/electronics11213483>
- ET BFSI. (2021). *Public Sector Bank: How PSU banks are catching up in the digital world*. Economic Times. <https://bfsi.economictimes.indiatimes.com/news/banking/how-psu-banks-are-catching-up-in-the-digital-world/84541392>
- Feng, L., Lundholm, R., and Michael, M. (2013). A measure of competition based on 10-k filings. *Journal of Accounting Research*, 51(2), 399–436. <https://doi.org/10.1111/j.1475-679X.2012.00472.x>
- Gensler, G., and Bailey, L. (2021). Deep Learning and Financial Regulation. *SSRN Electronic Journal*, 1–45. <https://doi.org/10.2139/ssrn.3788662>
- Goudarzi, S., Hickok, E., and Sinha, A. (2018). AI in Banking and Finance. In *The Centre For Internet and Society*.
- Hall, B. H., and Khan, B. (2003). *Adoption of a New Technology* (No. 9730; Issue May). <https://doi.org/10.4018/978-1-5225-7086-8.ch001>
- Holden, C. (1991). *Machines Who Think* (Vol. 254, Issue 5036). A K Peters. <https://doi.org/10.1126/science.254.5036.1291-b>
- Hong, L., Nikbakht, E., and Zhou, T. (2023). Does product market competition affect the adoption of FinTech by non-financial firms? *Finance Research Letters*, 54(August 2022), 103730. <https://doi.org/10.1016/j.frl.2023.103730>
- Lee, G., and Xia, W. (2006). Organizational size and IT innovation adoption: A meta-analysis. *Information and Management*, 43(8), 975–985. <https://doi.org/10.1016/J.IIM.2006.09.003>
- Loughran, T., and McDonald, B. (2016). Textual Analysis in Accounting and Finance: A Survey. *Journal of Accounting Research*, 54(4), 1187–1230. <https://doi.org/10.1111/1475-679X.12123>
- Loughran, T., McDonald, B., Yun, H., Loughran, T., and Yun, H. (2009). A Wolf in Sheep's Clothing: The Use of Ethics-Related Terms in 10-K Reports. 89(2009), 39–49. <https://www3.nd.edu/~tloughra/WolfSheep.pdf>
- Malladi, C. M., Soni, R. K., and Srinivasan, S. (2021). Digital financial inclusion: next frontiers—challenges and opportunities. *CSI Transactions on ICT*, 9(2), 127–134. <https://doi.org/10.1007/s40012-021-00328-5>
- McCarthy, J. (1960). Programs with common sense.
- McCarthy, J. (1989). Artificial Intelligence, Logic and Formalizing Common Sense. In *Philosophical Logic and Artificial Intelligence* (pp. 161–190). Springer Netherlands. https://doi.org/10.1007/978-94-009-2448-2_6
- McCarthy, J. (2007). From here to human-level AI. *Artificial Intelligence*, 171(18), 1174–1182. <https://doi.org/10.1016/j.artint.2007.10.009>
- Milojević, N., and Redzepagic, S. (2021). Prospects of Artificial Intelligence and Machine Learning Application in Banking Risk Management. *Journal of Central Banking Theory and Practice*, 10(3), 41–57. <https://doi.org/10.2478/jcbtp-2021-0023>
- Na, S., Heo, S., Choi, W., Han, S., and Kim, C. (2023). Firm Size and Artificial Intelligence (AI)-Based Technology Adoption: The Role of Corporate Size in South Korean Construction Companies. *Buildings*, 13(4). <https://doi.org/10.3390/buildings13041066>
- Nugroho, M. A., Susilo, A. Z., Fajar, M. A., and Rahmawati, D. (2017). Exploratory Study of SMEs Technology Adoption Readiness Factors. *Procedia Computer Science*, 124, 329–336. <https://doi.org/10.1016/j.procs.2017.12.162>
- Orçun Kaya. (2019). Artificial Intelligence in Banking Industry. *Deutsche Bank Research*. <https://doi.org/10.1002/9781119710301.ch19>
- PwC India, and FICCI. (2022). *Uncovering the ground truth: AI in Indian financial services*. February, 1–36.

- Rahman, M. S. (2016). The Advantages and Disadvantages of Using Qualitative and Quantitative Approaches and Methods in Language "Testing and Assessment" Research: A Literature Review. *Journal of Education and Learning*, 6(1), 102. <https://doi.org/10.5539/jel.v6n1p102>
- RBI. (2023). *Report on Trend and Progress of Banking in India 2022-23*.
- Russell, S. J., and Norvig, P. (2010). *Artificial Intelligence: A Modern Approach* (Vol. 4). Prentice Hall. <https://doi.org/10.1109/ICCAE.2010.5451578>
- Seth, S., and Bhavika Gandhi. (2023). Revolutionizing risk assessment and lending decisions: The impact of digitalization and data analytics in Indian banks. In *Advancements in commerce, economics and management: A research compilation* (Issue September, pp. 111–118).
- Sharma, M., Raut, D. K., Goel, S., and Kumar, M. (2024). Evolution of FinTech and Central Banks : A Text Mining- Based Survey. *RBI Bulletin*, LXXVIII(August), 131–148.
- Shirata, C. Y., Takeuchi, H., Ogino, S., and Watanabe, H. (2011). Extracting key phrases as predictors of corporate bankruptcy: Empirical analysis of annual reports by text mining. *Journal of Emerging Technologies in Accounting*, 8(1), 31–44. <https://doi.org/10.2308/jeta-10182>
- Survey Research and Questionnaires*. (n.d.). Research Connections. Retrieved November 3, 2023, from <https://researchconnections.org/research-tools/data-collection/survey-research-and-questionnaires>
- The Economist Intelligence Unit. (2022). Banking on a game-changer: AI in financial services. *The Economist*, 1–9.

Annexure**Annex 1: Glossary of Major AI Related Terms**

Term	Definition
Algorithm	A set of rules that a machine can follow to learn how to do a task.
Artificial Intelligence (AI)	AI refers to the simulation of human intelligence processes by machines, especially computer systems to perform cognitive tasks like thinking, perceiving, learning, problem solving and decision making. AI can have 'communication' or 'decisions making' similar to human.
Big data	Datasets that are too large or complex which may be structured, semi-structured and unstructured data that can be mined for information and used in machine learning projects, predictive modelling and other advanced analytics applications.
Chatbot	Chatbot is a program designed for communicating like humans with users/people through text or voice command.
ChatGPT	ChatGPT stands for 'Chat Generative Pre-Trained Transformer', which is a large-language-model based AI chatbot that uses natural language processing to create humanlike conversational dialogue. The language model can respond to questions and compose various written content, including articles, social media posts, essays, code and emails.
Computer Vision	An interdisciplinary scientific field that deals with how computers can gain high-level understanding from digital images or videos.
Data Mining	The process of discovering patterns in large data sets involving methods at the intersection of machine learning, statistics, and database systems.
Data Analytics	Data analytics is the science of analyzing raw data through tools, technologies, and processes. It is used to summarise data and to find trends pattern or to identify anomaly to improve decision-making, and foster business growth. Some types of data analytics such as prescriptive analytics and cognitive analytics are associated with AI/ML models such as predictive modelling, deep learning and natural language processing.
Data Science	An interdisciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from structured and unstructured data.
Deep Learning	A subset of machine learning which is based on artificial neural networks that has networks capable of learning complex patterns and relationships within data. Deep learning is a branch of machine learning. It is capable of learning.
Internet of Things (IoT)	It is a network of devices facilitating communication such as exchanging data with other devices/clouds and systems over the internet.
Machine Learning (ML)	Machine Learning is a type of artificial intelligence (AI) that allows software applications to become more accurate at predicting outcomes without being explicitly programmed to do so. It involves the use of algorithms to parse data and learn from it and making a determination or prediction. The machine gets "trained" using large amounts of data and algorithms, and in turn gains the capability to perform specific tasks.

Term	Definition
Natural Language Processing (NLP)	A subfield of linguistics, computer science, and artificial intelligence concerned with the interactions between computers and human language. It is the ability of computers to understand text and spoken words like human being.
Neural Network	A neural network is an adaptive system that learns by using interconnected nodes or neurons in a layered structure that resembles a human brain. A neural network can learn from data, so it can be trained to recognize patterns, classify data, and forecast future events.
Predictive Analysis	The use of data, statistical algorithms and machine learning techniques to identify the likelihood of future outcomes based on historical data.
Robotic Process Automation (RPA)	The use of software with artificial intelligence (AI) and machine learning capabilities to handle high-volume, repeatable tasks that previously required humans to perform.
Sentiment Analysis	The use of natural language processing, text analysis, computational linguistics, and biometrics to systematically identify, extract, quantify, and study affective states and subjective information.
Supervised Learning	A type of machine learning where the model is provided with labeled training data.
Text Mining	Text mining is the process of extracting valuable information from unstructured text data to analyze, understand, and derive insights. It uses techniques of natural language processing and machine learning.
Unsupervised Learning	A type of machine learning where the model is not provided with labeled training data.

COVID-19 and Performance of MSME Clusters in India

by Rajib Das, Dhanya V, Amarendra Acharya, Ramesh Golait, Silu Muduli and Arjit Shivhare ^

The COVID-19 pandemic adversely affected all sectors of the Indian economy, including the MSME sector. Drawing on survey conducted on select MSME clusters, this article investigates the performance and state of formalisation of MSME sector. Expenses related to electricity, rent, and debt service emerge as the key factors influencing the net profit margin of MSMEs in the post-pandemic period. Liquidity and regulatory measures by the Reserve Bank and Government schemes such as the Emergency Credit Line Guarantee Scheme (ECLGS) supported these enterprises in the aftermath of the pandemic. The paper's observations and results may not necessarily hold for the entire MSME sector, as the current study is limited to MSME firms within the sampled clusters and the characteristics and behaviour of the firms outside the clusters could be different.

Introduction

Micro, small, and medium enterprises (MSMEs) are well-known forms of business enterprises across the globe, having features like small size, independent entities and limited market exposure. MSMEs contribute significantly to inclusive development by fostering entrepreneurship and generating employment at comparatively lower capital costs. The COVID pandemic disrupted the business landscape for MSMEs across geographies, including India. In response, the Government of India (GoI) and the Reserve Bank introduced specific policies to alleviate working capital issues and ensure business continuity

in the MSME sector, apart from general monetary and fiscal support measures. With the pandemic receding, the Indian economy began its recovery in subsequent periods.

Various policy measures have been implemented by the government over the decades for the development of this sector in India, the prominent one being the cluster approach to MSME development. A large segment of MSMEs in India falls under the micro category, which face more acute challenges in their operations. A cluster approach to MSME development was conceptualised as a policy instrument to address the limitations arising from the 'smallness' of the firm. Clusters provide micro and small firms a competitive advantage through many avenues, primarily through proximity to raw materials, suitable business development services, marketing facilities, and skilled labour (Krugman, 1991). The initial move towards a cluster approach in India began in 1998 with efforts to promote technology adoption in small industries. By 2003, a more comprehensive approach to cluster development was envisioned encompassing marketing, exports, and skill development, establishing common facility centres, and implementing technology upgrades for enterprises.

Against this backdrop, this study, based on a primary survey conducted among select MSME clusters, examines the performance of MSME firms and the effectiveness of policy measures initiated during the pandemic. It also analyses the major factors influencing the profitability of MSME firms and their variability pre- and post-COVID pandemic.

The paper is structured into four sections, starting with the introduction. Section II presents the status of the MSME sector, including definition, historical background and policy measures taken by GoI and RBI. Section III delves into the empirical analysis, outlining the survey methodology and presenting stylised facts. Section IV presents concluding remarks.

[^] The authors are from the Department of Economic and Policy Research (DEPR), Reserve Bank of India (RBI), Mumbai. The authors are thankful to Soumya Bhadury and D Suganthi for their valuable suggestions. The views expressed in the article are those of the authors and do not represent the views of the Reserve Bank of India.

II. Status of MSMEs in India

II.1 Definition and Historical Background

The MSME sector is markedly heterogeneous, characterised by variations in enterprise size, the range of products and services offered, and the level of technology utilised. As per the MSME Act 2006, MSMEs were initially defined in terms of plant and machinery/equipment investment limits. However, due to their informal and small scale of operations, classifying MSMEs based on investment criteria was viewed as difficult (RBI, 2019). In 2020, the Government of India included turnover as a criterion along with the earlier criterion based on investment in machinery and equipment. The introduction of Goods and Services Tax (GST) in 2017 provided an avenue to verify the categorisation of MSMEs based on turnover from the Goods and Services Tax Network (GSTN) data, imparting transparency in the system. Further, the distinction between manufacturing and services was removed. Exports were also excluded from the turnover classification to widen the scope of MSMEs. Accordingly, at present:

- i. an enterprise is a micro-enterprise where the investment in plant and machinery or equipment is at most ₹1 crore, and the turnover is at most ₹5 crore.
- ii. a small enterprise, where the investment in plant and machinery or equipment does not exceed ₹10 crore, and the turnover does not exceed ₹50 crore; and
- iii. a medium enterprise, where the investment in plant and machinery or equipment is at most ₹50 crore, and the turnover does not exceed ₹250 crore.

As per the National Sample Survey Organisation's (NSSO) Annual Survey of Unincorporated Sector Enterprises, October 2022- September 2023, there were around 6.5 crore unincorporated non-agricultural MSMEs engaged in various economic activities in India.

However, only 5.2 crore MSME units were registered in the Udyam Portal, an online portal for the registration of MSMEs, as of September 2024. As per NSSO, the MSME sector employed around 11 crore individuals during October 2022- September 2023, nearly one-fifth of total employment in the economy and 35 per cent of non-agricultural employment. MSMEs contribute to nearly 63-66 per cent of employment in high-income and upper-middle-income economies, 91 per cent of total employment in lower-middle-income economies and 81 per cent of employment in low-income economies (Haider *et al.*, 2019).

MSMEs in India broadly fall under the 'micro category' and face challenges in technology adoption, credit availability, infrastructure, and formalisation (RBI, 2019). While conclusive evidence is lacking on the impact of firm size on productivity, the 'small nature' of firms can prevent MSMEs from taking the benefit of economies of scale (Williamson, 1967; Utterback, 1994; Dhawan, 2001). Medium and large firms are more innovative than the smaller ones (GoI, 2014). Insufficient skilled labour, limited financing, lack of technological and market information, and inadequate infrastructure are barriers to innovations by MSME firms (GoI, 2014; Pachouri and Sharma, 2016).

The cluster approach to economic development, pioneered by Michael Porter (Porter, 1990; Porter, 1998), gained traction across countries in the late 1990s and early 2000s to overcome the limitations faced by small independent units. The cluster approach gained broader importance when United Nations Industrial Development Organization (UNIDO) emphasised it in 2003 as a critical component of industrial development strategies and pointed out that the cluster has the potential to promote broad-based and inclusive growth (UNIDO, 2020). MSME clusters are proximate groupings of affiliated institutions and interconnected companies bound by shared technologies and expertise within a specific

field. Typically, clusters are geographically situated to facilitate seamless communication, logistics, and interpersonal interaction, creating an environment conducive to productivity gains, a crucial factor for growth (Porter, 2003).

The effectiveness of clusters hinges on the collaborative sharing of resources among small individual firms across various business processes such as manufacturing, technology, quality control, testing, marketing, and procurement. Clusters and associated networks enable small firms to combine the advantages of running a small unit with economies of scale and specialisation equivalent to large units (Magar, 2017).

The initial official endorsement of clusters as the focal point for Small Scale Industry (SSI) development in India came from the Abid Hussain Committee Report (GOI, 1997). India has actively adopted a cluster development approach since 2003 to enhance economic development by bolstering the competitiveness and growth of MSMEs. The Ministry of MSME has defined clusters as a "*group of enterprises located within an identifiable and as far as practicable, contiguous area or a value chain that goes beyond a geographical area and producing same/similar/complementary products/services, which can be linked together by common physical infrastructure facilities that help address their common challenges.* The essential characteristics of enterprises in a cluster are (a) *Similarity or complementarity in the methods of production, quality control and testing, energy consumption, pollution control, etc.,* (b) *Similar level of technology and marketing strategies/practices,* (c) *Similar channels for communication among the members of the cluster,* (d) *Common market and skill needs and* (e) *Common challenges and opportunities that the cluster faces*"¹. Cluster initiatives were recognised as efficient policy tools, enabling the

focused allocation of resources and funding to specific areas with considerable potential for growth and development. This targeted approach is advantageous due to the potential spillover and multiplier effects that can extend beyond the initially identified locations. As per the India Cluster Observatory, there were 4361 clusters in India in September 2024, with 57.2 per cent of clusters belonging to the handicraft sector, followed by 30 per cent of industrial clusters and 13 per cent of handloom clusters.

II.2 Policy Measures

The Ministry of MSME introduced selective interventions in industrial clusters in 1998, and subsequently broad-based its MSE Cluster Development Programme through interventions such as capacity building, marketing development, export promotion, skill development, and setting up common facilities centres. The Ministry of MSME has also launched the Scheme of Fund for Regeneration of Traditional Industries (SFURTI) specifically for traditional *khadi* and village industries. The Department for Promotion of Industry and Internal Trade initiated the Industrial Infrastructure Upgradation Scheme (IIUS) in 2003 as a central sector scheme to boost industries' competitiveness by enabling high-quality infrastructure development through collaborations between the public and private sectors in specific operational clusters.

The government also revised the Micro and Small Enterprises – Cluster Development Programme (MSE-CDP) in 2007. It operates as a demand-driven central sector scheme wherein state governments send proposals for establishing common facility centres and the initiation/up-gradation of infrastructure development projects. The MSE-CDP scheme has effectively enhanced and bolstered the value chain of member and non-member units within the cluster, which is estimated to have led to an overall productivity increase of approximately 10-15 per

¹ https://my.msme.gov.in/MyMsme/Reg/COM_ClusterForm.aspx

cent, a similar order of reduction in manufacturing costs, and an increase in operational efficiency by approximately 15 per cent².

To enhance credit flows to MSMEs, a Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) was established in 2000, which offered credit guarantee support to financial institutions for enabling collateral free loans to Micro and Small Enterprises (MSEs). In 2017, the scheme was widened to include non-banking financial companies (NBFCs) into the scheme acknowledging the vital role they play in credit disbursement to MSEs (Credit Guarantee Scheme for NBFCs - CGS-II).

To address the issue of delayed payments to MSMEs, the Reserve Bank of India (RBI) introduced the Trade Receivables Discounting System (TReDS) in 2014. The TReDS is an electronic platform where MSMEs can secure financing of their receivables from buyers, including large corporates, public sector undertakings (PSUs), government departments, etc. at a discount.

To mitigate the adverse impact of COVID pandemic on MSMEs, GoI and the Reserve Bank undertook a slew of measures to provide continuous access to credit and liquidity to the MSMEs to ensure business continuity of the sector. The Credit Guarantee Scheme for Subordinate Debt (CGSSD) was launched in 2020 to infuse credit into the stressed MSME units as equity, quasi equity or sub-debt. Further, under PM Street Vendor's Atma Nirbhar Nidhi (PM SVANidhi), street vendors in urban areas were provided working capital credit to resume their business. The Emergency Credit Line Guarantee Scheme (ECLGS) was also introduced in 2020, providing additional funding to MSMEs through a fully guaranteed emergency credit line. The RBI launched the on-tap targeted long-term repo operations (TLTRO) scheme on October 9, 2020 to enable banks to provide liquidity support to

a host of sectors, including MSMEs. Moreover, the Reserve Bank permitted loan moratorium subject to guidelines and exempted banks from keeping the cash reserve ratio (CRR) requirement against loans disbursed to first-time borrowers of micro, small and medium enterprises (MSMEs). In 2022, in sync with co-lending policies of RBI, the CGTMSE introduced Credit Guarantee Scheme for Co-Lending (CGSCL) for extending the guarantee coverage to credit facilities under co-lending model jointly by banks and NBFCs.

III. Stylised Facts and Empirical Analysis

III.1 Survey Methodology and Coverage

The study is based on a primary survey among 110 clusters across 15 states and one union territory conducted during April-September 2023. The MSME firms were selected from pre-identified clusters in the UNIDO list of clusters and the state governments' lists of MSME clusters. From each cluster, firms were selected randomly. In total, 3,246 MSMEs were interviewed for the study (Table 1).

Table 1: Distribution of Sample over States

States	Number of MSMEs Surveyed	Share (Per cent)
West Bengal	625	19.3
Delhi	557	17.2
Maharashtra	376	11.6
Punjab	353	10.9
Gujarat	240	7.4
Tamil Nadu	203	6.3
Karnataka	194	6
Uttar Pradesh	159	4.9
Rajasthan	104	3.2
Odisha	93	2.9
Andhra Pradesh	81	2.5
Telangana	81	2.5
Jharkhand	61	1.9
Madhya Pradesh	53	1.6
Haryana	46	1.4
Assam	20	0.6
Total	3246	100

Source: Authors' estimates based on the survey.

² Evaluation study of Micro and Small Enterprises - Cluster Development Programme (MSE-CDP), National Productivity Council.

Table 2: Distribution of Sample Firms Across Industry Groups

NIC 2008	Industry	Count of Response	Share (Per cent)
27	Electrical equipment	460	14.2
14	Wearing apparel	280	8.6
15	Leather	278	8.6
29	Motor vehicles	258	7.9
24	Basic metals	247	7.6
13	Textiles	210	6.5
28	Machinery n.e.s	192	5.9
17	Paper and paper products	158	4.9
10	Food products	149	4.6
22	Rubber and rubber products	149	4.6
20	Chemical and chemical products	139	4.3
25	Fabricated metal products	118	3.6
26	Computer and electronic	113	3.5
21	Pharmaceuticals	110	3.4
23	Other metallic non-minerals	104	3.2
16	Wood and wood products	99	3.0
32	Other manufacturing	85	2.6
31	Furniture	80	2.5
1	Crops and animals	17	0.5
Total		3246	100

Source: Authors' estimates based on the survey.

The surveyed firms are classified based on the National Industrial Classification (NIC) 2008 into 18 manufacturing sub-sectors and one agricultural sector for ease of comparison. Firms manufacturing electrical equipment had the largest share in the sample, followed by apparel, leather industries, motor vehicles, base metals and textiles (Table 2). As the survey in this study covered only MSME firms within sampled clusters, the survey responses and the observation and analysis in this paper need not hold for the broader MSME sector.

III.2 Stylised Facts

III.2.1 Formalisation

India has followed a multipronged approach to increase the degree of formalisation of the MSMEs. These include initiatives like the Employee Provident Fund Organisation (EPFO), Employee State Insurance

Corporation (ESIC), registration with the Udyam portal and being part of the GST Network.

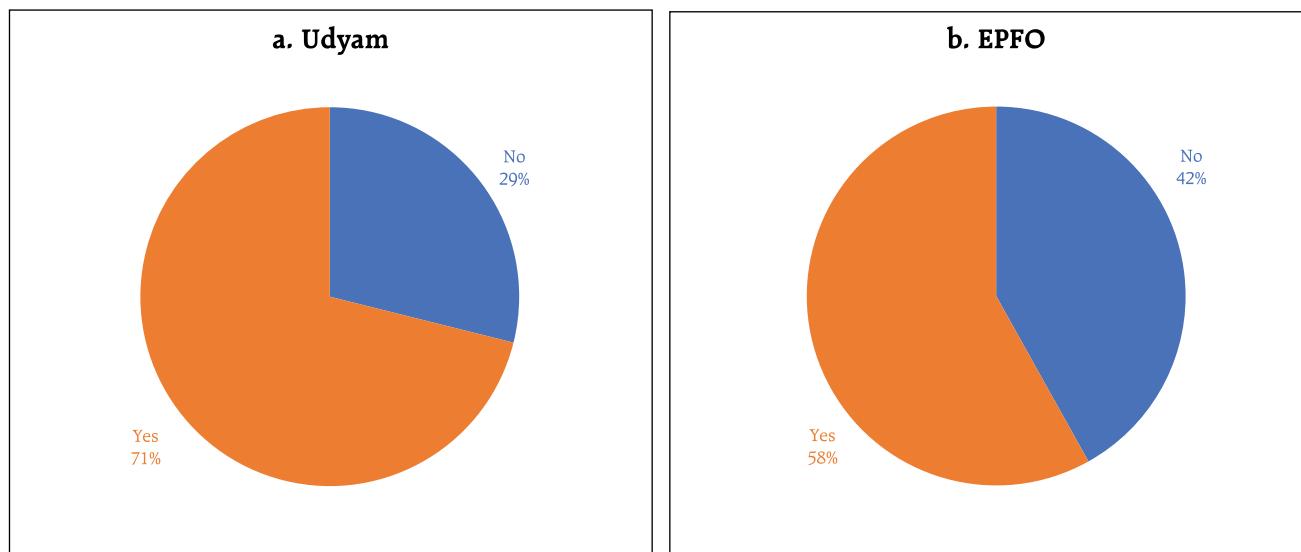
Almost three-fourths of the sampled clusters belonged to the private sector, followed by cooperative and state government clusters. One-fifth of the surveyed firms were listed and 95 per cent had bank accounts. More than three-fourths of enterprises belonged to the micro-enterprise category, while small and medium firms accounted for 14 per cent and 2 per cent of total firms, respectively. The sales averaged ₹4.4 crore in 2022-23 ranging between ₹70,000 and ₹250 crore. Nearly 70 per cent of firms have internet connectivity and use it for their business operations.

Around 71 per cent of the surveyed respondents have enrolled with the Udyam portal, an online platform for registering MSME units. Size-wise, 98, 84 and 69 per cent of the surveyed medium, small and micro enterprises, respectively, are registered with the Udyam portal. Over 80 per cent of the respondent MSME units with more than 10 employees have completed the registration process on the Udyam portal. More than half of the respondent MSME units are registered with EPFO and ESIC (Chart 1).

III.2.2 Banking and Access to Finance

Based on the survey, the majority of MSME firms are found to be bank-linked with nearly 70 per cent of MSME units disbursing employee salaries through their bank accounts. About 98 per cent of medium enterprises made direct salary deposits into employees' bank accounts. The proportion is lower at around 67 per cent for micro enterprises (Chart 2a and 2b).

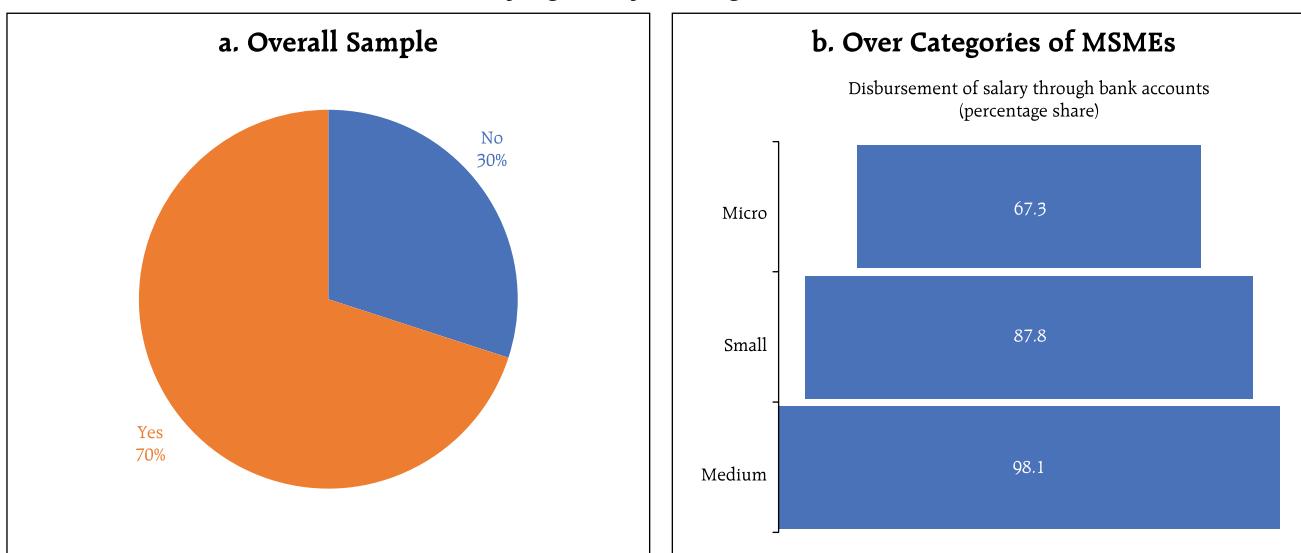
According to the survey, MSME firms mostly used personal savings, trade credit and retained earnings to manage their enterprises' expenses. Looking at sources which always remained most important, personal savings is found to be the top-

Chart 1: Registration with Udyam and EPFO

Source: Authors' estimates based on the survey³.

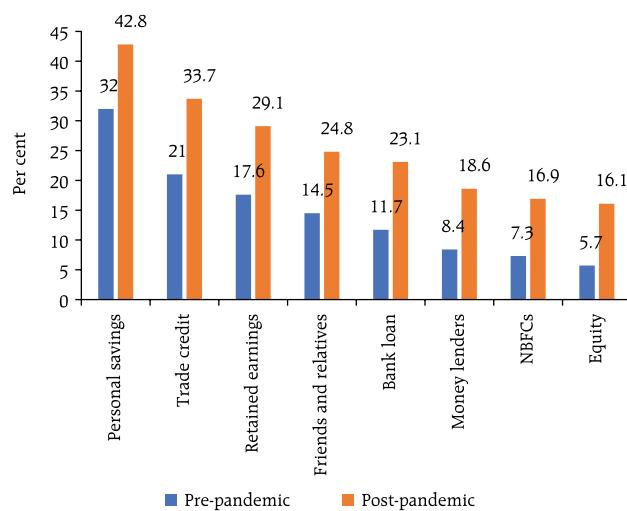
most source of financing as per survey, followed by trade credit, retained earnings, friends and relatives, bank loans and money lenders. About 42.8 per cent of respondents viewed personal savings as the most important source of financing post-pandemic, while this proportion was 32 per cent pre-pandemic. While

personal savings remained the most preferred source, the importance of trade credit, retained earnings and bank loan increased post-pandemic as 12.7 per cent, 11.5 per cent and 11.4 per cent of respondents respectively shifted their top preference to these categories (Chart 3).

Chart 2: Paying Salary Through Bank Accounts

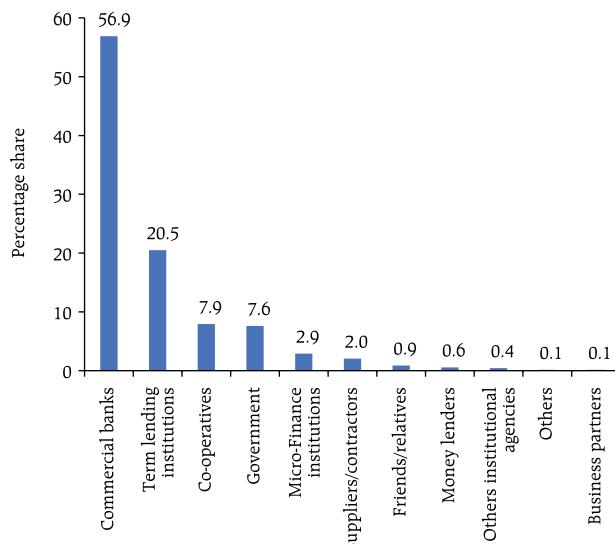
Source: Authors' estimates based on the survey.

³ The survey question was: "Is the company registered in Udyam Portal? Whether employees are registered with EPFO?" The detailed questions are set out in the questionnaire (Annexure).

Chart 3: Most Important Sources of Financing

Note: The numbers need not add up to 100 as same firm has given multiple sources as most important source of financing.

Source: Authors' estimates based on the survey.

Chart 5: Source-wise Quantum of Loans

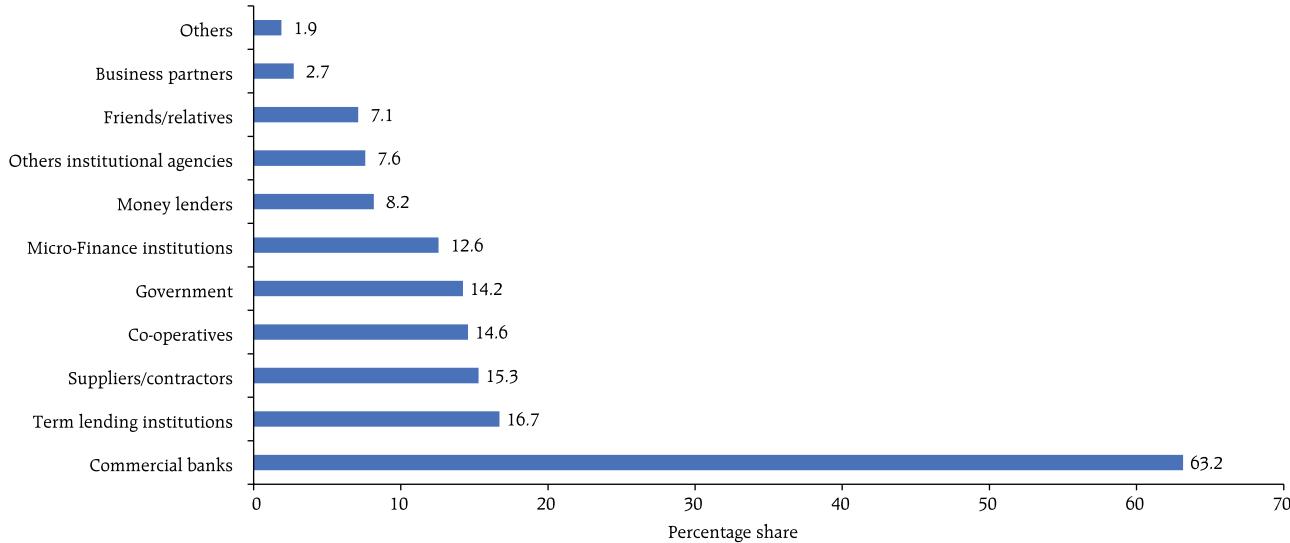
Source: Authors' estimates based on the survey.

Nearly 80 per cent of loans are taken from institutional sources, with 96 per cent of the quantum coming from institutional sources (Charts 4 and 5). Loans from commercial banks accounted for a significant share of outstanding loans, which holds true across micro, small, and medium segments. A large segment of firms have insured their

assets/businesses. Of the 90 per cent of firms who responded to the question, 73 per cent had insured their assets.

III.2.3 Business and Economic Issues Faced by MSMEs

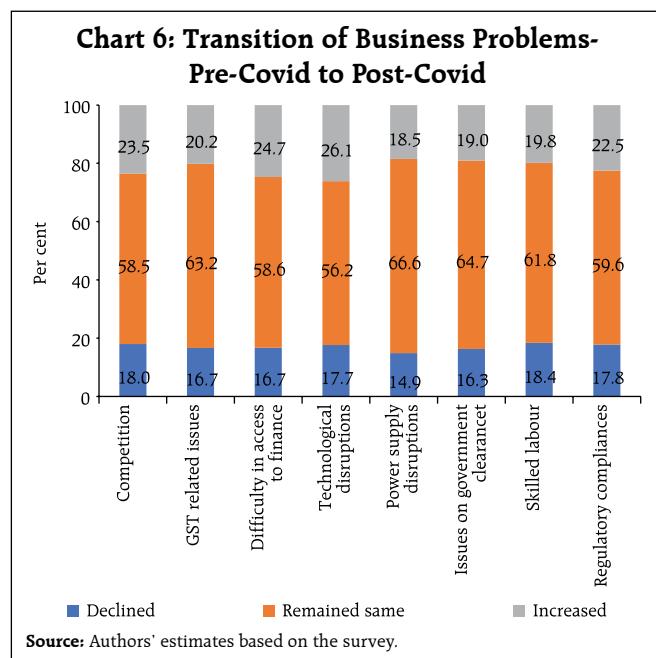
On the relative importance of various constraints, competition from other firms turned out to be the major business issue faced by firms in both pre and

Chart 4: Source-wise Number of Loans

Note: Shares do not add up to 100 as the same borrower could have borrowed from multiple sources.

Source: Authors' estimates based on the survey.

⁴ Pre-COVID period considered in the analysis is 2019-20 and post-COVID refers to 2022-23.



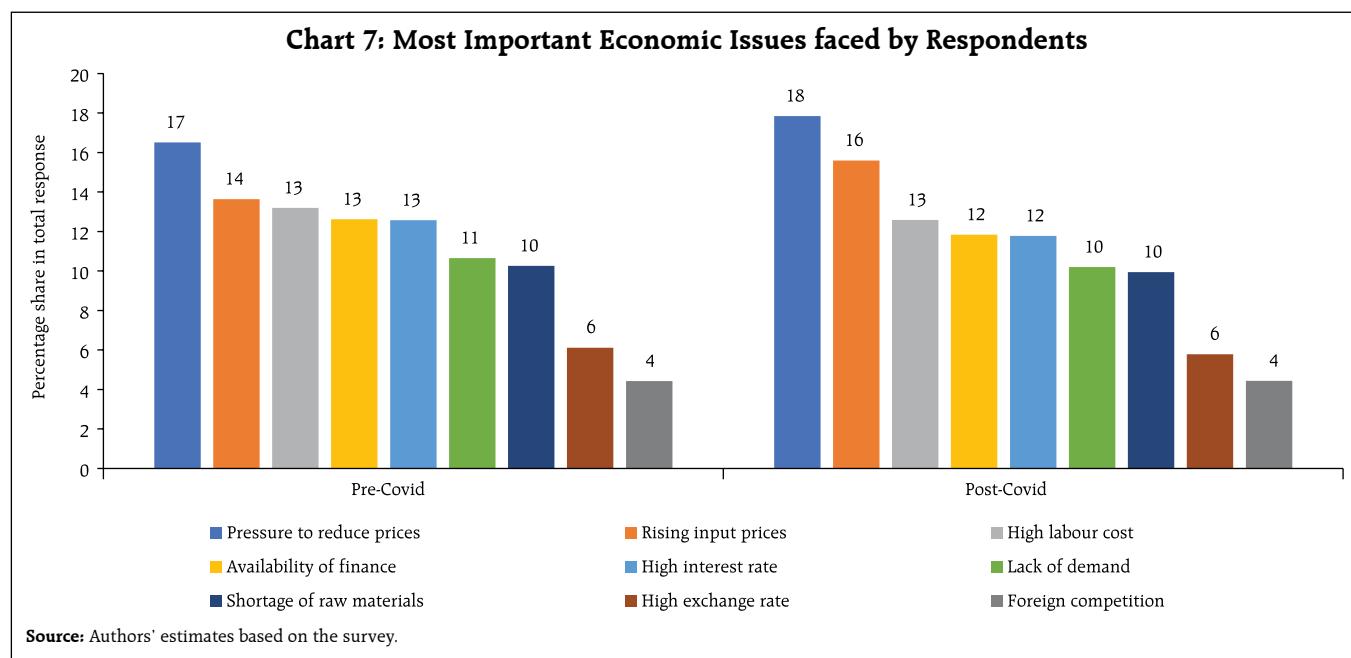
post-COVID periods⁴, followed by GST-related issues and power supply disruptions. Government clearance and regulatory compliance were seen as manageable business issues by most firms, reflecting the ease of adhering to regulations and compliance functions in the cluster. Among the various business issues faced by firms, 23.5 per cent saw an increase in competition from other firms in the post-COVID period, while 18

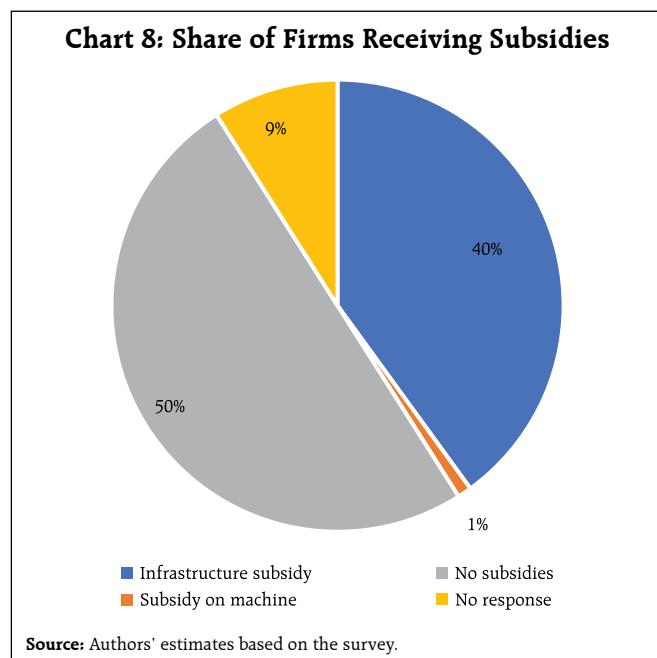
per cent of firms saw a decline of the same. For most firms, the relative importance of issues remained the same for pre- and post-COVID periods, pointing towards the structural nature of these issues (Chart 6).

The pressure to reduce output prices amidst rising input prices was the major economic issue faced by the firms during both pre- and post-COVID periods. Nearly one-fourth of firms witnessed increased input prices, labour costs, and pressure to reduce output prices. Foreign competition and the exchange rate were the least important issues, as most of the respondent firms were domestic-oriented. For most firms, the relative importance of issues remained the same during the pre- and post-pandemic periods (Chart 7).

III.2.4 Infrastructure Facilities

Infrastructure and marketing facilities available in a cluster play an essential role in firms' operations and profitability. In terms of physical infrastructure, all clusters are well-connected. All the respondent firms have access to roads within 2 kilometers. About 62 per cent have a warehouse within a vicinity of 5 km, with only 1.3 per cent having no warehousing





facility. Non-response firms accounted for one-fifth of total firms and remaining firms have warehousing facility outside 5 km radius.

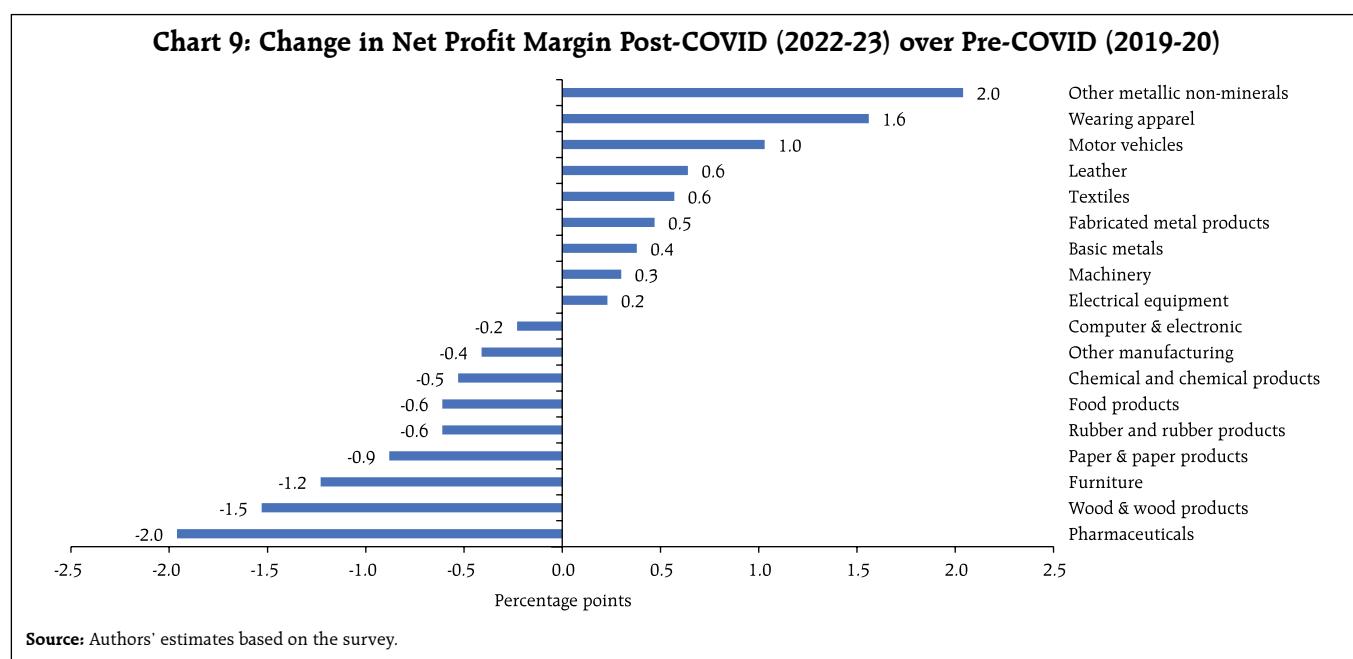
Regarding financial support for physical infrastructure⁵, about 40 per cent of firms across various clusters received one form of subsidy or the other (Chart 8). Amongst the firms receiving subsidies,

43 per cent got on electricity, 29 per cent on water and 27 per cent on land and buildings. About 2 per cent of firms received subsidy on all the three facilities and 1 per cent for purchasing machinery. Nearly 43 per cent of micro and small firms received at least one subsidy, while only less than one-fifth of medium enterprises received at least one subsidy.

III.3 Empirical Findings

The MSME sector was severely impacted by the COVID pandemic with both revenue and productivity witnessing a decline (Yangdol *et al*, 2023). The survey results indicate that in terms of the change in net profit margin (NPM) between 2022-23 and 2019-20, metals, wearing apparel and motor vehicles posted growth while pharmaceuticals, wood products and furniture registered decline over 2019-20 (Chart 9).

To determine how the various expenses affect the MSME units' NPM, we use the relative importance of regressors in the linear model approach by Lindeman, Merenda and Gold (1980). This methodology traces the contribution of each explanatory variable to the selected dependent variable. For a linear model with p regressors,



⁵ Subsidies received for electricity, water, land and buildings are considered as infrastructure subsidy.

$$y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p + \epsilon \quad \dots(1)$$

Where y is the dependent variable, x_i s are explanatory variables and ϵ is the error term that follows a standard normal distribution. $R^2_{overall}$ provides the proportionate contribution each predictor makes considering both the direct effects and its effects combined with other variables in equation 1 (Pal and Bharati, 2019). All the explanatory variables contribute to this $R^2_{overall}$. The analysis of variance (ANOVA) also estimates the relative contribution; however, this is sensitive to the ordering of explanatory variables. Lindeman, Merenda and Gold (1980) approach estimates all orders based on the Shapley value methodology. This approach takes care of the ordering issue encountered in the case of the ANOVA. The NPM is used as the dependent variable for this analysis. To examine whether increases in certain expenses share have impacted the NPM, dummy variables for the changes in the shares of expenses are considered. The dummy takes a value of 1 if the expenses share in a particular segment in the post-COVID period is higher than the pre-COVID period; otherwise, it takes a value of 0.

Chart 10 outlines the summary of the results. Rent and electricity expenses are seen as the most important determinants of profitability of the surveyed MSME units, followed by debt servicing and employees expenses. As noted earlier, firms in certain clusters were receiving financial support in the form of government subsidies towards electricity, land or machinery. To examine the impact of these financial incentives on firms' profitability, a linear model is employed incorporating cluster effects for state and MSME clusters along with other response variables. Based on firms' response to the availability of financial support, a binary or dummy variable has been created, taking the value 1 if the unit has received some form of subsidy and 0 otherwise. The unit's NPM is the dependent variable in the exercise. The model's estimation also has dummy control variables, including age, employee size, access to Udyam, ESIC, EPFO, and level of formalisation regarding salary payment through a bank account (For yes, it takes value 1, else 0). The regression results suggest that MSME units receiving subsidies had a higher NPM than those that have not received any subsidy. The results remain broadly consistent irrespective of the source of subsidy (Table 3).

Chart 10: Important Determinants of Net Profit Margin

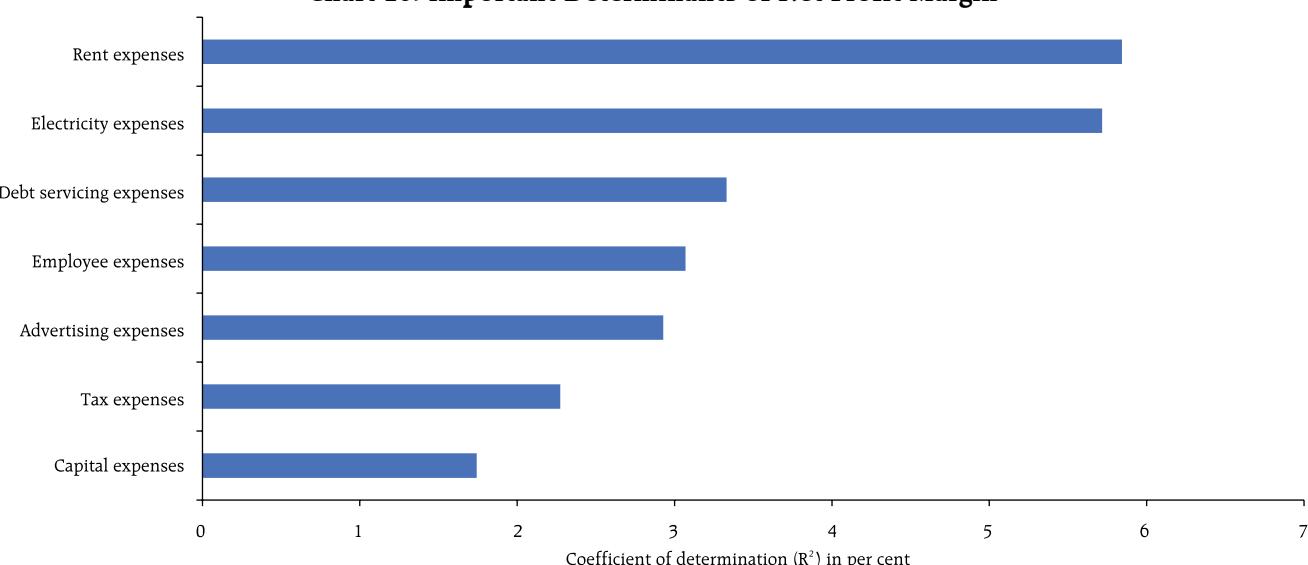


Table 3: Impact of Subsidy on Firm Profitability

	Dependent variable = Net Profit Margin (NPM)		
	Model 1	Model 2	Model 3
Central government Subsidies	11.40 ** (3.90)		
State government Subsidies		10.74 ** (3.68)	
Central and State government Subsidies			11.94 ** (4.11)
Constant	18.54 *** (1.65)	19.23 *** (1.64)	19.39 *** (1.76)
No of Observations	1957	1957	1957
R ²	0.18	0.15	0.16
State and Cluster fixed effect	Yes	Yes	Yes

Note: Standard errors are in parentheses. * p < 0.1. ** p < 0.05. *** p < 0.01. Estimation controls for various unit-specific factors, including age, employee size, access to Udyam, ESIC, EPFO, and salary payment through a bank account.

Source: Authors' estimates based on the survey.

III.4 Recent Government Schemes and MSMEs

As noted earlier, various measures have been undertaken to ease the financing of MSMEs, particularly after the pandemic. Further, the Production Linked Incentive (PLI) scheme, initiated for 14 sectors, benefits MSMEs along with large firms. In our survey, one-third of respondents responded to the query on the various schemes and among these respondents, ECLGS ranked as the most beneficial followed by Mudra, PLI and TReDS. To further explore the impact of ECLGS, a difference-in-difference (DID) approach is applied to the NPM. It uses the NPM as the dependent variable along with the dummy for ECLGS use and its interaction terms concerning a particular year (*ECLGS* Year dummy*). The firm's age is also used in the regression as an additional control. The effect of ECLGS on NPM is examined for 2022-23. In estimating the impact of the ECLGS, firms taking part in the ECLGS are the treatment firms, whereas other firms are the control firms. For this exercise, the following equation 2 is estimated.

$$y_{it} = \beta_0 + \beta_1 ECLGS\ dummy_i + \beta_2 Year\ dummy_t + \delta (ECLGS\ dummy * Year\ dummy)_{it} + \varepsilon_{it} \quad ... (2)$$

Table 4: Difference-in-Differences (DID) Estimates of Performance of MSMEs After ECLGS Implementation

	Net Profit Margin (NPM)
Year Dummy	0.19** (0.0947)
ECLGS Dummy	6.96* (0.5435)
ECLGS* Year Dummy	2.51* (0.2094)
Age	-0.09* (0.0172)
NIC Dummy	Yes
Constant	14.2* (0.5347)
Observations	8726
R ²	0.15

Notes: 1. The dummy for NIC has been used.

2. * and ** represent significance at 1 and 5 per cent, respectively.

3. Figures in parentheses indicate standard errors.

Source: Authors' estimates based on the survey.

ECLGS is the dummy variable for firms taking recourse to the ECLGS. β_2 is the time dummy, which takes value 1 for the year after 2021-22 (though ECLGS is operationalised in 2020). The interaction term is *ECLGS dummy * Year dummy*. The coefficient of *ECLGS dummy * Year dummy* is the DID representing the effect of ECLGS on NPM after the implementation of the ECLGS.

The empirical analysis suggests that the average NPM increased for all firms during 2022-23 (Table 4). Further, it increased for the firms taking recourse to the ECLGS relative to the firms which did not avail this scheme, as indicated by the significance of the interaction term.

IV. Conclusion

The study examined the performance of Micro, Small, and Medium Enterprises (MSMEs) across various clusters in India. It utilised primary survey data, which predominantly consisted of micro-enterprises, followed by small and medium-sized enterprises, reflecting the typical economic structure. According to the survey, a substantial portion of the respondent MSMEs in the surveyed clusters have

formalised their operations through registration and benefited from various government schemes. A majority of the respondent MSMEs rely on internal sources such as savings or retained profits, while a notable proportion accessed external financing, primarily through bank loans and loans from long-term financial institutions. An empirical analysis, using difference-in-difference approach, suggests that firms receiving financial support from the government under the ECLGS exhibited higher NPMs in 2022-23 compared to those without government assistance. The paper's observations and results may not necessarily hold for the entire MSME sector, as the current study is limited to MSME firms within the sampled clusters and the characteristics and behaviour of the firms outside the clusters could be different. Overall, the ongoing support for MSMEs, particularly in providing basic infrastructure like land, buildings, and power, is crucial.

References

- Dhawan, R. (2001). Firm size and productivity differential: theory and evidence from a panel of US firms. *Journal of Economic Behavior and Organization*, 44(3), 269-293. doi:10.1016/S0167-2681(00)00139-6.
- GoI. (1997). Report of the Expert Committee on Small Enterprises (Chairman:Abid Hussain). Government of India.
- GoI. (2014). *Understanding Innovation: Indian National Innovation Survey*. New Delhi: Department of Science and Technology, Government of India.
- Haider, K., Khanna, M., Kotei, M., Kushnir, K., Singh, S. and Sridhar, T. (2019). *Micro, Small and Medium Enterprises-Economic Indicators (MSME-EI) : Analysis Note*. World Bank Group.
- Krugman, P. (1991). Increasing Returns and Economic Geography. *Journal of Political Economy*, 99(3), 483-99. doi:abs/10.1086/261763#.
- Lindeman, R. H., Merenda, P. F. and Gold, R. Z. (1980). *Introduction to bivariate and multivariate analysis*. Glenview, IL: Scott, Foresman.
- Magar, S. (2017). Cluster Approach for Development of MSME Sector in India. *International Journal of Advanced Research*, 5(11), 414-420. doi:10.21474/IJAR01/5784.
- Pachouri, A., Sharma, S. (2016). Barriers to Innovation in Indian Small and Medium-Sized Enterprises. *ADBI Working Paper 588*. doi:10.2139/ssrn.2838109.
- Pal, M., Bharati, P. (2019). *Relative Contribution of Regressors. Applications of Regression Techniques*, 155-169. Singapore: Springer.
- Porter, M. (1990). The Competitive Advantage of Nations. *Harvard Business Review*, 68(2), 73-93. Retrieved from <https://hbr.org/1990/03/the-competitive-advantage-of-nations>.
- Porter, M. (1998). Clusters and New Economics of Competition. *Harvard Business Review*, 76(6), 77-90. Retrieved from <https://hbr.org/1998/11/clusters-and-the-new-economics-of-competition>.
- RBI. (2019). *Report of the Expert Committee on Micro, Small and Medium Enterprises (Chairman:U K Sinha)*. Reserve Bank of India.
- UNIDO. (2020). *The UNIDO Approach to Cluster Development: Key Principles and Project Experiences*. Vienna: United Nations Industrial Development Organisation.
- Utterback, J. (1994). *Mastering the Dynamics of Innovation*. Boston: Harvard Business School Press.
- Williamson, O. (1967). Hierarchical control and optimum firm size. *Journal of Political Economy*, 75, 123-138. doi:abs/10.1086/259258.
- Yangdol, R., Acharya, A. and Dhanya, V. (2023). COVID-19 and Productivity Performance of MSMEs and Large Firms in India. *Reserve Bank of India Occasional Papers*, 44(1).

Annex**MSME Survey Questionnaire**

Name of the Cluster: _____

Sr.No. _____

Date of Visit: _____

Name of Surveyor: _____

1. Location and Nature of the firm:

Location/ District	Village/ Town	State	Cluster owned by	Name and address of the enterprise	E-mail id and website of enterprise
			Central Government/State Government/ Private Sector/Cooperative		

2. Company Profile:

Sector	Product details	NIC code	Type of product (Final/ Intermediate/ both)	Ownership type (proprietary/ partnership/ self-help group/trust/ private ltd)	Co. – listed or unlisted	Whether bank accounts are maintained	Whether seasonal operations (Y/N)	Whether export oriented or domestic
Manufacturing								
Services								

3. Company Details**3.1. Financial Details**

	2019-20	2020-21	2021-22	2022-23 (expected)
Sales in Rupees lakh				
Employees (no.)				
Operating cost (% of gross profit)				
Net profit margin (%)				

3.2. Size of Investment and operations (Please tick the correct one)

Investment (in Rupees crore)	Annual turnover (in Rupees crore)	Number of employees		Year of establishment/age of firm
		Permanent	Contractual	
< 1 crore	<5 crore			
< 10 crore	<50 crore			
<50 crore	<250 crore			
>50 crore	>250 crore			
Actual amount in Rupees	Actual amount in Rupees			

3.3. Formalisation of MSMEs

Is the company registered in Udyam portal?	Yes / No
Are your employees registered in Employees' Provident Fund Organisation (EPFO)?	Yes / No
Are your employees registered in Employees' State Insurance Corporation (ESIC)?	Yes / No
Whether the company deposits salary to employees' bank accounts?	Yes / No

3.4. Composition of workers in terms of skills and their wages:

	Number of employees			Average wages per month	
	Permanent employees	Contractual employees	Total employees	Permanent employees	Contractual employees
Skilled					
Semi-Skilled					
Unskilled					
Total					

4. Subsidies in the cluster

4.1. Infrastructure facilities/subsidies in the cluster

Subsidy (as % of cost)	Land/Building	Electricity	Water	Others (please specify)
75- 100 %				
50-75 %				
25- 50 %				
No subsidy				

4.2. Distance of the following from manufacturing units (in km)

Port	Warehouse	Bank	Railway Station	Roads

5. Market (Buying/Sales Source)

5.1. Sale of output/ sourcing of Inputs. Please indicate Yes/No and share under each (in per cent)

	Another MSME within India %	Single large corporate within India %	Multiple small buyers/ sellers within India %	More than one large corporates %	Mostly domestic, within or outside State %	Only within state %	Only export/ import %	Mostly export/ imports %
Output sold to								
Inputs/ raw material purchased from								

5.2. Does the enterprise undertake any work on contract basis Yes/No. If Yes, type of contract

Working solely for other enterprise/contractor	
Mainly for contract, but for other customers without contract also	
Mainly without contract but also work on contract	

Sourcing of Inputs (Please tick applicable)

	Self-procured	Supplied by contractor	Both
Equipment			
Raw material			
Design of product			
Trade Credit			

5.3. If an exporting enterprise, please give details.

Major destination countries	Major competitors	Whether exporting destination a part of FTA	Exchange rate risk covered (Y/N)

Note: FTA- Free Trade Agreement

5.4. Whether raw materials are sourced/imported from outside, Yes / No. If yes, please give details.

Major source countries	Type of raw material imported	Imported from FTA countries (Y/N)	Whether exchange rate risk covered (Y/N)

5.5. If raw materials are sourced from outside, please give the reason for doing so (Please tick the applicable).

Name of raw material	Cost advantage	Better quality product	Established chain globally	Not available within India	Others (please specify)

6. Business Operations:

6.1. Major operating expenses as a per cent of total expenses

	Electricity	Rent	Cost of capital	Employee cost	Taxes	Transportation	Debt servicing	Advertising	Others (please specify)
Pre-COVID									
Post- COVID									

6.2a. What are the most pressing business problems your unit is facing? (Please rank as per importance; same rank also may be given) 5- Most Important, 4- Important, 3- Somewhat important, 2- Not important, and 1- Not at all important.

	Competition from other firms	GST	Shortage/ access to finance	Technological disruptions	Power supply	Government clearance	Absence of skilled labour	Regulatory compliances	Others (please specify)
Pre-COVID									
Post-COVID									

6.2b. What are the economic issues affecting your business? (Please rank as per importance; same rank also may be given against more than one) 5- Most Important, 4- Important, 3- Somewhat important, 2- Not important, and 1- Not at all important.

	Pressure to reduce prices	Rising price of inputs	Lack of demand	High labour cost	Shortage of raw materials	Availability of finance	High interest rates	High exchange rates	Foreign competition
Pre-COVID									
Post-COVID									

7. Finance

7.1. What is the most important source of finance for your firm as percentage of total finance? (please rank as per importance) 5- Most Important, 4- Important, 3- Somewhat important, 2- Not important, and 1- Not at all important.

	Trade credit	Retained earnings	Bank loans	Equity	Friends/ relatives	Private money lenders	NBFCs	Personal savings	Fintech	Others (please specify)
Pre-COVID										
Post COVID										

Note: Fintech refers to borrowing and lending through online platforms – payment apps, business-to-business lending, peer-to-peer lending etc.

7.2. Share of bank loan in total financing

Share of bank loan	75-100%	50-75%	25-50%	>25%
Pre-COVID				
Post-COVID				

7.3. Type of loan

	Term loan		Demand loans ⁶ (cash credit, overdraft, bills purchased and discounted etc.)
	1 year to 3 years	Above 3 years	
Share in the total (bank and non-bank) loan portfolio			
Share in total bank loan			

⁶ All loans repayable on demand (such as cash credit, overdraft, bills purchased and discounted, etc.) and short-term loans with maturity up to one year, whether secured or unsecured, are considered demand loans.

7.4. Loan Outstanding – as of March 2023

Source of borrowing	Amount outstanding (in ₹ lakh)	Interest rate payable (per annum)
Central/state-level term lending institutions		
Government		
Commercial banks		
Cooperatives		
Micro-finance institutions		
Other institutional agencies		
Money lenders		
Business partners		
Suppliers/contractors		
Friends & relatives		
Others		

7.5. Have you insured your assets/plants/business? Yes/No

8. Innovation

8.1. Particulars on use of information and communication technology (ICT) by the enterprise.

	Yes	No
Does the enterprise use internet banking?		
Does the enterprise have a web presence on the date of the survey?		
Did the enterprise receive orders for goods or services over the Internet or email during the last one year?		
The average number of persons employed who routinely use the Internet at work during last one year among the total employees		
Does the enterprise have a Local Area Network (LAN) as on date of the survey		

8.2. During the fiscal year 2020-21 to 2022-23, has the establishment introduced or significantly changed in any of the following:

	Yes	No	Do not know	Does not apply
Packaging				
Branding/logo/name/trademark				
Products appearance				
Advertising methods				
Sales channels or sales points				
Discount schemes				
Pricing strategies other than discounts				
Payment schemes				
New training to staff				

8.3. Whether the firm has introduced any new or significantly improved process/product or service during the post-covid period? Yes/ No/ Do not know. If no, skip to Question No. 9

8.4. If yes, please describe in detail how the new process/ product or service is different than the most similar product or service, if any, previously produced by this establishment.

	Yes	No	Don't know	NA
Does it have completely new functions?				
Is it cheaper to produce or offer?				
Is it a better-quality product or service?				
Does it use different inputs?				
Is it based on a technology or industrial design not already used by this establishment?				

8.5. Reason for introducing the new product/process/service

	Yes	No	Don't know	NA
To replace an existing product/process/service of the firm				
To extend the range of products/process/service of the firm				
To open new market and to increase market share				
To decrease the cost of production				
To meet competition				
To comply with regulations or standards				
To deal with decrease in demand for other products/services				

9. Post-COVID

9.1. After COVID how the following indicators have performed during 2022 as compared to pre-COVID period. (Please tick applicable)

	Sales		Employment	Wage cost	Input Cost	Capacity utilization	Availability of finance
	Domestic	Exports					
Increased							
Stayed the same							
Decreased							

9.2. How do you expect your business to perform in the coming 3 years? (Please tick applicable)

	Sales revenue	Input cost	Profits
Will increase substantially			
Marginal increase			
Stay the same			
Will come down			

10. Government Schemes

10.1. Type of assistance received from the State/Central government (please select all that is received) (tick appropriate columns):

	Loan	Subsidy	Machinery /equipment	Skill development	Marketing	Raw material	Export incentives	Others (please specify)
Central government								
State government								

10.2. Whether availed the scheme/subsidy from government (Please order the scheme as per the utility)

Schemes	Please rank the scheme as per your utility (1 ranks the highest)	Not aware of any scheme	If no, please give reason
ECLGS			
Mudra Loan			
PLI			
TReDS			
Others (please specify)			

Note: ECLGS _Emergency credit line guarantee scheme, PLI _Production linked incentive scheme, TReDS _Trade receivables discounting system.

10.3a. If yes, how far you find these schemes useful?

	Very useful	Useful	Not useful	Do not know
In improving revenue				
In improving sales volume/quantity				
Getting working capital finances				
Better access to credit				

10.3b. If part of PLI, what per cent of incremental sales can be attributed to PLI.

>50%	25-50%	<25%	No change

11. What further support is required for sector in which you operate for business development?

Please specify.....

12. Any other suggestions:

Cash Usage Indicator for India

by Pradip Bhuyan ^

The anonymous nature of cash payments and the use of cash as both a mode of payment and a store of value presents significant challenges to measuring its usage. This article presents several approaches to measure the usage of cash and develops a quarterly indicator to measure the use of cash as a mode of payment in India to help policies on currency management.

Introduction

Data on cash usage can help a central bank in assessing the cash required in the system. Cash or currency in circulation (CIC) represents the total notes and coins in circulation in the economy. Cash is not only used as a mode of payment but also as a store of value. The use of cash could be on account of payments for consumption (to purchase goods and services), other purposes (lending, debt repayment, gift, donation, etc.) and precautionary holding (cash for emergency purposes such as medical emergencies).

The Reserve Bank of India (RBI) is responsible for the overall supply and management of CIC in India. Unlike electronic and digital payments, cash payments do not leave any trail. It is therefore not possible to measure the direct usage of cash. Hence, an indirect approach is required to measure the same. The main objective of this article is to develop an indicator for the measurement of the usage of cash in India as a mode of payment for financial transaction.

The rest of the article is organised as follows. Section II describes the recent trend in currency with the public (CWP) in India. The literature on methods

of measuring cash usage in important economies is presented in section III. The methods proposed to measure the usage of cash in India are discussed in section IV. Results are analysed in section V. Conclusions are laid out in section VI.

II. Currency with the Public in India

CWP is defined by CIC minus cash with banks and accounts for around 95-97 per cent of CIC. There was a decline in the ratio of CWP to GDP from 2011-12 to 2014-15 (Table 1). The ratio saw a rise in 2015-16 but a sharp drop in 2016-17 due to the withdrawal of the legal tender character of the then existing ₹500 and ₹1000 banknotes in November 2016. CWP increased in the next year due to remonetisation. The ratio increased sharply in 2020-21 due to increase in cash intensity in the wake of the pandemic (RBI, 2021). The ratios have decreased in the subsequent years.

In recent years, significant growth has been observed in retail digital payments (RDP), which is the total digital payments except for payments through real-time gross settlement (Table 2). Unified payments interface (UPI) launched in 2016, accounted for the highest share in RDP in volume in the last five

Table 1: Movement in GDP and CWP

Years	CWP to GDP	Y-o-Y Growth	
		CWP	Nominal GDP
2011-12	11.7	12.3	14.4
2012-13	11.5	11.5	13.8
2013-14	11.1	9.2	13.0
2014-15	11.1	11.3	11.0
2015-16	11.6	15.2	10.5
2016-17	8.2	-20.9	11.8
2017-18	10.3	39.2	11.0
2018-19	10.9	16.6	10.6
2019-20	11.7	14.5	6.4
2020-21	13.9	17.1	-1.2
2021-22	12.9	10.3	18.9
2022-23	12.2	7.9	14.2
2023-24	11.5	4.1	9.6

Note: Data are in per cent.

Source: DBIE; Author's calculations.

^ The author is from the Department of Currency Management (DCM), Reserve Bank of India (RBI). The author is thankful to Shri Suman Ray, CGM in Charge, other officials of DCM, Dr. Praggya Das, Adviser-in-Charge, in the Monetary Policy Department and Shri Joice John, Director in the Department of Statistics and Information Management of RBI for their valuable suggestions. The views are personal views of the author and do not represent the views of the RBI.

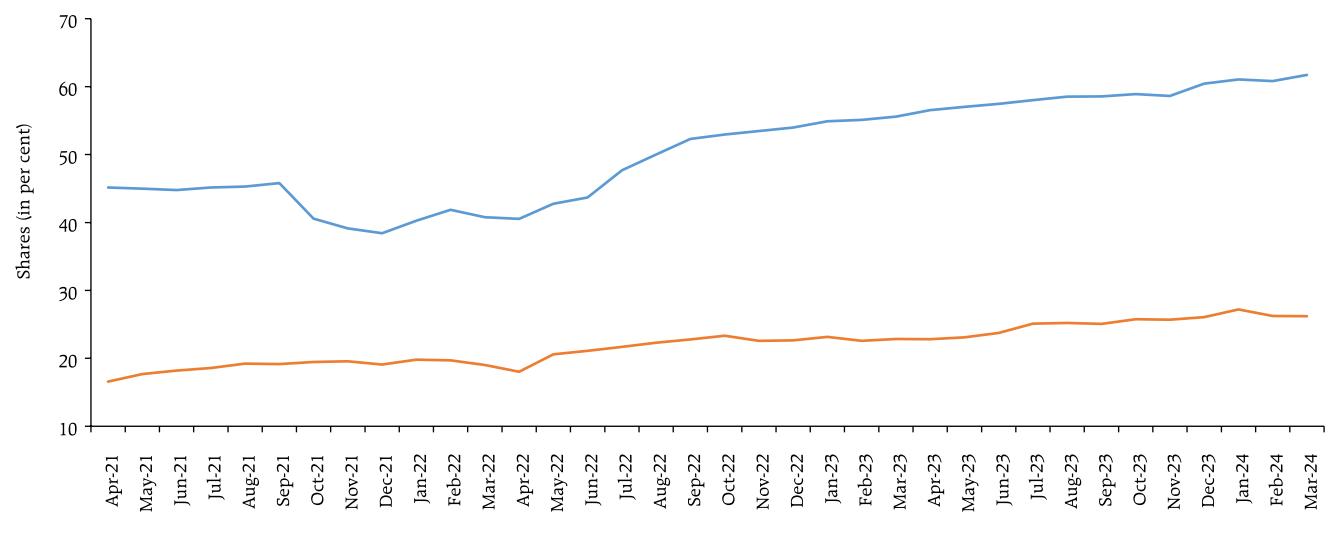
Table 2: Movement in RDP and UPI Transactions¹

Years	Y-o-Y Growth (in per cent)				Share of UPI in RDP (in per cent)	Average Ticket Size of UPI (in ₹)	
	RDP		UPI				
	Volume	Value	Volume	Value	Volume	Value	
2016-17	64.2	45.2	-	-	0.2	0.1	3872.8
2017-18	51.0	45.7	4992.0	1477.9	6.3	0.5	1200.0
2018-19	59.9	38.3	489.1	698.5	23.3	3.1	1626.6
2019-20	46.5	9.9	132.2	143.1	37.0	6.9	1702.9
2020-21	28.6	16.4	78.4	92.5	51.3	11.4	1837.7
2021-22	64.8	27.6	105.8	105.1	64.0	18.4	1831.3
2022-23	58.4	28.4	82.2	65.3	73.6	23.7	1662.2
2023-24	44.4	22.5	56.6	43.8	79.9	27.8	1525.2

Source: DBIE; and Author's calculations.

years under reference. Moreover, y-o-y growth in UPI exceeded that in RDP in volume and value from 2017-18. The growth in UPI in value was higher than that in volume during the period. However, from 2021-22 to 2023-24 (post COVID-19 period), the growth in UPI in volume was higher than that in value. Consequently, the average size of UPI transactions decreased from ₹1838 in 2020-21 to ₹1525 in 2023-24. The share of P2M (person to merchant) payments

in total UPI transactions increased from 16.6 per cent in April 2021 to 26.2 per cent in March 2024 in value (Chart 1). In volume, the share increased from 45.2 per cent to 61.7 per cent during the same period. In this period, P2M payments increased nearly six-fold in volume and over five-fold in value and the growth far exceeded that observed for P2P (person to person) payments (Table 3). The decline in the average size of UPI transactions, the increase in the share of P2M in

Chart 1: Shares of P2M in UPI

Source: DBIE; and Author's calculations.

¹ The pilot launch of UPI was in April 2016; banks started their UPI enabled apps from August, 2016 onwards; <https://www.npci.org.in/what-we-do/upi/product-overview>.

Table 3: Growth in UPI (March 2024 over April 2021)

UPI		P2P		P2M	
Volume	Value	Volume	Value	Volume	Value
403.7	297.9	244.9	248.1	596.6	548.8

Note: Data are in per cent.

Source: NPCI; and Author's calculations.

UPI (in volume and value) and the moderation in the ratio of CWP to GDP in 2023-24 from its pre-pandemic level suggest substitution of cash with UPI for small value transactions. Raj *et al.* (2020) found a reduction in demand for currency in the recent period with increased use of digital payments.

III. Literature Review

Benchmarking Currency (2023a) found usage of cash² for just over two-fifths of payments among 17 central banks in 2022, slightly lower than that observed for 2021. The report found an increase in the value of cash in circulation in many jurisdictions and noted that cash retained its role as a store of value. Benchmarking Currency (2023b) report found cash usage averaged 40.6 per cent in 17 nations in 2022, as

compared to an average of 45.2 per cent observed in 2021. Information available across various economies suggests decline in use of cash in those countries (Table 4). On the other hand, surveys conducted by Chile's central bank indicated –that the proportion of people using cash more than once per week fell to 60 per cent in 2021 from 75 per cent in 2019 but rose to 79 per cent in 2022 (Central Banking, 2023).

Based on the literature available on the usage of cash, the methods adopted for the measurement of cash usage can be divided into two – sample surveys and administrative records. In the information on usage of cash provided above, use cases in a few economies are based on surveys. Methods that can be applied based on administrative records are discussed below.

Table 4: Studies on Cash Usage in Select Countries

Country	Period	Decline in cash usage	Source
Australia	2007-2019	Consumer payments survey revealed a decline in the share of cash in total retail payments from 69 per cent in 2007 to 27 per cent in 2019.	Caddy <i>et al.</i> , (2020)
UK	2010-2020	The share of transactional cash use declined from over 50 per cent of payments in 2010 to 17 per cent of all payments in 2020.	BoE (2021)
Euro area	2016-2022	Study on the payment attitudes of consumers found share of cash payments at the point of sale (PoS) in terms of volume and value declined to 59 and 42 per cent respectively in 2022 from 79 and 54 per cent in 2016.	ECB (2022)
New Zealand	2017-2020	Cash use survey found proportion of the population indicating cash as one way to pay for daily things declined from 96 per cent in 2017 to 70 per cent in 2020	RBNZ (2021)
US	2020-2022	Diary of consumer payment choice survey revealed slight decline in 2022 in the share of payments made using cash to 18 per cent of all payments as compared to that in 2021 and 2020 due to increase in non-cash payments	Cubides and O'Brien, (2023)
Canada	2017-2021	Methods-of-Payment Survey revealed share of purchases using cash in volume declined by 11 percentage points in 2021 from that in 2017 and was found as 22 per cent in 2021. In terms of value, the share however was almost the same, 14 per cent in 2021 and 15 per cent in 2017	Henry <i>et al.</i> , (2023)
Sweden	2020	As per the survey of the payment behaviour, 9 per cent of respondents informed to use cash to make payments in 2020 in their most recent purchase.	SR (2020)

² the proportion of payments in cash.

CIC to GDP is frequently used to measure cash demand (Amromin and Chakravorti, 2007). Drawing attention to the situation of a high stock of cash, Amromin and Chakravorti (2009) stated that if more merchants and consumers accepted cash alternatives, payment objectives were not the sole use of cash. They focussed on the ratio of coin and low-value currency denominations (small CIC) to GDP, as most cash was used for low-value purchases. A key feature of their method was the disentanglement of dual roles of cash as a store of value and medium of payment and isolating the transactional role of cash by focusing on small-denomination class, which they defined as currency and coin that were lower in value than that commonly dispensed by ATMs. They segregated the ratio of outstanding cash to GDP into large, medium, and small denominations. Medium denomination banknotes were defined as those prevalently distributed by ATMs based on their survey of thirteen central banks. Banknotes of small and large denominations were defined as those above and below this threshold. According to Khiaonarong and Humphrey (2019), there was more information on payment instruments that substituted for cash than on cash itself and suggested three alternative measures for cash use in a country as explained below.

(i) Method based on residual household consumption (HC): This method estimates the use of cash in consumption as a residual, on the argument that, if information on cash use in a country is not sufficient, the same may be approximated by subtracting the value of all non-cash payment instruments used in consumption from total value of HC. It is thus based on the share of residual HC to total HC in the national accounts as shown below:

$$\text{Residual HC} = \frac{\text{HC} - \text{card} - \text{E money}}{\text{HC}} \quad \dots (1)$$

where 'Card' is the value of all debit/ credit card payments, and 'E money' is the value of privately stored value cards or mobile phones with the value stored on a chip.

(ii) Method based on the share of cash withdrawals in HC: It assumes that cash withdrawn from ATMs and over-the-counter (OTC) at banks (referred to as ATM cash and OTC cash respectively henceforth) in a country is almost all spent on HC items and defines the following measure:

$$\text{Cash HC} = \frac{\text{ATM cash} + \text{OTC cash}}{\text{HC}} \quad \dots (2)$$

(iii) Method based on the share of cash withdrawals in total cash and cash-like payments: It is based on the value of cash withdrawals as a percent of the value of transactions made using these withdrawals plus cash substitutes viz. 'Card' and 'E money'. The measure is defined as follows:

$$\text{Cash share} = \frac{\text{ATM cash} + \text{OTC cash}}{\text{ATM cash} + \text{OTC cash} + \text{card} + \text{E money}} \quad \dots (3)$$

Summarising the results of their three methods presented above, Khiaonarong and Humphrey (2019) observed that the cash share levels were mismeasured to differing degrees due to missing data. The use of the value of cash withdrawn from ATMs to measure the use of cash would provide more accuracy and would be a more timely measure (Khiaonarong and Humphrey, 2023). They stated that cash withdrawn at ATMs is of medium value denominations of currency notes commonly used for legal payment transactions and thus would exclude other uses (hoarding and illegal use).

IV. Methodology

The methods discussed in section III were evaluated for their applicability in estimating cash use in India. Measuring the usage of cash through surveys may be difficult for challenges as alluded to before. The ratio of CIC to GDP, although popular, does not distinguish between the demand for currency and the usage of cash for transaction purposes. Although transactions and precautionary motives were the original causes for holding currency, other motives however appeared with the progress of the financial system (Nachane et al., 2013). Awasthy et

al. (2022) found precautionary and store-of-value motives influenced the sustained growth in currency demand. Methods popularly used to measure the demand for cash, *viz.* cash holdings per capita and cash outstanding to GDP do not distinguish between store of value and payment functions of cash (Amromin and Chakravorti, 2007). Khiaonarong and Humphrey (2019) stated that the ratio of CIC to consumption component of GDP could be more useful as cash is commonly used for consumption purpose. They further stated that CIC to GDP was frequently used to measure cash use as data on CIC and GDP were easily available. In the same vein, this paper suggests that CIC to GDP ratio may not be a good indicator for cash use. The second measure by Khiaonarong and Humphrey (2019) assumes that cash withdrawn from ATMs and OTC at banks is almost all spent on household consumption. Cash withdrawn could also be used as a store of value, and hence entire amount (almost) may not be spent for consumption. For example, the high rise in CIC during the COVID-19 pandemic was partly motivated by the precautionary response. Moreover, although data on ATM cash withdrawal is available in India in public, the same for OTC cash is not available. It is therefore not possible to know the share of ATM cash in total cash withdrawal in India. Therefore, the methods based on small CIC to GDP (Amromin and Chakravorti, 2007) and that on residual measure (Khiaonarong and Humphrey, 2019) are used India to estimate the use of cash for financial transactions in the country.

Amromin and Chakravorti (2007, 2009) used the ratio of denominations lower to ATM dispensed notes to define small CIC. This paper however also adds some denominations dispensed by ATMs in India to small CICs, as explained later. The residual measure is suggested if there is not sufficient information in a country on cash use (Khiaonarong and Humphrey, 2019). Although an indirect approach, it is applicable for measuring the use of cash in India, and also,

datasets required for this method are broadly available. Cash usage (CU) in India is therefore estimated based on the following in this article.

- (i) CIC of small and medium denominations (CIC_{sm})
- (ii) CIC of small, medium, and high denominations (CIC_{smh})
- (iii) Residual HC.

The methodologies proposed are explained below. Based on the analysis of CU derived, the paper proposes a cash usage indicator for India.

IV.1 CU based on CIC_{sm}

Consequent upon commencement of withdrawal of ₹2000 banknotes from circulation [although continues to remain legal tender (RBI, 2023)], ₹500 banknote is practically the highest denomination in circulation in the country. Hence, this paper considers denominations up to ₹200 banknotes as small and medium and defines small and medium CIC in India as follows:

CIC of small and medium denominations at period t,

$$CIC_{sm}^t = Coins_t + Banknotes_{200,t} \quad \dots(4.1)$$

where coins are of all denominations and banknotes are of denominations up to ₹200 at period t. Accordingly, the following formulae are used to measure the usage of cash based on CIC_{sm} at period t.

$$CIC_{sm} \text{ to GDP at period } t = 100 \times \frac{CIC_{sm}^t}{GDP^t} \quad \dots(4.2)$$

$$CIC_{sm} \text{ to HC at period } t = 100 \times \frac{CIC_{sm}^t}{HC^t} \quad \dots(4.3)$$

GDP^t and HC^t are values of GDP and HC respectively at period t (at current prices). For HC, data on private final consumption expenditure were used (discussed later). CU based on CIC_{sm} could help to know the usage of cash in the form of small and medium denominations.

IV.2 CU based on CIC_{smh}

The high denomination considered for this paper is taken as ₹500. Inclusion of denominations above ₹500 will mean that CIC_{smh} is same as total CIC and cash outstanding to GDP do not distinguish between store of value and payment functions of cash (Amromin and Chakravorti, 2007). Definition used for CIC_{smh} is as shown below:

CIC of small, medium, and high denominations at period t ,

$$CIC_{smh}^t = Coins_t + Banknotes_{500,t} \quad \dots(5.1)$$

where coins include all denominations, and banknotes include denominations up to ₹500 at period t . The formulae used to measure the usage of cash based on CIC_{smh} at period t are as follows.

$$CIC_{smh} \text{ to GDP at period } t = 100 \times \frac{CIC_{smh}^t}{GDP^t} \quad \dots(5.2)$$

$$CIC_{smh} \text{ to HC at period } t = 100 \times \frac{CIC_{smh}^t}{HC^t} \quad \dots(5.3)$$

CU based on CIC_{smh} could help to know the usage of cash including higher denominations.

IV.3 CU based on Residual HC

HC in the national accounts and non-cash payment instruments are the inputs used for this method (Khiaonarong and Humphrey, 2019). Private final consumption expenditure (PFCE) as part of national accounts statistics published by the Ministry of Statistics and Programme Implementation (MoSPI) which is made up of expenses by households on goods/ services acquired for consumption is taken as the measure of HC. PFCE also includes the final consumption of non-profit institutions serving households (NPISH). PFCE accounts for around 60 per cent of GDP in India.

The residual method subtracts the value of all non-cash payment instruments used in HC and estimates cash use as the residual. Total PFCE minus the value of retail payments to merchants to purchase goods and services through digital mode used for PFCE (i.e., $PFCE_{digital}$) can be used as an estimate for the residual HC, which is the value of cash payments

for PFCE (i.e., $PFCE_{cash}$). $PFCE_{digital}$ is estimated using data on retail digital payments to merchants by consumers to purchase goods and services as shown below. Regarding credit and debit cards, disaggregated data on payments are available for 'PoS based' and 'Others'. For prepaid instruments, such data through 'wallet', 'PoS based' and 'Others' are available. PoS based payments are payments to merchants. However, payments to merchants through cards also happen outside 'PoS' and hence would be part of 'Others'. At the same time, card payments on 'Others' could also possibly cover payments other than to merchants e.g. transfer of funds to bank accounts, other card accounts etc. Unlike cards, data on 'PoS based' are not available separately for wallet. The entire data on 'wallet' are therefore assumed to be for payments to merchants. P2M of UPI, BHIM Aadhaar pay, national electronic toll collection (NETC) are instruments used for payments to merchants. The components of RDP and their usability as non-cash payments to estimate payments to merchants is discussed in Annex A. $PFCE_{digital}$ at period t is therefore estimated at two levels, lower and upper, as shown below:

$PFCE(digital)$ (lower level) at period t ,

$$PFCE(digital)_L^t = P2M\ UPI^t + BHIM\ Aadhaar\ pay^t + NETC^t + \text{credit card payments (PoS)}^t + \text{debit card payments (PoS)}^t + \text{pre paid card payments through wallet}^t + \text{pre paid card payments (PoS)}^t \quad \dots(6.1)$$

$PFCE(digital)$ (upper level) at period t ,

$$PFCE(digital)_U^t = PFCE(digital)_L^t + \text{credit card payments (others)}^t + \text{debit card payments (others)}^t + \text{pre paid card payments (others)}^t \quad \dots(6.2)$$

Accordingly, $PFCE(cash)$ at period t is also estimated at two levels as follows:

$PFCE(cash)$ (lower level) at period t ,

$$PFCE(cash)_L^t = PFCE(\text{total})^t - PFCE(digital)_U^t \quad \dots(7.1)$$

$PFCE(cash)$ (upper level) at period t ,

$$PFCE(cash)_U^t = PFCE(\text{total})^t - PFCE(digital)_L^t \quad \dots(7.2)$$

All the items considered for PFCE(digital)_L represent payments to merchants. PFCE(digital)_U includes, in addition to these items, 'Others' also on card payments. This item may not entirely represent payments to merchants as discussed above and some amount under this item may be for payments to merchants. Disaggregated data for it are however not available. Hence, PFCE(digital)_L and PFCE(digital)_U at period t are taken respectively as likely lower (excludes 'Others') and upper levels (includes 'Others') of PFCE(digital) at period t. PFCE(digital)_L and PFCE(digital)_U respectively can then be assumed as minimum and maximum possible values of digital modes of payments by consumers. Similarly, PFCE(cash)_L and PFCE(cash)_U at period t are respectively taken as probable lower and upper levels of PFCE(cash) at period t. Accordingly, use of digital payments (DP) in PFCE at period t is thus defined between two bounds, lower and upper as presented below.

$$DP_L^t = \text{Likely lower bound of digital payment usage} \\ = 100 \times \frac{\text{PFCE(digital)}_L^t}{\text{PFCE (total)}^t} \quad \dots(8.1)$$

$$DP_U^t = \text{Likely upper bound of digital payment usage}$$

$$= 100 \times \frac{\text{PFCE(digital)}_U^t}{\text{PFCE (total)}^t} \quad \dots(8.2)$$

Similarly, cash usage (CU) in PFCE at period t is also defined between two bounds as follows.

$$CU_L^t = \text{Likely lower bound of cash usage} \\ = 100 \times \frac{\text{PFCE(cash)}_L^t}{\text{PFCE (total)}^t} \quad \dots(9.1)$$

$$CU_U^t = \text{Likely upper bound of cash usage} \\ = 100 \times \frac{\text{PFCE(cash)}_U^t}{\text{PFCE (total)}^t} \quad \dots(9.2)$$

V. Results

The CIC_{sm} to GDP ratio declined in pre-demonetisation period (i.e., from 2011-12 to 2015-16) (Table 5). The ratio increased in the year 2016-17 mainly due to higher infusion of banknotes of lower denominations following demonetisation (RBI, 2017). The ratio started declining again after 2016-17 until 2020-21, the COVID-19 induced lockdown year (the ratio remained at same level in 2018-19 and 2019-20). In 2020-21 the ratio increased due to a fall in GDP and also higher precautionary holding of cash. The ratio however started declining again after 2020-21. Overall, although it increased marginally in 2023-24, the ratio

Table 5. CU based on the ratios of CIC_{sm} and CIC_{smb} to GDP

Years	CIC _{sm} to GDP	CIC _{smb} to GDP	Shares in CIC (Volume)		Shares in CIC (Value)	
			CIC _{sm}	CIC _{smb}	CIC _{sm}	CIC _{smb}
2011-12	2.4	8.2	90.7	97.6	19.4	67.5
2012-13	2.2	7.5	90.5	97.3	18.2	63.6
2013-14	2.0	7.1	90.2	97.0	17.1	60.9
2014-15	1.9	7.1	89.7	96.9	15.9	61.3
2015-16	1.8	7.5	88.8	96.8	14.7	62.0
2016-17	2.4	4.3	95.7	98.4	28.1	50.1
2017-18	2.2	6.7	91.5	98.5	20.6	62.9
2018-19	2.1	7.8	89.2	98.6	18.8	69.2
2019-20	2.1	9.4	86.5	98.8	17.4	77.6
2020-21	2.2	11.9	83.4	99.0	15.1	82.8
2021-22	1.8	11.5	81.3	99.2	13.7	86.3
2022-23	1.6	11.2	79.8	99.3	12.9	89.3
2023-24	1.7	11.9	78.4	99.9	14.1	99.8

Note: Data are in per cent.

Source: Author's calculations based on Annual Reports of RBI (various years) and (GoI, 2024).

was lower than that in 2020-21. Regarding CIC_{smh} to GDP, the ratio remained in the range of 7 to 8 per cent during the period from 2011-12 to 2018-19 except in 2016-17 and 2017-18 (the ratio sharply fell in 2016-17 due to demonetisation and then increased in 2017-18 for remonetisation). The ratio increased noticeably from 2018-19 to 2020-21, probably due to higher holding of cash (arising from heightened uncertainty caused by COVID-19) but declined in 2021-22 and 2022-23. There was some increase in the ratio in 2023-24, due to rise in the share of ₹100, ₹200 and ₹500 banknotes in value terms as that of ₹2000 banknotes declined sharply reflecting the withdrawal of the latter denomination from circulation [RBI (2024)]. The ratio however remained in the range of 11 to 12 per cent in the last four years under reference. The share of CIC_{smh} in total CIC however continuously increased from 2016-17 in volume and from 2017-18 in value.

V.1 CU based on the ratios of CIC_{sm} and CIC_{smh} to PFCE

Values of the ratios are presented in Table 6. Observations are almost similar in nature to those observed in the corresponding ratios to GDP and suggest declining use of CIC by households.

Table 6: CU based on the ratios of CIC_{sm} and CIC_{smh} to PFCE

Years	CIC_{sm} to PFCE	CIC_{smh} to PFCE
2011-12	4.2	14.6
2012-13	3.8	13.4
2013-14	3.4	12.2
2014-15	3.2	12.2
2015-16	3.0	12.7
2016-17	4.1	7.3
2017-18	3.8	11.5
2018-19	3.6	13.2
2019-20	3.5	15.5
2020-21	3.5	19.5
2021-22	3.0	18.8
2022-23	2.6	18.4
2023-24	2.8	19.7

Note: Data are in per cent.

Source: Author's calculations.

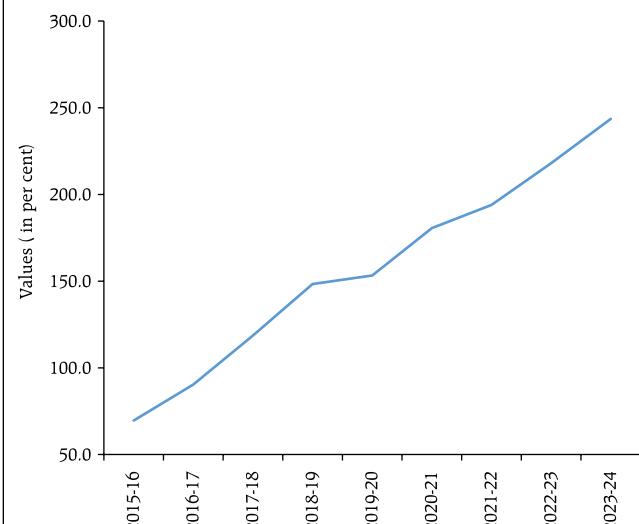
V.2 Issues on use of CU based on CIC_{sm} and CIC_{smh}

It is found that the ratios CIC_{sm} to GDP, CIC_{sm} to PFCE, CIC_{smh} to GDP and CIC_{smh} to PFCE were broadly unchanged during the period under study. On the other hand, the ratios of RDP to GDP increased from around 70 per cent in 2015-16 to nearly 244 per cent in 2023-24 (Chart 2). In the absence of comprehensive data on the use CIC_{sm} and CIC_{smh} for financial transactions, the direct use of their values alone will not help to measure appropriately use of cash in India in the light of fast adoption of digital modes of payments in the country.

V.3 CU based on Residual HC

Following the approach stated in section IV³, the estimated values of $PFCE(digital)_L$, $PFCE(digital)_U$, $PFCE(cash)_L$ and $PFCE(cash)_U$ are presented in Table 7. The y-o-y growth in cash payments by households [$PFCE(cash)_L$ and $PFCE(cash)_U$] was positive in the

Chart 2: Values of RDP to GDP



Source: Author's calculations using data from PSI and (Goi, 2024).

³ Values are presented from the quarter ending March 2021. Disaggregated data on UPI in terms of P2P and P2M payments are available only from April 2021 onwards in NPCI. The same for the quarter ending March 2021 were estimated using the share of P2P and P2M payments in UPI available in Worldline (2021) (explained in detail in Annex B). The author could not find any other source publishing data on P2P and P2M payments for period earlier to the quarter end March 2021.

Table 7: Estimated Values of PFCE(digital) and PFCE(cash)

Years	Quarters	PFCE (total)	PFCE (digital) _L	PFCE (digital) _U	PFCE (cash) _L	PFCE (cash) _U
2021	Jan-Mar	34.5	4.8	6.7	27.8	29.7
	April-Jun	29.6	4.7	6.6	23.0	24.8
	Jul-Sep	34.5	6.3	8.5	26.0	28.2
	Oct-Dec	40.5	7.8	10.3	30.2	32.7
2022	Jan-Mar	39.3 (14.1)	8.0 (66.6)	10.5 (56.7)	28.8 (3.8)	31.3 (5.6)
	Apr-Jun	38.4 (30.0)	9.2 (94.7)	12.0 (83.5)	26.4 (14.8)	29.2 (17.7)
	Jul-Sep	40.5 (17.5)	10.4 (64.1)	13.4 (57.3)	27.1 (4.5)	30.1 (7.0)
	Oct-Dec	43.8 (8.2)	11.7 (50.6)	14.7 (42.2)	29.1 (-3.4)	32.1 (-1.9)
2023	Jan-Mar	41.5 (5.5)	12.1 (52.1)	15.1 (44.5)	26.3 (-8.7)	29.4 (-6.3)
	Apr-Jun	41.5 (8.1)	13.4 (45.1)	16.6 (37.6)	25.0 (-5.4)	28.2 (-3.6)
	Jul-Sep	43.3 (6.9)	14.9 (44.0)	18.4 (37.4)	24.9 (-8.2)	28.4 (-5.9)
	Oct-Dec	48.0 (9.7)	17.1 (46.2)	21.0 (43.0)	27.1 (-7.0)	31.0 (-3.5)
2024	Jan-Mar	45.3 (9.3)	18.2 (49.9)	21.8 (43.8)	23.5 (-10.6)	27.1 (-7.5)
<i>Financial Years</i>						
2021-22		143.8	26.8	35.9	108.0	117.1
2022-23		164.2 (14.2)	43.4 (62.1)	55.2 (54.0)	109.0 (1.0)	120.8 (3.2)
2023-24		178.2 (8.5)	63.6 (46.5)	77.7 (40.7)	100.5 (-7.8)	114.7 (-5.1)

Notes: 1. PFCE(total) = 'PFCE(digital)_L + PFCE(cash)_U' or 'PFCE(digital)_U + PFCE(cash)_L'.

2. Values are in ₹ lakh crore.

3. Figures in brackets are y-o-y growths in per cent.

Source: Author's estimates.

quarters ending with March, June, and September in the year 2022; the growth was negative in the subsequent quarters. The growth in digital payments by households on the other hand was significantly higher. The distribution of PFCE(digital) is presented in Annex B. P2M of UPI accounted for the highest share in PFCE(digital). The estimated shares of cash and digital payments in PFCE are presented in Table 8. It may be observed that the use of cash was dominant in PFCE during the period under study but with a declining share .

V.4. Construction of Cash Usage Indicator (CUI) for India

CIC_{sm} and CIC_{smh} are based on CIC and are more appropriate for measuring demand for cash, but they may not properly reflect the usage of cash. They do not discriminate between cash holdings for payment *vis-à-vis* that for store of value purposes (Amromin and Chakravorti, 2007). The residual method, on the other hand, could reflect better the actual usage of cash in retail payments by the households. This

Table 8: Use of Cash and Digital Payments in PFCE

Years	Quarters	Use of cash in PFCE		Use of digital modes in PFCE	
		CU _L	CU _U	DP _L	DP _U
2021	Jan-Mar	80.6	86.1	13.9	19.4
	Apr-Jun	77.8	84.0	16.0	22.2
	Jul-Sep	75.3	81.7	18.3	24.7
	Oct-Dec	74.5	80.8	19.2	25.5
2022	Jan-Mar	73.3	79.7	20.3	26.7
	Apr-Jun	68.7	76.0	24.0	31.3
	Jul-Sep	66.9	74.4	25.6	33.1
	Oct-Dec	66.5	73.3	26.7	33.5
2023	Jan-Mar	63.5	70.8	29.2	36.5
	Apr-Jun	60.1	67.8	32.2	39.9
	Jul-Sep	57.5	65.5	34.5	42.5
	Oct-Dec	56.4	64.5	35.5	43.6
2024	Jan-Mar	51.9	59.9	40.1	48.1
<i>Financial Years</i>					
2021-22		75.1	81.4	18.6	24.9
2022-23		66.4	73.6	26.4	33.6
2023-24		56.4	64.3	35.7	43.6

Notes: 1. Data are in per cent.

2. Total = CU_L + DP_U (or CU_U + DP_L)

Source: Author's estimates.

paper, therefore, proposes an interval-based cash usage indicator (CUI) using the residual measure as shown below:

$$\text{CUI}_t (\text{CUI at period } t) = (\text{CU}_L^t \text{ } \text{CU}_U^t) \quad \dots (10)$$

where CU_L^t and CU_U^t represent the lower and the upper bounds of cash usage respectively. The estimates of CUI are presented in Table 9 below (based on Table 8).

VI. Conclusion

This article attempts to measures the usage of cash in India as a mode of payment using different methods and the analysis suggests that the residual household consumption expenditure-based approach could be more appropriate. A cash usage indicator (CUI) constructed in the article taking into account both physical and digital modes of payments indicates that the cash usage remains significant but has

Table 9: Estimated Values of CUI for India

Years	Quarters	Values of CUI		
		Jan-Mar	Apr-Jun	Jul-Sep
2021	Jan-Mar	80.6	-	86.1
	Apr-Jun	77.8	-	84.0
	Jul-Sep	75.3	-	81.7
	Oct-Dec	74.5	-	80.8
2022	Jan-Mar	73.3	-	79.7
	Apr-Jun	68.7	-	76.0
	Jul-Sep	66.9	-	74.4
	Oct-Dec	66.5	-	73.3
2023	Jan-Mar	63.5	-	70.8
	Apr-Jun	60.1	-	67.8
	Jul-Sep	57.5	-	65.5
	Oct-Dec	56.4	-	64.5
2024	Jan-Mar	51.9	-	59.9
<i>Financial Years</i>				
2021-22		75.1	-	81.4
2022-23		66.4	-	73.6
2023-24		56.4	-	64.3

Note: Data are in per cent.

Source: Author's estimates.

been declining during the period under study. CUI developed in the article is a quarterly indicator and can facilitate currency management.

References

- Amromin, G., & Chakravorti, S. (2007). Debit Card and Cash Usage. A Cross-Country Analysis, *Federal Reserve Bank of Chicago, Working Papers*, No. 4.
- Amromin, G., & Chakravorti, S. (2009). Whither Loose Change? The Diminishing Demand for Small-Denomination Currency, *Journal of Money, Credit and Banking*, Vol 41(2/3), 315-335.
- Awasthy, S., Misra, R., & Dhal, S. (2022). Cash versus Digital Payment Transactions in India: Decoding the Currency Demand Paradox, *Reserve Bank of India Occasional Papers*, Vol. 43(2), 1-45.
- Benchmarking Currency (2023a). Central Banks Report – Executive Summary, *Benchmarking Currency 2023*, November, Central Banking, www.centralbanking.com.

- Benchmarking Currency (2023b). Central Banks Report Continued Fall in Cash Usage. *Benchmarking Currency 2023*, Central Banking, November, www.centralbanking.com.
- BoE (2021). Update on the future of Wholesale Cash Distribution in the UK. December, Bank of England. <https://www.bankofengland.co.uk/paper/2021/update-on-the-future-of-wholesale-cash-distribution-in-the-uk>.
- Caddy, J., Delaney, L., & Fisher, C. (2020). Consumer Payment Behaviour in Australia: Evidence from the 2019 Consumer Payments Survey. *RBA Research Discussion Paper No. 2020-06*.
- Central Banking (2023). Chile's Cash Use Has Rebounded Since Pandemic, Survey Finds. Central Banking. <https://www.centralbanking.com>.
- Cubides, E., & O'Brien, S. (2023). 2023 Findings from the Diary of Consumer Payment Choice. The Federal Reserve Financial Services. <https://www.frbsf.org/cash/wp-content/uploads/sites/7/2023-Findings-from-the-Diary-of-Consumer-Payment-Choice.pdf>.
- ECB (2022). Study on the Payment Attitudes of Consumers in the Euro Area (SPACE). December, European Central Bank. https://www.ecb.europa.eu/stats/ecb_surveys/space/html/ecb_spacereport202212~783ffdf46e.en.html.
- GoI (2024). Statement 12, Annual Estimates of GDP at Current Prices, 2011-12 Series. <https://www.mospi.gov.in/publication/national-accounts-statistics-2024>.
- Henry, C., Shimoda, M., & Zhu, J. (2023). 2021 Methods-of-Payment Survey Report. February, Bank of Canada. <https://www.bankofcanada.ca/wp-content/uploads/2022/12/sdp2022-23.pdf>.
- Khiaonarong, T., & Humphrey, D. (2019). Cash Use Across Countries and the Demand for Central Bank Digital Currency. *IMF Working Paper*, No. 19/46, www.imf.org.
- Khiaonarong, T., & Humphrey, D. (2023). Measurement and Use of Cash by Half the World's Population. *IMF Working Paper*, No. 23/62, www.imf.org.
- Nachane, D. M., Chakraborty, A. B., Mitra, A. K., & Bordoloi, S. (2013). Modelling Currency Demand in India: An Empirical Study". *DRG Study No. 39, RBI*.
- Raj, J., Bhattacharyya, I., Behera, S. R., John, J., & Talwar, B. A. (2020). Modelling and Forecasting Currency Demand in India: A Heterodox Approach, *Reserve Bank of India Occasional Papers*, Vol. 41(1), 1-45.
- RBI (2017). Currency Management. *Annual Report*, Chapter VIII. www.rbi.org.in.
- RBI (2021). Economic Review. *Annual Report*, Chapter II. www.rbi.org.in.
- RBI (2023). ₹2000 Denomination Banknotes – Withdrawal from Circulation; Will continue as Legal Tender. *Press Release*, May, www.rbi.org.in.
- RBI (2024). Currency Management. *Annual Report*, Chapter VIII. www.rbi.org.in.
- RBNZ (2021). Cash and Payments Data Update: COVID-19 Special. June, Reserve Bank of New Zealand. <https://www.rbnz.govt.nz>
- SR (2020). Payments in Sweden. Sveriges Riksbank. <https://www.riksbank.se/globalassets/media/rapporter/betalningsrapport/2020/engelska/payments-in-sweden-2020.pdf>.
- Worldline (2021). India Digital Payments Report, Q3 2021. <https://worldline.com/dam/india/documents>.

Annex A**Components of RDP and their usability as non-cash payments to estimate payments to merchants****I. Components of RDP**

- (i) Unified Payments Interface (UPI) @
- (ii) BHIM Aadhaar Pay
- (iii) Aadhaar Enabled Payment System (AePS) @
- (iv) National Electronic Toll Collection (NETC)
- (v) Credit Cards
- (vi) PoS based \$
- (vii) Others \$
- (viii) Debit Cards
- (ix) PoS based \$
- (x) Others \$
- (xi) Prepaid Payment Instruments
- (xii) Wallets
- (xiii) Cards (PoS based) \$
- (xiv) Others \$
- (xv) National Electronic Funds Transfer (NEFT)
- (xvi) Immediate Payment Service (IMPS)
- (xvii) National Automated Clearing House (NACH)
- (xviii) Aadhaar Payment Bridge System (APBS) \$

@: New inclusion w.e.f. November 2019; \$: Inclusion separately initiated from November 2019 - would have been part of other items hitherto.

Source: PSI in DBIE in www.rbi.org.in.

II. Usability of RDP components as non-cash payments to estimate payments to merchants**(i) Usage of UPI**

UPI is used for payments to merchants as well as for fund transfer. NPCI started publishing data on payments done through UPI, segregating them into P2M and P2P payments from April 2021 onwards. P2M payments are by a person to a merchant, identified as peer to merchant payments. P2P payments are by a person to a person, known as peer to peer payments. NPCI classifies the merchants into three broad categories *viz.*, 'High Transacting Categories', 'Medium Transacting Categories' and 'All Other Categories' covering wide varieties of merchants as shown below (Table A).

Table A: Category wise Classification of Merchants

High Transacting Categories	Groceries and supermarkets Eating places and restaurants Telecommunication services, including local and long distance calls, credit card calls, calls through use of magnetic stripe reading telephones and faxes Fast food restaurants Department stores Service stations (with or without ancillary services) Digital Goods: Games Bakeries Drug stores and pharmacies Debit card to wallet credit (Wallet top up)
Medium Transacting Categories	Dairies Utilities electric, gas, water and sanitary Drinking places (alcoholic beverages) bars, taverns, night-clubs, cocktail lounges and discothques Miscellaneous personal services not elsewhere classified Debt collection agencies Variety stores Financial institutions merchandise and services Freezer and locker meat provisioners Miscellaneous general merchandise Men's, women's and children's uniforms and commercial clothing
All Other Categories	Electronics shops Candy, nut and confectionery shops Securities brokers and dealers Beauty and barber shops Online Marketplaces Government services not elsewhere classified Cable and other pay television services Stationery, office and school supply shops Taxi-cabs and limousines Others

Source: NPCI (<https://www.npci.org.in/what-we-do/upi/upi-ecosystem-statistics>).

(ii) *Usage of BHIM Aadhaar pay, AePS and NETC*

BHIM Aadhaar pay enables merchants to receive digital payments from customers over the counter through Aadhaar authentication. AePS also offers BHIM Aadhaar pay. NETC enables customers to use their FASTag as payment modes at any of the toll plazas.

(iii) *Usage of Cards (debit, credit and PPI)*

Cards are used for payments to merchants as well as for funds transfer. Cards and PPIs can also be used for cash withdrawal. For transactions through cards, disaggregated data are available on payments and also on cash withdrawal in RBI website. Regarding data on payments through cards (credit as well debit), further disaggregation is available in terms of 'PoS based' and 'Others'. For PPI, disaggregated data on payments

through 'wallet', 'PoS based' and 'Others' are available. Further disaggregation on data under 'Others' are not available for payments through cards (credit/debit/PPI).

(iv) *Usage of funds transfer (NEFT, IMPS, NACH) and paper-based instruments*

National electronic funds transfer (NEFT), immediate payment service (IMPS), national automated clearing house (NACH) and paper-based instruments are also non-cash modes of payments. Disaggregated data, however, are not available in public in respect of these instruments to identify payments done for the purpose of purchase of goods and services for consumption and for other purposes. Hence, payments through these instruments are excluded to estimate non-cash payments.

(v) *Aadhar Based Payment System (ABPS)*

Pertains to the transfer of benefits and subsidies under Direct Benefit Transfer scheme launched by GoI. Hence not included to estimate non-cash payments by consumers.

Annex B**Table B: Distribution of Digital Payment for PFCE**

Components	Vol and Val	2020-21	2021-22					2022-23					2023-24					
		Jan- Mar	April- June	Jul- Sept	Oct- Dec	Jan- Mar												
UPI_P2M	Vol	51.6	57.4	59.8	58.2	63.8	67.0	73.7	77.5	80.0	82.0	84.3	85.2	87.0				
	Val	33.2	40.9	42.4	44.4	48.7	50.3	54.1	57.5	59.6	61.3	64.1	65.1	68.8				
BHIM Aadhaar Pay	Vol	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
	Val	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1				
NETC	Vol	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2				
	Val	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0				
Credit Card PoS based	Vol	4.5	3.2	3.6	3.7	3.3	3.3	2.9	2.6	2.4	2.2	2.0	2.0	1.9				
	Val	13.5	10.5	11.2	10.9	9.9	10.2	9.8	9.8	9.5	9.1	8.3	8.4	8.0				
Credit Card Others	Vol	3.9	4.0	3.4	3.5	3.2	3.0	2.5	2.2	2.1	2.0	1.9	1.9	1.8				
	Val	16.0	16.0	16.2	16.6	16.9	17.1	16.3	15.5	15.8	15.7	15.4	15.7	14.1				
Debit Card PoS based	Vol	10.1	7.1	7.7	7.6	6.3	5.7	4.5	3.7	3.0	2.5	2.0	1.7	1.3				
	Val	17.9	13.2	13.7	13.0	10.9	10.6	9.0	8.4	7.0	6.5	5.4	4.8	4.0				
Debit Cards Others	Vol	7.2	6.9	5.6	4.7	3.8	3.1	2.3	1.7	1.3	1.0	0.8	0.6	0.5				
	Val	10.5	9.7	8.5	7.4	6.4	5.3	5.1	4.0	3.5	3.1	3.0	2.3	2.0				
PPI Wallets	Vol	18.0	17.6	15.8	17.6	15.0	13.8	10.8	9.4	8.9	8.4	7.0	6.9	5.8				
	Val	6.1	6.8	6.4	6.2	5.5	4.8	4.1	3.7	3.6	3.6	3.2	3.0	2.5				
PPI PoS based	Vol	0.2	0.2	0.4	0.3	0.4	0.3	0.2	0.1	0.1	1.1	1.0	0.9	0.8				
	Val	0.7	0.6	0.4	0.4	0.8	0.5	0.3	0.2	0.2	0.2	0.1	0.1	0.1				
PPI Others	Vol	4.1	3.2	3.3	4.1	3.7	3.3	2.8	2.4	2.0	0.8	0.8	0.7	0.7				
	Val	2.0	2.1	1.2	0.8	0.7	1.0	1.1	0.9	0.7	0.5	0.5	0.5	0.5				
HH digital payments	Vol	100	100	100	100	100	100	100	100	100	100	100	100	100				
	Val	100	100	100	100	100	100	100	100	100	100	100	100	100				

Notes: 1. Data are in per cent.

2. Disaggregated data on UPI in terms of P2P and P2M payments are available only from April 2021 onwards in NPCI. The same for the quarter ending March 2021 were estimated as follows. In Worldline (2021), data on the share (not data on amount) of P2P and P2M payments in UPI are available. In the RBI site, aggregate data on UPI are available. Based on these, disaggregated data on P2P and P2M payments were estimated for the quarter ending March 2021. The author could not find any other source publishing data on P2P and P2M payments for period earlier to the quarter end March 2021.

3. 'Vol' and 'Val' represent volume and value respectively.

Source: Author's calculations based on data from RBI, NPCI and Worldline (2021).

New Digital Economy and the Paradox of Productivity

by Sadhan Kumar Chattopadhyay,
Sreerupa Sengupta and Shruti Joshi ^

This article estimates the contribution of digitalisation to productivity growth and examines the Solow Productivity paradox for India. The analysis indicates that the contribution of Information and Communication Technology (ICT) to output growth increased from 5.0 per cent in 1981-1990 to 13.2 per cent during 1992-2023. On average, the ICT sector's productivity fared better than the non-ICT sector for the whole sample period.

Introduction

Digitalisation, a form of innovation, is expected to improve productivity in the long run (Solow, 1987). First, digital technologies let businesses innovate by streamlining operations and lowering expenses associated with communications with clients and suppliers (Akerman et al., 2013). Second, information and communication technology (ICT), when used as an input in the production process, also improves productivity via deepening. Third, companies can reduce their ICT expenditures and associated costs like energy, labour and maintenance by switching from owning ICT assets to acquiring ICT services. The economy's overall productivity performance may eventually benefit from these savings as they improve resource allocation and increase efficiency (van Ark, 2020).

Some studies have contended that the rise of the new digital economy has not been accompanied by a subsequent rise in productivity (van Ark, 2016). Moreover, the recent work of Acemoglu et al. (2014),

Brynjolfsson and McAfee (2014) and Bartelsman et al. (2017) do not find any significant impact of digitalisation on productivity. These studies have reignited discussions over Robert Solow's 1987 "productivity paradox" resurgence in the light of sluggish global productivity growth.

Following the global trend, India is also experiencing rapid digitalisation, and the impact of digital goods and services on India's economic growth has become more pronounced, especially after the COVID-19 pandemic (Gajbhiye et al., 2022). While a host of studies examine the existence of a productivity paradox in advanced economies, especially OECD countries, there are limited studies that enrich understanding of the existence of a productivity paradox in emerging market economies like India. In this light, this article examines the existence of a productivity paradox in India.

Following Das and Erumban (2016), the effect of digitalisation¹ on productivity is assessed through two separate channels - (i) the contribution of ICT as an input in driving output and labour productivity growth and (ii) estimating the productivity potentials by examining the differential between ICT sector and non-ICT sector. The remaining sections of the article are arranged as follows. Section II deals with the literature survey on digitalisation and the productivity paradox. Section III describes the data and methodology used in this paper. Section IV presents the results of the empirical analysis for digitalisation and the productivity paradox for India. Finally, the last section concludes the study.

II. Literature Review

The weak association between ICT and productivity was described as "computer is everywhere except in productivity statistics" –known as the "Solow Paradox" in literature. Early studies on ICT and

[^] The authors are from the Department of Economic and Policy Research, Reserve Bank of India, Mumbai. The views expressed in this article are those of the authors and do not represent the views of the Reserve Bank of India.

¹ As per OECD (2020) the extent of digitalisation can be measured by estimating the contribution of the ICT sector to economic growth.

productivity found evidence of the Solow paradox and found an insignificant relationship exists between ICT and productivity (Berndt and Morrison, 1995; Brynjolfsson and Yang, 1996; Franke, 1987). Schreyer (2001) argued that when ICT was at its infant stage, its share in the total economy was too low, and hence, it was not reflected in productivity. Further, using ICT in a wide range of activities and internalising its full benefits take a long time (Basu and Fernald, 2007).

Brynjolfsson (1996) found that labour and capital in the Information Technology (IT) industry have a substantial relationship with output and that the marginal products of IT industries are larger than those of non-IT industries. According to Brynjolfsson and Hitt (2000), IT capital increased output growth and productivity in the short term (with a one-year lag), but the impact was five times larger in the long term (with a five to seven-year lag). Siegel and Griliches (1992) found a significant positive relationship between computer investment and productivity growth in developed economies.

van Ark and Inklaar (2006) found that the association between the use of ICT and productivity was U-shaped, which suggests that returns of ICT investment are initially followed by a period of experimentation, during which it shows a negative relation with TFP growth. In the later phase, productivity gains are realised in line with the marginal cost of ICT. In a related study, van Ark (2008) found that the slower development of the knowledge economy in Europe relative to the US was the cause of the decline in productivity in that continent. According to these findings, higher IT investment is linked to higher productivity growth rates.

The productivity paradox seems to have surfaced again. The recent trends in global productivity indicate that despite the increasing adoption of digital technology, particularly in the form of cloud computing, i-cloud, big data, and robotics across the globe, there has been a fall in productivity growth

in both advanced economies as well as emerging economies (Conference Board total economy database). Gopane (2020) confirmed the emergence of a new productivity paradox with accelerated digitalisation in the production process that is not manifested in productivity growth statistics. All these studies have reinvigorated discussions on Solow's 1987 productivity paradox. Some authors point out that digital technologies have had only a transitory impact on productivity and will not fundamentally alter long-term living standards (Gordon, 2012). Others argue that firms are in the learning phase, and there is a time lag between digital technology adoption and the effect to be reflected in TFP numbers (van Ark, 2016). Moreover, even with new empirical research, there are limited studies that deepen the understanding of the productivity paradox in emerging market economies.

For India, Jorgenson and Vu (2005), using ICT spending data from the World Information Technology and Services Alliance (WITSA), estimate the total investment in ICT in the economy. Erumban and Das (2016) found an increased contribution from ICT investment to India's overall economic growth, mostly focused on the service sector. This article builds on Erumban and Das (2016) in two ways - first, it directly examines the productivity paradox for India using regression techniques and analyses the productivity difference between the ICT and non-ICT sectors. Erumban and Das (2016) have used shift share and Domar aggregation² analysis to identify the contribution of ICT and non-ICT sectors to aggregate TFP growth in India. Secondly, the present study covers a larger period from 1980 to 2019 and uses Conference Board and India KLEMS datasets.

The literature has segmented the digital

² Domar aggregation is a weighted sum of industrial productivity growth, with the sum of its weights higher than unity in input-output economies (Santini and Araujo, 2021).

economy into ICT-producing and ICT-using sectors (Mesenbourg, 2011) - the former produces ICT infrastructure while the latter uses ICT for another economic process. van Ark (2003) has also provided a classification of industries based on ICT usage. Based on van Ark (2003), 27 KLEMS industries are classified into ICT-using, ICT-producing and non-ICT industries. In addition to van Ark, Erumban and Das (2016) have also classified KLEMS industries in a similar way. Based on van Ark (2003), the contribution of ICT and non-ICT to labour productivity and TFP growth is examined. Lastly, it also tests whether there is any significant difference in the productivity of ICT and non-ICT industries.

III. Data and Method

The study uses the growth accounting approach suggested by Jorgenson *et al.* (2007), which is as follows:

$$\Delta \ln Y \equiv \bar{v}_{ictK} \Delta \ln ICTk + \bar{v}_{ictnonK} \Delta \ln ICTnonK + \bar{v}_L \Delta \ln L + \Delta TFP \quad (1)$$

In the above equation, the total economy value added (Y) is obtained by summing up industry value-added growths. $\Delta \ln K$ and $\Delta \ln L$ denote the growth of factor inputs - capital and labour. The capital input is segregated into ICT capital and is denoted as $ICTk$, and non-ICT capital is denoted as $ICTnonK$. \bar{v}_{ictK} is the average share of two consecutive years of ICT capital in aggregate value-added, $\bar{v}_{ictnonK}$ is the average share of two consecutive years of non-ICT capital in value-added growth. \bar{v}_L is the two consecutive years average share of labour in aggregate value-added. ΔTFP is growth in aggregate TFP growth.

By subtracting employment growth rates from both sides of equation (1), the following equation is obtained:

$$\Delta lnlp \equiv \bar{v}_{ictK} \Delta \ln ICTk + \bar{v}_{ictnonK} \Delta \ln ICTnonK + \bar{v}_L \Delta \ln LQ + \Delta TFP \quad (2)$$

In equation 2, $\Delta lnlp$ represents labour productivity

growth, $\Delta \ln ICTk$ and $\Delta \ln ICTnonK$ represents growth in capital deepening, $\Delta \ln LQ$ represents growth in labour quality³. Equation 2 shows the ICT capital investment's contribution to labour productivity growth.

To estimate the above equation, the study utilises the KLEMS-India dataset published by the RBI. The KLEMS framework measures factor inputs within the production function approach, while incorporating a quality index in input measurement. For instance, labour input categorises educational attainment to address productivity variations between low and high-skilled labour services. Similarly, the measurement of capital stock accounts for asset heterogeneity. The gross value added (GVA) data in KLEMS are derived from India's National Accounts Statistics (NAS).

Labour data are based on quinquennial Employment Unemployment Survey (EUS) rounds for 1991-2016 and Periodic Labor Force Survey (PLFS) data for 2017 onwards. Employment and wage data are categorised based on the skill level of workers defined by education categories. Wage rates for self-employed workers are estimated using the Mincer equation (KLEMS Manual, 2023). Capital input data in the KLEMS framework is estimated from NAS data by obtaining investment data categorised by asset type. The capital stock is estimated using the perpetual inventory method, assuming an 8.0 per cent depreciation rate for machinery, 2.5 per cent for construction, and 10.0 per cent for transport equipment, respectively (KLEMS Manual, 2023). The rental price of capital represents the external rate of return. Capital input at the total economy level is segregated into ICT and non-ICT capital using data from the Total Economy database (2023), Conference Board, published by Groningen University, Netherlands.

IV. Effect of ICT on GVA and Productivity Growth

³ The contribution of labour is split into the contribution of pure employment quantity and labour quality.

As seen from Chart 1a, the share of the ICT sector in the total economy GVA increased over time. In particular, this is true for ICT-using services, whereas the share of non-ICT service sectors and non-ICT other sectors (agriculture, mining, construction, electricity) has declined. The share of ICT-producing/using manufacturing sectors, on the other hand, has remained constant over time (Chart 1a and 1b).

The contribution of ICT capital as an input to GVA and labour productivity growth is further analysed by estimating Equations 1 and 2 described above. The decomposition results show that ICT capital services, on average, contributed 5.0 per cent to output growth during 1981-91 and this contribution increased to about 16.0 per cent during 1992-2000 and 14.3 per cent during 2001-2010. Subsequently, it moderated to 10.3 per cent during 2011-2023 (Chart 2a). The share of ICT capital deepening to labour productivity growth rose from 8.4 per cent in 1981-90 to 20.8 per cent during 1992-2000 and 17.4 per cent during 2001-2010, suggesting an improvement in the role of ICT capital investment in catalysing output and productivity growth during the 1990s and 2000s.

The share of ICT capital deepening to labour productivity growth fell to 11.3 per cent during 2011-23 (Chart 2b). These results indicate that during 1980s to 2000s, the contribution of ICT to productivity was high, refuting the productivity paradox but the paradox appears to have emerged in the post-2010s period consistent with the global trends (Sayeh, Dabla-Norris and Kinda, 2023).

Is the Difference in Productivity Statistically Significant?

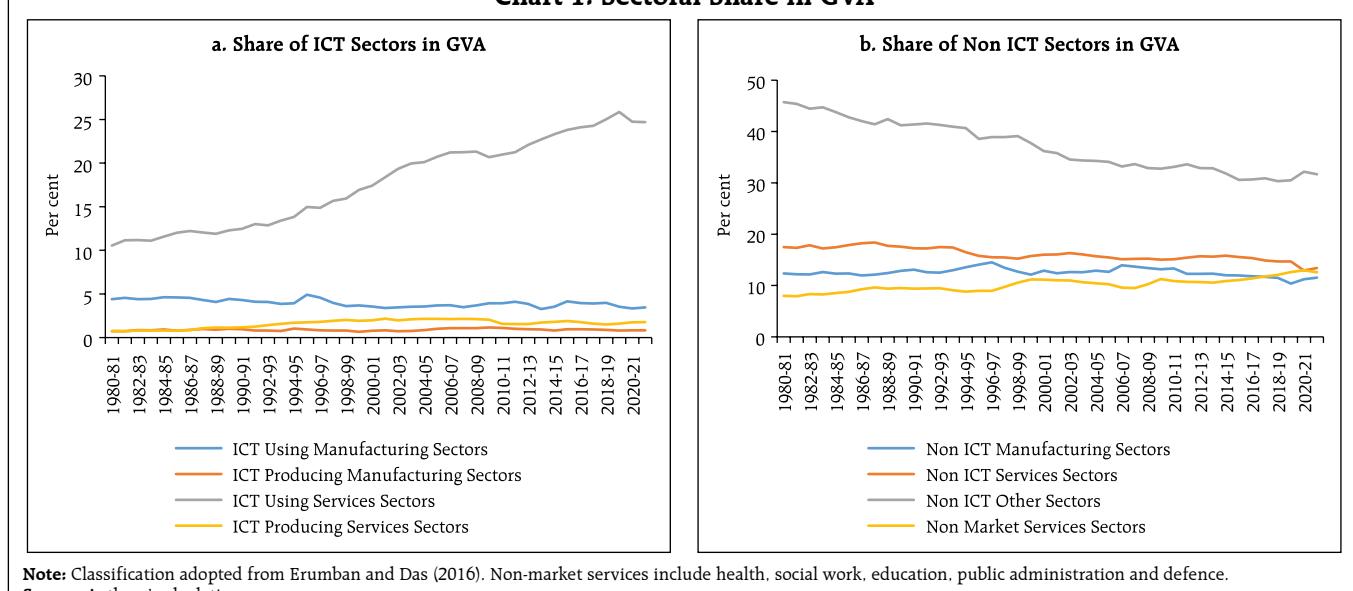
It is observed that, on average, the performance of the ICT sector is better than that of non-ICT in terms of partial and aggregate productivity. Next, in order to examine if the productivity difference between ICT and non-ICT sectors is statistically significant, the following regression equations are estimated.

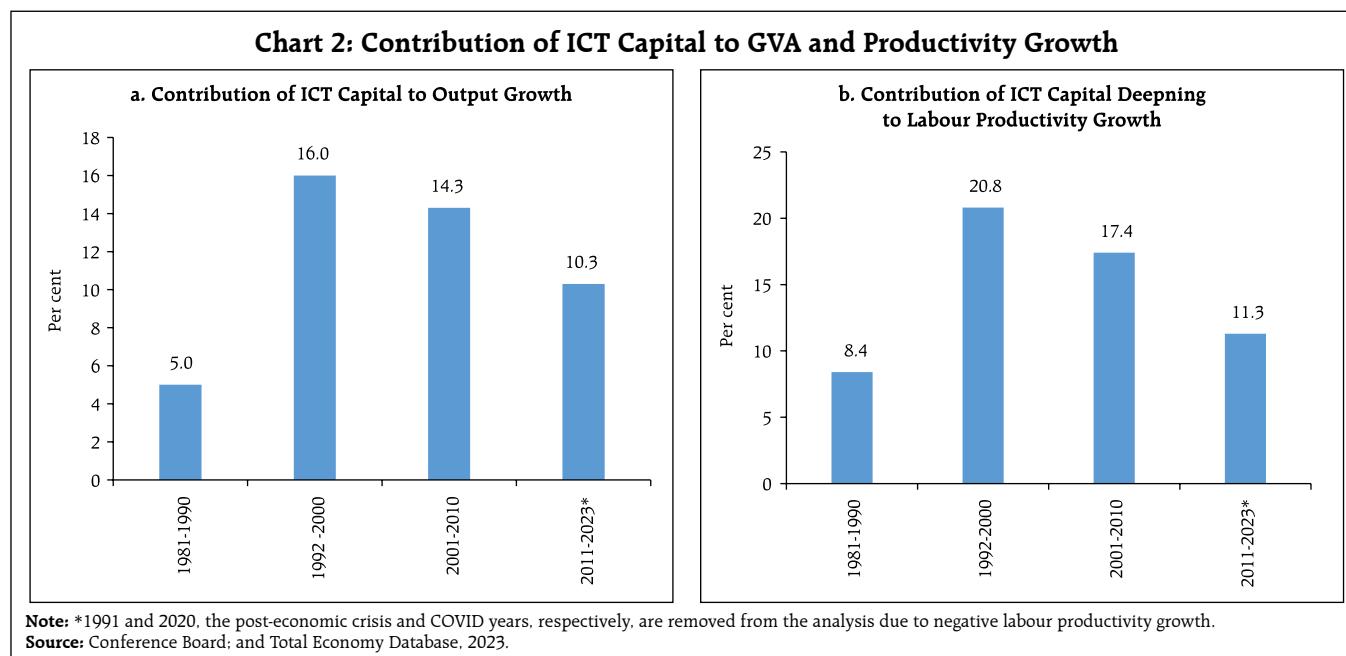
$$\Delta P_{it} = \alpha + \beta * \text{ICT Dummy} + \gamma X_{it} + \epsilon_{it} \quad (3)$$

$$\Delta LPG_{it} = \alpha + \beta * \text{ICT Dummy} + \gamma X_{it} + \epsilon_{it} \quad (4)$$

In Equation (3), ΔP_{it} is the total factor productivity growth rate, i is the industry, and t is the year (1980-2020). ICT is the industry dummy and takes the value of 1 if the industry is ICT and 0 otherwise. X_{it} is a vector

Chart 1: Sectoral Share in GVA





of control variables, including labour quality, capital quality and total capital stock. Additionally, industry and time-fixed effects have been controlled. α is the estimated average productivity growth rate for the non-ICT industry and $\alpha + \beta$ is the estimated average productivity growth rate for ICT industry. Therefore, β shows the difference in the productivity growth rate of the ICT and non-ICT industries. In Equation (4), LPG is the annual labour productivity growth rate, and all other variables are the same as in Equation 3.

The results from Table 1 show that, on average, the ICT sector's productivity performance, which includes both ICT-producing and ICT-using sectors, is higher than the non-ICT for the entire period

1980-2020. Next, the model was run for different sub-periods. It is found that the productivity impact of ICT was the highest from 1980 to 2010. However, during the period from 2010 to 2020, the productivity differential between the ICT sector and the non-ICT sector was insignificant, consistent with the post-GFC productivity slowdown observed in many parts of the world.

These results are corroborated in Table 2. In terms of labour productivity growth, the ICT sector performs better than the non-ICT sector for the full period and subsequent sub-periods. Although a slight moderation in labour productivity growth is observed in the last decade, overall, the ICT sector's

Table 1: Regression Results for Total Factor Productivity Growth

	ΔP	ΔP	ΔP	ΔP	ΔP
	1980-2020	1980-1990	1990-2000	2000-2010	2010-2020
ICT Sector Dummy	0.16*** (3.46)	0.31* (1.83)	0.52 (1.39)	0.68* (1.99)	-0.31 (-0.91)
Non-ICT Sector Dummy	0.12* (2.69)	0.27 (1.56)	0.45 (1.24)	0.60* (1.82)	-0.33 (-0.99)
Difference of ICT over non-ICT	0.04*** (5.46)	0.04*** (9.15)	0.07* (2.69)	0.07** (3.24)	0.01 (1.33)
N	1053	243	243	243	243

Note: No cross-sectional dependence in the data was found and all the variables were panel stationary.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Authors' calculations.

Table 2: Regression Results for Labour Productivity Growth

	ΔLPG	ΔLPG	ΔLPG	ΔLPG	ΔLPG
	1980-2020	1980-1990	1990-2000	2000-2010	2010-2020
ICT	0.074 (1.06)	0.451* (2.26)	0.334 (1.03)	0.740* (2.11)	-0.64 (-1.53)
Non-ICT	0.070 (1.06)	0.42* (2.18)	0.27 (0.91)	0.71* (2.12)	-0.523 (-1.43)
Difference over non-ICT	0.0036 (0.72)	0.031** (3.83)	0.0586** (2.52)	0.027* (1.82)	-0.046* (-2.75)
N	1014	234	234	234	234

Note: No cross-sectional dependence in the data was found; all the variables were panel-stationary.

*, **and *** indicate statistically significant at 5 per cent, 10 per cent and 1 per cent level.

Source: Authors' calculations.

productivity performance was better than that of the non-ICT sectors.

ICT-using vs ICT-producing industries

To identify the productivity differences between ICT producing and ICT using sectors, the following regressions are run for the disaggregated ICT sectors:

$$\Delta P_{it} = \alpha + \beta * \text{ICT using Dummy} + \gamma X_{it} + \epsilon_{it} \quad (5)$$

$$\Delta LPG_{it} = \alpha + \beta * \text{ICT using Dummy} + \gamma X_{it} + \epsilon_{it} \quad (6)$$

A dummy for ICT-using and producing industries is introduced in equations (5) and (6). The dummy

takes a value of 1 if the industry is ICT-using and 0 if it is ICT-producing.

From Table 3, it is found that, on average, the productivity performance of ICT-producing industries was better than that of ICT-using industries. Further, from Table 4, in terms of labour productivity, the ICT-producing sector also outperforms the ICT-using sector. The moderation in the labour productivity growth of the ICT sector in 2000-2020 is attributable to the moderation in the labour productivity growth rate of ICT-using industries. Hence, industries

Table 3: Regression Results for Total Factor Productivity Growth

	ΔP	ΔP	ΔP
	1980-2020	1980-2000	2000-2020
ICT -using	0.15*** (3.16)	0.34*** (3.30)	0.041 (0.39)
ICT-producing	0.18*** (3.48)	0.33*** (3.36)	0.079 (0.70)
Non-ICT	0.12* (2.69)	0.29** (2.87)	0.031 (0.32)
Difference over non-ICT			
ICT-using	0.030*** (5.46)	0.06*** (4.57)	0.009* (2.03)
ICT-producing	0.055*** (6.53)	0.05*** (4.61)	0.04** (3.31)
N	1014	494	494

Note: No cross-sectional dependence in the data was found and all the variables were panel stationary.

*, **and *** indicate statistically significant at 5 per cent, 10 per cent and 1 per cent level.

Source: Authors' calculations.

Table 4: Regression Results for Labour Productivity Growth

	ΔLPG	ΔLPG	ΔLPG
	1980-2020	1980-2000	2000-2020
ICT -using	0.08 (1.25)	0.314* (2.71)	-0.050 (-0.37)
ICT-producing	0.110 (1.61)	0.328** (2.75)	-0.002 (-0.01)
Non-ICT	0.0776 (1.23)	0.308* (2.68)	-0.0363 (-0.28)
Difference over non-ICT			
ICT-using	0.00258* (2.47)	0.00632*** (5.52)	-0.0138* (-2.53)
ICT-producing	0.0330*** (5.23)	0.0197*** (3.96)	0.0341 (1.77)
N	1053	513	513

Note: No cross-sectional dependence in the data was found, and all the variables were panel-stationary.

*, **and *** indicate statistically significant at 5%, 10% and 1% level.

Source: Authors' calculations.

that produce ICT goods and services or use ICT in the provision of goods and services have higher productivity than those that are less intensive users of ICT, with the gap between the productivity of ICT and non-ICT increasing over time.

VI. Conclusion

This article aims to analyse the role of ICT in driving productivity growth in India using two approaches. In the first approach, the role of ICT capital as an input in driving output growth and productivity is examined. The second approach studies the productivity differentials between ICT and non-ICT sectors using regression models. The stylised facts indicate that the contribution of ICT capital to output and labour productivity growth increased in the post-liberalisation period, during 1980s-2000s, with some moderation subsequently. These inferences are supported by regression results. Hence, ICT contributed to productivity growth during this period, thereby refuting Solow's productivity paradox for India. However, in the latter half of the 2010s, marked by the beginning of new digital technologies, the productivity differential between the ICT sector and the non-ICT sector has been insignificant, consistent

with the post-GFC productivity slowdown observed in many parts of the world.

References

- Acemoglu, D., Gallego, F. A., and Robinson, J. A. (2014). Institutions, human capital, and development. *Ann. Rev. Econ.*, 6(1), 875-912.
- Akerman, A., Gaarder, I., and Mogstad, M. (2013). The skill complementarity of broadband internet. IZA Discussion Papers 7762. *Institute for the Study of Labor (IZA)*. URL <http://ideas.repec.org/p/iza/izadps/dp7762.html>.
- Bartelsman, E. J., and Wolf, Z. (2017). Measuring productivity dispersion.
- Basu, S., and Fernald, J. (2007). Information and communications technology as a general-purpose technology: Evidence from US industry data. *German Economic Review*, 8(2), 146-173.
- Berndt, E. R., and Morrison, C. J. (1995). High-tech capital formation and economic performance in US manufacturing industries: An exploratory analysis. *Journal of Econometrics*, 65(1), 9-43.
- Brynjolfsson, E., and Hitt, L. (1996). Paradox lost? Firm-

- level evidence on the returns to information systems spending. *Management Science*, 42(4), 541-558.
- Brynjolfsson, E., and Hitt, L. M. (2000). Beyond computation: Information technology, organizational transformation and business performance. *Journal of Economic Perspectives*, 14(4), 23-48.
- Brynjolfsson, E., and Hitt, L. M. (2003). Computing productivity: Firm-level evidence. *Review of Economics and Statistics*, 85(4), 793-808.
- Brynjolfsson, E., and McAfee, A. (2011). Race against the machine: How the digital revolution is accelerating innovation, driving productivity, and irreversibly transforming employment and the economy.
- Brynjolfsson, E., and McAfee, A. (2014). The second machine age: Work, progress, and prosperity in a time of brilliant technologies. WW Norton and Company.
- Brynjolfsson, E., and Yang, S. (1996). Information technology and productivity: A review of the literature. *Advances in computers*, 43, 179-214.
- Erumban, A. A., and Das, D. K. (2016). Information and communication technology and economic growth in India. *Telecommunications Policy*, 40(5), 412-431.
- Franke, R. H. (1987). Technological revolution and productivity decline: Computer introduction in the financial industry. *Technological Forecasting and Social Change*, 31(2), 143-154.
- Gajbhiye, D., Arora, R., Arham,N., Rigzen,Y., and Ishu,T. (2022). Measuring India's digital economy. *RBI Bulletin*.
- Gopane, T. J. (2020). Digitalisation, productivity, and measurability of digital economy: evidence from BRICS. In *Digital Economy. Emerging Technologies and Business Innovation: 5th International Conference on Digital Economy, ICDEc 2020, Bucharest, Romania, June 11–13, 2020. Proceedings* 5 (pp. 27-37). Springer International Publishing.
- Gordon, R. J. (2012). Is US economic growth over? Faltering innovation confronts the six headwinds. *National Bureau of Economic Research* (No. w18315).
- Inklaar, R., Jäger, K., O'Mahony, M., and van Ark, B. (2020). European productivity in the digital age: evidence from EU KLEMS. *Measuring economic growth and productivity* (pp. 75-94). Academic Press.
- Jorgenson, D. W., and Vu, K. (2005). Information technology and the world economy. *The Scandinavian Journal of Economics*, 107(4), 631-650.
- Jorgenson, D. W., Ho, M. S., and Stiroh, K. J. (2008). A retrospective look at the US productivity growth resurgence. *Journal of Economic Perspectives*, 22(1), 3-24.
- McAfee, A., and Brynjolfsson, E. (2008). Investing in the IT that makes a competitive difference. *Harvard Business Review*, 86(7/8), 98.
- Mesenbourg Jr, T. (2011). The role of the commodity flow survey in understanding the US economy. *Transportation Research Circular*, (E-C158).
- Santini, T., and Araujo, R.A. (2021). Productivity growth and sectoral interactions under Domar aggregation: A study for the Brazilian economy from 2000 to 2014. *Economic Structures* 10, 14.
- Schreyer, P., and Pilat, D. (2001). Measuring productivity. *OECD Economic studies*, 33(2), 127-170.
- Siegel, D. S., and Griliches, Z. (1991). Purchased services, outsourcing, computers, and productivity in manufacturing.
- van Ark, B. (2016). The productivity paradox of the new digital economy. *International Productivity Monitor*, 31, 3-18.
- van Ark, B., and Inklaar, R. (2006). Catching up or getting stuck? Europe's troubles to exploit ICT's productivity potential.
- van Ark, B., Inklaar, R., and McGuckin, R. H. (2003). ICT and Productivity in Europe and the United States Where do the differences come from? *Cesifo Economic Studies*, 49(3), 295-318.
- van Ark, B., O'Mahony, M., and Timmer, M. P. (2008). The productivity gap between Europe and the United States: Trends and causes. *Journal of Economic Perspectives*, 22(1), 25-44.

Appendix Table 1: Classification of ICT and Non-ICT Industries

KLEMS industry	Industry group
Agriculture, Hunting, Forestry and Fishing	Non-ICT others
Mining and Quarrying	Non-ICT others
Food Products, Beverages and Tobacco	Non-ICT manufacturing
Textiles, Textile Products, Leather and Footwear	Non-ICT manufacturing
Wood and Products of Wood	Non-ICT manufacturing
Pulp, Paper, Paper Products, Printing and Publishing	ICT-using manufacturing
Coke, Refined Petroleum Products and Nuclear Fuel	Non-ICT manufacturing
Chemicals and Chemical Products	Non-ICT manufacturing
Rubber and Plastic Products	Non-ICT manufacturing
Other Non-Metallic Mineral Products	Non-ICT manufacturing
Basic Metals and Fabricated Metal Products	Non-ICT manufacturing
Machinery, nec	ICT-using manufacturing
Electrical and Optical Equipment	ICT-producing manufacturing
Transport Equipment	ICT-using manufacturing
Manufacturing, nec; recycling	ICT-using manufacturing
Electricity, Gas and Water Supply	Non-ICT others
Construction	Non-ICT others
Trade	ICT-using service
Hotels and Restaurants	Non-ICT service
Transport and Storage	Non-ICT service
Post and Telecommunication	ICT-producing service
Financial Intermediation	ICT-using service
Business Services	ICT-using service
Public Administration and Defense; Compulsory Social Security	Non-ICT service
Education	Non-ICT service
Health and Social Work	Non-ICT service
Other Services	Non-ICT service

CURRENT STATISTICS

Select Economic Indicators

Reserve Bank of India

Money and Banking

Prices and Production

Government Accounts and Treasury Bills

Financial Markets

External Sector

Payment and Settlement Systems

Occasional Series

Contents

No.	Title	Page
1	Select Economic Indicators	283
Reserve Bank of India		
2	RBI – Liabilities and Assets	284
3	Liquidity Operations by RBI	285
4	Sale/ Purchase of U.S. Dollar by the RBI	286
4A	Maturity Breakdown (by Residual Maturity) of Outstanding Forwards of RBI (US\$ Million)	287
5	RBI's Standing Facilities	287
Money and Banking		
6	Money Stock Measures	288
7	Sources of Money Stock (M_3)	289
8	Monetary Survey	290
9	Liquidity Aggregates	291
10	Reserve Bank of India Survey	292
11	Reserve Money – Components and Sources	292
12	Commercial Bank Survey	293
13	Scheduled Commercial Banks' Investments	293
14	Business in India – All Scheduled Banks and All Scheduled Commercial Banks	294
15	Deployment of Gross Bank Credit by Major Sectors	295
16	Industry-wise Deployment of Gross Bank Credit	296
17	State Co-operative Banks Maintaining Accounts with the Reserve Bank of India	297
Prices and Production		
18	Consumer Price Index (Base: 2012=100)	298
19	Other Consumer Price Indices	298
20	Monthly Average Price of Gold and Silver in Mumbai	298
21	Wholesale Price Index	299
22	Index of Industrial Production (Base: 2011-12=100)	303
Government Accounts and Treasury Bills		
23	Union Government Accounts at a Glance	303
24	Treasury Bills – Ownership Pattern	304
25	Auctions of Treasury Bills	304
Financial Markets		
26	Daily Call Money Rates	305
27	Certificates of Deposit	306
28	Commercial Paper	306
29	Average Daily Turnover in Select Financial Markets	306
30	New Capital Issues by Non-Government Public Limited Companies	307

No.	Title	Page
External Sector		
31	Foreign Trade	308
32	Foreign Exchange Reserves	308
33	Non-Resident Deposits	308
34	Foreign Investment Inflows	309
35	Outward Remittances under the Liberalised Remittance Scheme (LRS) for Resident Individuals	309
36	Indices of Nominal Effective Exchange Rate (NEER) and Real Effective Exchange Rate (REER) of the Indian Rupee	310
37	External Commercial Borrowings (ECBs) – Registrations	311
38	India's Overall Balance of Payments (US \$ Million)	312
39	India's Overall Balance of Payments (₹ Crore)	313
40	Standard Presentation of BoP in India as per BPM6 (US \$ Million)	314
41	Standard Presentation of BoP in India as per BPM6 (₹ Crore)	315
42	India's International Investment Position	316
Payment and Settlement Systems		
43	Payment System Indicators	317
Occasional Series		
44	Small Savings	319
45	Ownership Pattern of Central and State Governments Securities	320
46	Combined Receipts and Disbursements of the Central and State Governments	321
47	Financial Accommodation Availed by State Governments under various Facilities	322
48	Investments by State Governments	323
49	Market Borrowings of State Governments	324
50 (a)	Flow of Financial Assets and Liabilities of Households - Instrument-wise	325
50 (b)	Stocks of Financial Assets and Liabilities of Households- Select Indicators	328

Notes: .. = Not available.

– = Nil/Negligible.

P = Preliminary/Provisional. PR = Partially Revised.

No. 1: Select Economic Indicators

Item	2023-24	2022-23		2023-24		2024-25
		Q4		Q1	Q4	Q1
		1	2	3	4	5
1 Real Sector (% Change)						
1.1 GVA at Basic Prices		7.2	6.0	8.3	6.3	6.8
1.1.1 Agriculture		1.4	7.6	3.7	0.6	2.0
1.1.2 Industry		9.3	1.7	5.0	8.3	7.4
1.1.3 Services		7.9	7.3	10.4	7.0	7.7
1.1a Final Consumption Expenditure		3.8	3.5	4.6	3.4	6.3
1.1b Gross Fixed Capital Formation		9.0	3.8	8.5	6.5	7.5
2023-24		2023		2024		
		1	2	3	4	5
1.2 Index of Industrial Production	5.9	6.2	10.9	4.7	-0.1	
2 Money and Banking (% Change)						
2.1 Scheduled Commercial Banks						
2.1.1 Deposits	12.9	12.0	12.4	11.0	12.3	
	(13.5)	(12.9)	(13.2)	(10.6)	(11.9)	
2.1.2 Credit #	16.3	14.6	14.9	15.1	14.4	
	(20.2)	(19.5)	(19.7)	(13.7)	(13.1)	
2.1.2.1 Non-food Credit #	16.3	14.7	15.0	15.1	14.4	
	(20.2)	(19.7)	(19.8)	(13.7)	(13.1)	
2.1.3 Investment in Govt. Securities	11.1	14.2	14.2	9.1	7.2	
	(12.8)	(16.5)	(16.5)	(8.1)	(6.3)	
2.2 Money Stock Measures						
2.2.1 Reserve Money (M0)	5.6	5.4	9.8	7.2	4.8	
2.2.2 Broad Money (M3)	11.1	10.6	10.8	10.0	10.2	
	(11.6)	(11.3)	(11.5)	(9.7)	(9.8)	
3 Ratios (%)						
3.1 Cash Reserve Ratio	4.50	4.50	4.50	4.50	4.50	
3.2 Statutory Liquidity Ratio	18.00	18.00	18.00	18.00	18.00	
3.3 Cash-Deposit Ratio	5.0	5.2	5.8	5.1	5.1	
	(5.0)	(5.2)	(5.7)	(5.1)	(5.1)	
3.4 Credit-Deposit Ratio	78.1	74.6	75.0	77.3	76.5	
	(80.3)	(77.1)	(77.5)	(79.3)	(78.4)	
3.5 Incremental Credit-Deposit Ratio #	95.8	51.6	60.9	56.3	50.4	
	(113.4)	(99.0)	(103.8)	(53.1)	(47.7)	
3.6 Investment-Deposit Ratio	29.5	30.1	30.3	29.6	29.1	
	(29.8)	(30.5)	(30.7)	(29.8)	(29.3)	
3.7 Incremental Investment-Deposit Ratio	25.8	32.1	35.6	31.4	22.5	
	(28.4)	(37.8)	(40.6)	(28.8)	(20.8)	
4 Interest Rates (%)						
4.1 Policy Repo Rate	6.50	6.50	6.50	6.50	6.50	
4.2 Fixed Reverse Repo Rate	3.35	3.35	3.35	3.35	3.35	
4.3 Standing Deposit Facility (SDF) Rate *	6.25	6.25	6.25	6.25	6.25	
4.4 Marginal Standing Facility (MSF) Rate	6.75	6.75	6.75	6.75	6.75	
4.5 Bank Rate	6.75	6.75	6.75	6.75	6.75	
4.6 Base Rate	9.10/10.25	8.85/10.10	8.85/10.10	9.10/10.40	9.10/10.40	
4.7 MCLR (Overnight)	8.00/8.60	7.95/8.35	7.95/8.40	8.10/8.60	8.15/8.45	
4.8 Term Deposit Rate >1 Year	6.50/7.25	6.00/7.25	6.00/7.25	6.00/7.30	6.00/7.25	
4.9 Savings Deposit Rate	2.70/3.00	2.70/3.00	2.70/3.00	2.70/3.00	2.70/3.00	
4.10 Call Money Rate (Weighted Average)	6.85	6.50	6.75	6.59	6.59	
4.11 91-Day Treasury Bill (Primary) Yield	-	6.72	6.82	6.67	6.63	
4.12 182-Day Treasury Bill (Primary) Yield	7.28	6.86	7.02	6.79	6.72	
4.13 364-Day Treasury Bill (Primary) Yield	7.31	6.89	7.03	6.80	6.72	
4.14 10-Year G-Sec Par Yield (FBIL)	7.31	7.17	7.14	6.97	6.90	
5 Reference Rate and Forward Premium						
5.1 INR-US\$ Spot Rate (Rs. Per Foreign Currency)	83.37	82.25	82.65	83.73	83.87	
5.2 INR-Euro Spot Rate (Rs. Per Foreign Currency)	90.22	90.32	89.17	90.86	92.91	
5.3 Forward Premium of US\$ 1-month (%)	1.00	1.17	1.31	1.11	1.12	
3-month (%)	1.11	1.22	1.38	1.20	1.34	
6-month (%)	1.31	1.33	1.40	1.43	1.64	
6 Inflation (%)						
6.1 All India Consumer Price Index	5.4	7.4	6.8	3.6	3.7	
6.2 Consumer Price Index for Industrial Workers	5.19	7.5	6.9	2.1	2.4	
6.3 Wholesale Price Index	-0.7	-1.2	-0.5	2.1	1.3	
6.3.1 Primary Articles	3.6	8.2	6.7	3.2	2.4	
6.3.2 Fuel and Power	-4.6	-12.7	-6.3	1.9	-0.7	
6.3.3 Manufactured Products	-1.7	-2.6	-2.3	1.6	1.2	
7 Foreign Trade (% Change)						
7.1 Imports	-5.3	-16.1	0.7	7.4	3.3	
7.2 Exports	-3.1	-10.0	3.4	-1.8	-9.3	

Note : Financial Benchmark India Pvt. Ltd. (FBIL) has commenced publication of the G-Sec benchmarks with effect from March 31, 2018 as per RBI circular FMRD.DIRD. 7/14/03/025/2017-18 dated March 31, 2018. FBIL has started dissemination of reference rates w.e.f. July 10, 2018.

#: Bank credit growth and related ratios for all fortnights from December 3, 2021 to November 18, 2022 are adjusted for past reporting errors by select scheduled commercial banks (SCBs).

Figures in parentheses include the impact of merger of a non-bank with a bank.

*: As per Press Release No. 2022-2023/41 dated April 08, 2022.

Reserve Bank of India

No. 2: RBI - Liabilities and Assets *

(₹ Crore)

Item	As on the Last Friday/ Friday						
	2023-24	2023	2024				
			Sep.	Aug. 30	Sep. 06	Sep. 13	Sep. 20
	1	2	3	4	5	6	7
1 Issue Department							
1.1 Liabilities							
1.1.1 Notes in Circulation	3482333	3257516	3458493	3471089	3474449	3455943	3447381
1.1.2 Notes held in Banking Department	11	10	14	14	15	14	22
1.1/2 Total Liabilities (Total Notes Issued) or Assets	3482344	3257526	3458507	3471104	3474463	3455957	3447403
1.2 Assets							
1.2.1 Gold	162996	137471	188699	188209	190852	192298	199209
1.2.2 Foreign Securities	3318885	3119750	3269461	3282415	3283188	3263285	3247889
1.2.3 Rupee Coin	463	305	347	479	424	375	305
1.2.4 Government of India Rupee Securities	-	-	-	-	-	-	-
2 Banking Department							
2.1 Liabilities							
2.1.1 Deposits	1782333	1678098	1702744	1744535	1715825	1784146	1851979
2.1.1.1 Central Government	101	100	100	100	100	100	100
2.1.1.2 Market Stabilisation Scheme	-	-	-	-	-	-	-
2.1.1.3 State Governments	42	42	42	42	42	42	42
2.1.1.4 Scheduled Commercial Banks	1008618	969235	1019456	988846	1004956	956255	1020447
2.1.1.5 Scheduled State Co-operative Banks	10092	8917	8019	8151	8383	7923	8254
2.1.1.6 Non-Scheduled State Co-operative Banks	6412	4900	5186	5328	5220	5046	5134
2.1.1.7 Other Banks	48725	49321	49701	49736	49501	49752	49498
2.1.1.8 Others	545400	518710	479121	534528	493671	604088	600409
2.1.1.9 Financial Institution Outside India	162944	126871	141119	157803	153951	160940	168095
2.1.2 Other Liabilities	1804747	1498291	1917383	1948716	1967285	1965094	2008888
2.1/2.2 Total Liabilities or Assets	3587080	3176389	3620127	3693251	3683109	3749240	3860867
2.2 Assets							
2.2.1 Notes and Coins	11	10	14	14	15	14	22
2.2.2 Balances Held Abroad	1480408	1235681	1790736	1824082	1816602	1833767	1944750
2.2.3 Loans and Advances							
2.2.3.1 Central Government	-	-	-	-	-	-	-
2.2.3.2 State Governments	2300	11606	13381	35426	29725	26447	24412
2.2.3.3 Scheduled Commercial Banks	266021	170292	6968	7740	10917	51223	33302
2.2.3.4 Scheduled State Co-op.Banks	-	-	-	-	-	-	-
2.2.3.5 Industrial Dev. Bank of India	-	-	-	-	-	-	-
2.2.3.6 NABARD	-	-	-	-	-	-	-
2.2.3.7 EXIM Bank	-	-	-	-	-	-	-
2.2.3.8 Others	12398	3030	8547	7123	7123	8547	8496
2.2.3.9 Financial Institution Outside India	162650	127232	141402	157993	154366	161507	167968
2.2.4 Bills Purchased and Discounted							
2.2.4.1 Internal	-	-	-	-	-	-	-
2.2.4.2 Government Treasury Bills	-	-	-	-	-	-	-
2.2.5 Investments	1365425	1388293	1317280	1317112	1315545	1315672	1316708
2.2.6 Other Assets	297868	240246	341800	343760	348816	352064	365211
2.2.6.1 Gold	272028	226353	330135	332122	336784	339336	351532

* Data are provisional.

No. 3: Liquidity Operations by RBI

(₹ Crore)

Date	Liquidity Adjustment Facility						Standing Liquidity Facilities	OMO (Outright)		Net Injection (+)/ Absorption (-) (1+3+5+7+9-2-4-6 -8)	
	Repo	Reverse Repo	Variable Rate Repo	Variable Rate Reverse Repo	MSF	SDF		Sale	Purchase		
								1	2	3	4
Aug. 1, 2024	-	-	-	32831	579	81930	-	675	-	-	-114857
Aug. 2, 2024	-	-	-	59860	781	186921	-	465	-	-	-246465
Aug. 3, 2024	-	-	-	-	263	158577	-	-	-	-	-158314
Aug. 4, 2024	-	-	-	-	63	136919	-	-	-	-	-136856
Aug. 5, 2024	-	-	-	78955	1517	138445	-767	305	-	-	-216955
Aug. 6, 2024	-	-	-	43757	4212	89857	-89	930	-	-	-130421
Aug. 7, 2024	-	-	-	-	16750	40842	-368	1055	-	-	-25515
Aug. 8, 2024	-	-	-	-	43791	37087	1216	220	-	7700	
Aug. 9, 2024	-	-	-	60190	2685	102634	-39	0	-	-	-160178
Aug. 10, 2024	-	-	-	-	562	57020	-	-	-	-	-56458
Aug. 11, 2024	-	-	-	-	1139	58431	-	-	-	-	-57292
Aug. 12, 2024	-	-	-	42970	1236	69627	8	215	-	-	-111568
Aug. 13, 2024	-	-	-	22505	2107	59451	-1424	165	-	-	-81438
Aug. 14, 2024	-	-	-	30457	1204	47059	1410	100	-	-	-75002
Aug. 15, 2024	-	-	-	-	19	39799	-	-	-	-	-39780
Aug. 16, 2024	-	-	-	93237	6960	67431	-	705	-	-	-154413
Aug. 17, 2024	-	-	-	-	6548	68029	-	-	-	-	-61481
Aug. 18, 2024	-	-	-	-	5563	62069	-	-	-	-	-56506
Aug. 19, 2024	-	-	-	21685	1690	95740	-	270	-	-	-116005
Aug. 20, 2024	-	-	-	875	1202	103244	-	610	-	-	-103527
Aug. 21, 2024	-	-	-	-	14226	69962	-	300	-	-	-56036
Aug. 22, 2024	-	-	-	-	1019	84413	-	365	-	-	-83759
Aug. 23, 2024	-	-	-	20377	1818	98793	-	230	-	-	-117582
Aug. 24, 2024	-	-	-	-	722	66501	-	-	-	-	-65779
Aug. 25, 2024	-	-	-	-	1794	66500	-	-	-	-	-64706
Aug. 26, 2024	-	-	-	29080	1576	47791	5	0	-	-	-75290
Aug. 27, 2024	-	-	-	-	2365	69908	-	330	-	-	-67873
Aug. 28, 2024	-	-	-	9875	1477	50427	-	410	-	-	-59235
Aug. 29, 2024	-	-	-	-	7893	63663	-	95	-	-	-55865
Aug. 30, 2024	-	-	-	4000	2128	113478	-	245	-	-	-115595
Aug. 31, 2024	-	-	-	-	1140	89068	-	-	-	-	-87928

No. 4: Sale/ Purchase of U.S. Dollar by the RBI**i) Operations in onshore / offshore OTC segment**

Item	2023-24	2023		2024	
		Aug.	Jul.	Aug.	Aug.
		1	2	3	4
1 Net Purchase/ Sale of Foreign Currency (US \$ Million) (1.1-1.2)	41271	-3856	6934	-6494	
1.1 Purchase (+)	194296	500	23569	16141	
1.2 Sale (-)	153025	4356	16635	22635	
2 ₹ equivalent at contract rate (₹ Crores)	339528	-31994	57887	-54476	
3 Cumulative (over end-March) (US \$ Million)	41271	19195	5402	-1092	
(₹ Crore)	339528	157279	44872	-9604	
4 Outstanding Net Forward Sales (-)/ Purchase (+) at the end of month (US \$ Million)	-541	10068	-9100	-18980	

ii) Operations in currency futures segment

Item	2023-24	2023		2024	
		Aug.	Jul.	Aug.	Aug.
		1	2	3	4
1 Net Purchase/ Sale of Foreign Currency (US \$ Million) (1.1-1.2)	0	0	0	0	0
1.1 Purchase (+)	7930	441	2144	1993	
1.2 Sale (-)	7930	441	2144	1993	
2 Outstanding Net Currency Futures Sales (-)/ Purchase (+) at the end of month (US \$ Million)	-1080	0	-340	-897	

**No. 4 A : Maturity Breakdown (by Residual Maturity) of
Outstanding Forwards of RBI (US \$ Million)**

Item	As on August 31, 2024		
	Long (+)	Short (-)	Net (1-2)
	1	2	3
1. Upto 1 month	0	13800	-13800
2. More than 1 month and upto 3 months	0	5180	-5180
3. More than 3 months and upto 1 year	0	0	..
4. More than 1 year	0	0	..
Total (1+2+3+4)	..	18980	-18980

No. 5: RBI's Standing Facilities

(₹ Crore)

Item	As on the Last Reporting Friday							
	2023-24	2023	2024					
			Sep. 22	Apr. 19	May. 31	Jun. 28	Jul. 26	Aug. 23
		1	2	3	4	5	6	7
1 MSF	49906	168348	3238	14601	46848	2021	1818	21731
2 Export Credit Refinance for Scheduled Banks								
2.1 Limit	-	-	-	-	-	-	-	-
2.2 Outstanding	-	-	-	-	-	-	-	-
3 Liquidity Facility for PDs								
3.1 Limit	9900	4900	9900	9900	9900	9900	9900	9900
3.2 Outstanding	9810	3054	8770	9311	9061	9062	8541	8547
4 Others								
4.1 Limit	76000	76000	76000	76000	76000	76000	76000	76000
4.2 Outstanding	-	-	-	-	-	-	-	-
5 Total Outstanding (1+2.2+3.2+4.2)	59716	171402	12008	23912	55909	11083	10359	30278

Money and Banking

No. 6: Money Stock Measures

(₹ Crore)

Item	Outstanding as on March 31/last reporting Fridays of the month/ reporting Fridays				
	2023-24	2023	2024		
		Aug. 25	Jul. 26	Aug. 09	Aug. 23
	1	2	3	4	5
1 Currency with the Public (1.1 + 1.2 + 1.3 – 1.4)	3410276	3205302	3426089	3425336	3404741
1.1 Notes in Circulation	3477795	3278580	3502389	3490831	3477861
1.2 Circulation of Rupee Coin	32689	30657	33563	33563	33563
1.3 Circulation of Small Coins	743	743	743	743	743
1.4 Cash on Hand with Banks	101185	104763	111091	100319	108200
2 Deposit Money of the Public	2681424	2423242	2678638	2650448	2680305
2.1 Demand Deposits with Banks	2586888	2351355	2587413	2557746	2588482
2.2 'Other' Deposits with Reserve Bank	94536	71887	91225	92702	91822
3 M1 (1 + 2)	6091700	5628545	6104726	6075784	6085046
4 Post Office Saving Bank Deposits	225927	211296	225927	225927	225927
5 M2 (3 + 4)	6317627	5839841	6330653	6301711	6310973
6 Time Deposits with Banks	18739918	17697364	19485726	19652233	19619055
	(18848160)	(17844160)	(19568928)	(19732896)	(19698002)
7 M3 (3 + 6)	24831618	23325909	25590453	25728017	25704100
	(24939860)	(23472705)	(25673654)	(25808680)	(25783048)
8 Total Post Office Deposits	1298623	1216324	1298623	1298623	1298623
9 M4 (7 + 8)	26130241	24542233	26889076	27026640	27002723
	(26238483)	(24689029)	(26972277)	(27107303)	(27081671)

Figures in parentheses include the impact of merger of a non-bank with a bank.

No. 7 : Sources of Money Stock (M₃)

(₹ Crore)

Sources	Outstanding as on March 31/last reporting Fridays of the month/reporting Fridays				
	2023-24	2023	2024		
		Aug. 25	Jul. 26	Aug. 09	Aug. 23
		1	2	3	4
					5
1 Net Bank Credit to Government	7512016	7274511	7612861	7674995	7629866
1 Net Bank Credit to Government (Including Merger)	(7603571)	(7387274)	(7678213)	(7739908)	(7694769)
1.1 RBI's net credit to Government (1.1.1–1.1.2)	1193213	1185246	1060910	1107752	1025545
1.1.1 Claims on Government	1370428	1415628	1341836	1351627	1343455
1.1.1.1 Central Government	1363828	1399159	1320596	1318634	1316653
1.1.1.2 State Governments	6600	16470	21239	32993	26802
1.1.2 Government deposits with RBI	177215	230382	280926	243875	317910
1.1.2.1 Central Government	177172	230340	280883	243833	317868
1.1.2.2 State Governments	42	42	42	42	42
1.2 Other Banks' Credit to Government	6318803	6089264	6551951	6567243	6604322
1.2 Other Banks Credit to Government (Including Merger)	(6410358)	(6202028)	(6617302)	(6632157)	(6669224)
2 Bank Credit to Commercial Sector	16672145	15052452	17084181	17155454	17224460
2 Bank Credit to Commercial Sector (Including Merger)	(17202832)	(15654654)	(17577818)	(17644067)	(17709792)
2.1 RBI's credit to commercial sector	14406	5186	10935	10439	10307
2.2 Other banks' credit to commercial sector	16657739	15047266	17073246	17145015	17214153
2.2 Other banks credit to commercial sector (Including Merger)	(17188425)	(15649468)	(17566883)	(17633628)	(17699485)
2.2.1 Bank credit by commercial banks	15901477	14315110	16320298	16391688	16459977
2.2.1 Bank credit by commercial banks (Including Merger)	(16432164)	(14917312)	(16813935)	(16880301)	(16945309)
2.2.2 Bank credit by co-operative banks	738194	714934	733892	735027	735395
2.2.3 Investments by commercial and co-operative banks in other securities	18068	17222	19056	18299	18781
2.2.3 Investments by commercial and co-operative banks in other securities (Including Merger)	(18068)	(17222)	(19056)	(18299)	(18781)
3 Net Foreign Exchange Assets of Banking Sector (3.1 + 3.2)	5543700	4993999	5736662	5773433	5866203
3.1 RBIs net foreign exchange assets (3.1.1 - 3.1.2)	5240824	4751175	5433786	5470557	5563327
3.1.1 Gross foreign assets	5241083	4751434	5434044	5470816	5563586
3.1.2 Foreign liabilities	259	259	259	259	259
3.2 Other banks' net foreign exchange assets	302876	242825	302876	302876	302876
4 Government's Currency Liabilities to the Public	33432	31400	34306	34306	34306
5 Banking Sector's Net Non-monetary Liabilities	4929674	4026453	4877557	4910172	5050735
5 Banking Sectors Net Non-monetary Liabilities (Including Merger)	(5443674)	(4594622)	(5353343)	(5383035)	(5522022)
5.1 Net non-monetary liabilities of RBI	1789875	1510374	1718379	1816054	1892962
5.2 Net non-monetary liabilities of other banks (residual)	3139799	2516079	3159178	3094118	3157772
5.2 Net non-monetary liabilities of other banks (residual) (Including Merger)	(3653798)	(3084248)	(3634964)	(3566981)	(3629060)
M₃(1+2+3+4-5)	24831618	23325909	25590453	25728017	25704100
M ₃ (1+2+3+4-5) (Including Merger)	(24939860)	(23472705)	(25673654)	(25808680)	(25783048)

Figures in parentheses include the impact of merger of a non-bank with bank.

No. 8: Monetary Survey

(₹ Crore)

Item	Outstanding as on March 31/last reporting Fridays of the month/reporting Fridays				
	2023-24	2023	2024		
		Aug. 25	Jul. 26	Aug. 09	Aug. 23
		1	2	3	4
Monetary Aggregates					
NM ₁ (1.1+1.2.1+1.3)	6091700	5628293	6104726	6075784	6085046
NM ₂ (NM ₁ + 1.2.2.1)	14424855	13510696	14761845	14806439	14798820
NM ₂ (NM ₁ + 1.2.2.1) (Including Merger)	(14473564)	(13576754)	(14799285)	(14842738)	(14834346)
NM ₃ (NM ₂ +1.2.2.2 + 1.4 = 2.1 + 2.2 + 2.3 - 2.4 - 2.5)	25387764	23962818	26277956	26327878	26360365
NM ₃ (NM ₂ + 1.2.2.2 + 1.4 = 2.1 + 2.2 + 2.3 - 2.4 - 2.5) (Including Merger)	(25496006)	(24109614)	(26361158)	(26408542)	(26439312)
1 Components					
1.1 Currency with the Public	3410276	3205051	3426089	3425336	3404741
1.2 Aggregate Deposits of Residents	21105009	19867806	21825453	21959202	21952425
1.2 Aggregate Deposits of Residents (Including Merger)	(21213252)	(20014602)	(21908655)	(22039866)	(22031372)
1.2.1 Demand Deposits	2586888	2351355	2587413	2557746	2588482
1.2.2 Time Deposits of Residents	18518121	17516451	19238040	19401456	19363943
1.2.2.1 Time Deposits of Residents (Including Merger)	(18626364)	(17663247)	(19321242)	(19482120)	(19442890)
1.2.2.1.1 Short-term Time Deposits	8333155	7882403	8657118	8730655	8713774
1.2.2.1.1 Certificates of Deposits (CDs)	(8381864)	(7948461)	(8694559)	(8766954)	(8749300)
1.2.2.2 Long-term Time Deposits	369399	296520	420069	430842	441388
1.2.2.2 Long-term Time Deposits (Including Merger)	10184967	9634048	10580922	10670801	10650168
1.3 'Other' Deposits with RBI	94536	71887	91225	92702	91822
1.4 Call/Term Funding from Financial Institutions	777942	818074	935190	850638	911377
2 Sources					
2.1 Domestic Credit	25295986	23445850	25825974	25987260	26020508
2.1 Domestic Credit (Including Merger)	(25918227)	(24160815)	(26384962)	(26540787)	(26570742)
2.1.1 Net Bank Credit to the Government	7512016	7274511	7612861	7674995	7629866
2.1.1 Net Bank Credit to the Government (Including Merger)	(7603571)	(7387274)	(7678213)	(7739908)	(7694769)
2.1.1.1 Net RBI credit to the Government	1193213	1185246	1060910	1107752	1025545
2.1.1.2 Credit to the Government by the Banking System	6318803	6089264	6551951	6567243	6604322
2.1.1.2 Credit to the Government by the Banking System (Including Merger)	(6410358)	(6202028)	(6617302)	(6632157)	(6669224)
2.1.2 Bank Credit to the Commercial Sector	17783970	16171339	18213113	18312265	18390642
2.1.2.1 Bank Credit to the Commercial Sector (Including Merger)	(18314656)	(16773541)	(18706750)	(18800878)	(18875973)
2.1.2.1.1 RBI Credit to the Commercial Sector	14406	5186	10935	10439	10307
2.1.2.2 Credit to the Commercial Sector by the Banking System	17769564	16166153	18202178	18301826	18380335
2.1.2.2 Credit to the Commercial Sector by the Banking System (Including Merger)	(18300250)	(16768355)	(18695815)	(18790439)	(18865667)
2.1.2.2.1 Other Investments (Non-SLR Securities)	1089184	1099978	1112229	1140039	1150445
2.2 Government's Currency Liabilities to the Public	33432	31148	34306	34306	34306
2.3 Net Foreign Exchange Assets of the Banking Sector	5110820	4797159	5304164	5358037	5420007
2.3.1 Net Foreign Exchange Assets of the RBI	5240824	4751175	5433786	5470557	5563327
2.3.2 Net Foreign Currency Assets of the Banking System	-130004	45984	-129622	-112520	-143320
2.4 Capital Account	3912897	3900890	4317778	4361103	4421744
2.5 Other items (net)	1653576	978618	1044496	1163485	1163999

Figures in parentheses include the impact of merger of a non-bank with a bank.

No. 9: Liquidity Aggregates

(₹ Crore)

Aggregates	2023-24	2023	2024		
		Aug.	Jun.	Jul.	Aug.
		1	2	3	4
1 NM₃	25387764	23962818	26225278	26277956	26360365
	(25496006)	(24109614)	(26314675)	(26361158)	(26439312)
2 Postal Deposits	729246	687547	729246	729246	729246
3 L₁ (1 + 2)	26117010	24650365	26954524	27007202	27089611
	(26225252)	(24797161)	(27043921)	(27090404)	(27168558)
4 Liabilities of Financial Institutions	85150	71557	68179	68324	68118
4.1 Term Money Borrowings	2375	1137	748	748	395
4.2 Certificates of Deposit	70245	60285	54670	54670	54670
4.3 Term Deposits	12531	10136	12761	12905	13054
5 L₂ (3 + 4)	26202160	24721922	27022704	27075526	27157730
	(26310403)	(24868718)	(27112100)	(27158728)	(27236677)
6 Public Deposits with Non-Banking Financial Companies	102994	..	102994
7 L₃ (5 + 6)	26305155	..	27125698

Note : 1. Figures in the columns might not add up to the total due to rounding off of numbers.

2. Figures in parentheses include the impact of merger of a non-bank with a bank.

No. 10: Reserve Bank of India Survey

(₹ Crore)

Item	Outstanding as on March 31/last reporting Fridays of the month/reporting Fridays				
	2023-24	2023	2024		
		Aug. 25	Jul. 26	Aug. 9	Aug. 23
	1	2	3	4	5
1 Components					
1.1 Currency in Circulation	3511461	3309813	3537180	3525656	3512941
1.2 Bankers' Deposits with the RBI	1025449	1073614	1039059	1033815	1023595
1.2.1 Scheduled Commercial Banks	956011	1010361	976073	971052	960220
1.3 'Other' Deposits with the RBI	94536	71887	91225	92702	91822
Reserve Money (1.1 + 1.2 + 1.3 = 2.1 + 2.2 + 2.3 - 2.4 - 2.5)	4631446	4455314	4667464	4652173	4628359
2 Sources					
2.1 RBI's Domestic Credit	1147066	1183365	917751	963363	923688
2.1.1 Net RBI credit to the Government	1193213	1185246	1060910	1107752	1025545
2.1.1.1 Net RBI credit to the Central Government (2.1.1.1 + 2.1.1.2 + 2.1.1.3 + 2.1.1.4 - 2.1.1.5)	1186655	1168819	1039713	1074801	998785
2.1.1.1.1 Loans and Advances to the Central Government	-	-	-	-	-
2.1.1.1.2 Investments in Treasury Bills	-	-	-	-	-
2.1.1.1.3 Investments in dated Government Securities	1363369	1398848	1320373	1318325	1316259
2.1.1.1.3.1 Central Government Securities	1363369	1398848	1320373	1318325	1316259
2.1.1.1.4 Rupee Coins	459	311	223	308	393
2.1.1.1.5 Deposits of the Central Government	177172	230340	280883	243833	317868
2.1.1.2 Net RBI credit to State Governments	6557	16427	21197	32951	26760
2.1.2 RBI's Claims on Banks	-60553	-7067	-154094	-154828	-112164
2.1.2.1 Loans and Advances to Scheduled Commercial Banks	-60553	-7067	-154094	-154828	-112164
2.1.3 RBI's Credit to Commercial Sector	14406	5186	10935	10439	10307
2.1.3.1 Loans and Advances to Primary Dealers	9358	3122	9062	8547	8541
2.1.3.2 Loans and Advances to NABARD	-	-	-	-	-
2.2 Government's Currency Liabilities to the Public	33432	31148	34306	34306	34306
2.3 Net Foreign Exchange Assets of the RBI	5240824	4751175	5433786	5470557	5563327
2.3.1 Gold	439319	366616	483062	497338	511818
2.3.2 Foreign Currency Assets	4801522	4384576	4950741	4973236	5051527
2.4 Capital Account	1589134	1641017	1774642	1809690	1863913
2.5 Other Items (net)	200741	-130643	-56263	6364	29049

No. 11: Reserve Money - Components and Sources

(₹ Crore)

Item	2023-24	Outstanding as on March 31/last Fridays of the month/Fridays					
		2023	2024				
			Aug. 25	Aug. 2	Aug. 9	Aug. 16	Aug. 23
		1	2	3	4	5	6
Reserve Money (1.1 + 1.2 + 1.3 = 2.1 + 2.2 + 2.3 + 2.4 + 2.5 - 2.6)	4631446	4455566	4663647	4652173	4655359	4628359	4668483
1 Components							
1.1 Currency in Circulation	3511461	3310065	3523570	3525656	3516861	3512941	3493088
1.2 Bankers' Deposits with RBI	1025449	1073614	1048181	1033815	1046644	1023595	1082361
1.3 'Other' Deposits with RBI	94536	71887	91896	92702	91855	91822	93034
2 Sources							
2.1 Net Reserve Bank Credit to Government	1193213	1185246	1173784	1107752	1114650	1025545	1085576
2.2 Reserve Bank Credit to Banks	-60553	-7067	-264214	-154828	-163770	-112164	-130881
2.3 Reserve Bank Credit to Commercial Sector	14406	5186	10591	10439	10603	10307	10604
2.4 Net Foreign Exchange Assets of RBI	5240824	4751175	5498839	5470557	5508534	5563327	5579046
2.5 Government's Currency Liabilities to the Public	33432	31400	34306	34306	34306	34306	34594
2.6 Net Non-Monetary Liabilities of RBI	1789875	1510374	1789658	1816054	1848963	1892962	1910457

No. 12: Commercial Bank Survey

(₹ Crore)

Item	Outstanding as on last reporting Fridays of the month/ reporting Fridays of the month				
	2023-24	2023	2024		
		Aug. 25	Jul. 26	Aug. 9	Aug. 23
	1	2	3	4	5
1 Components					
1.1 Aggregate Deposits of Residents	20145188 (20253430)	18913252 (19060048)	20862822 (20946024)	20997281 (21077944)	20991067 (21070014)
1.1.1 Demand Deposits	2443853	2212312	2444220	2414560	2446039
1.1.2 Time Deposits of Residents	17701334 (17809577)	16700940 (16847736)	18418602 (18501804)	18582720 (18663384)	18545028 (18623975)
1.1.2.1 Short-term Time Deposits	7965600	7515423	8288371	8362224	8345262
1.1.2.1.1 Certificates of Deposits (CDs)	369399	296520	420069	430842	441388
1.1.2.2 Long-term Time Deposits	9735734	9185517	10130231	10220496	10199765
1.2 Call/Term Funding from Financial Institutions	777942	818074	935190	850638	911377
2 Sources					
2.1 Domestic Credit	23019606 (23641847)	21214123 (21929088)	23688947 (24247935)	23803124 (24356651)	23918044 (24468278)
2.1.1 Credit to the Government	6014054 (6105610)	5788050 (5900814)	6247305 (6312657)	6262951 (6327864)	6300226 (6365128)
2.1.2 Credit to the Commercial Sector	17005551 (17536238)	15426073 (16028274)	17441642 (17935278)	17540173 (18028786)	17617818 (18103150)
2.1.2.1 Bank Credit	15901477 (16432164)	14315110 (14917312)	16320298 (16813935)	16391688 (16880301)	16459977 (16945309)
2.1.2.1.1 Non-food Credit	15878397 (16409083)	14295755 (14897956)	16292108 (16785745)	16363757 (16852370)	16435616 (16920948)
2.1.2.2 Net Credit to Primary Dealers	22904	19173	16966	17035	16000
2.1.2.3 Investments in Other Approved Securities	949	775	1111	373	358
2.1.2.4 Other Investments (in non-SLR Securities)	1080222	1091015	1103267	1131076	1141482
2.2 Net Foreign Currency Assets of Commercial Banks (2.2.1+2.2.2+2.2.3)	-130004	45984	-129622	-112520	-143320
2.2.1 Foreign Currency Assets	241661	336338	284197	301751	283039
2.2.2 Non-resident Foreign Currency Repatriable Fixed Deposits	221796	180913	247686	250776	255112
2.2.3 Overseas Foreign Currency Borrowings	149868	109441	166133	163495	171247
2.3 Net Bank Reserves (2.3.1+2.3.2+2.3.3)	893350	1110573	1229518	1214484	1168575
2.3.1 Balances with the RBI	931483	1010361	976073	971052	960220
2.3.2 Cash in Hand	89433	93145	99350	88604	96191
2.3.3 Loans and Advances from the RBI	127566	-7067	-154094	-154828	-112164
2.4 Capital Account	2299592	2235702	2518965	2527243	2533660
2.5 Other items (net) (2.1+2.2+2.3-2.4-1.1-1.2)	560230	403653	471866	529926	507195
2.5.1 Other Demand and Time Liabilities (net of 2.2.3)	787560	781267	732752	744746	759393
2.5.2 Net Inter-Bank Liabilities (other than to PDs)	197781	180408	149681	137511	122730

Figures in parentheses include the impact of merger of a non-bank with a bank.

No. 13: Scheduled Commercial Banks' Investments

(₹ Crore)

Item	As on March 22, 2024	2023				2024			
		2023		2024		Aug. 25	Jul. 26	Aug. 09	Aug. 23
		1	2	3	4				
1 SLR Securities	6106558 (6015003)	5901589 (5788825)	6313767 (6248416)	6328238 (6263324)	6365487 (6300584)				
2 Other Government Securities (Non-SLR)	177136	180085	157537	158404	158529				
3 Commercial Paper	61175	57376	52091	57615	66610				
4 Shares issued by									
4.1 PSUs	8475	9048	12950	12829	12930				
4.2 Private Corporate Sector	77722	83515	93831	94706	96898				
4.3 Others	5624	5576	7367	2961	7348				
5 Bonds/Debentures issued by									
5.1 PSUs	103070	90401	121092	123549	120537				
5.2 Private Corporate Sector	287596	288808	242161	245255	243210				
5.3 Others	124690	109063	138806	123160	144139				
6 Instruments issued by									
6.1 Mutual funds	62499	76060	96391	103474	109634				
6.2 Financial institutions	172340	191082	181041	209123	181647				

Note: Data against column Nos. (1), (2) & (3) are Final and for column Nos. (4) & (5) data are Provisional.

1. Data since July 14, 2023 include the impact of the merger of a non-bank with a bank.
2. Figures in parentheses exclude the impact of the merger.

No. 14: Business in India - All Scheduled Banks and All Scheduled Commercial Banks

(₹ Crore)

Item	As on the Last Reporting Friday (in case of March)/ Last Friday							
	All Scheduled Banks				All Scheduled Commercial Banks			
	2023-24	2023	2024		2023-24	2023	2024	
		Aug.	Jul.	Aug.		Aug.	Jul.	Aug.
	1	2	3	4	5	6	7	8
Number of Reporting Banks	210	212	208	208	137	137	135	135
1 Liabilities to the Banking System	554117	511608	500022	541312	549351	508423	495645	536780
1.1 Demand and Time Deposits from Banks	298452	243491	285475	334046	294471	241128	281386	330012
1.2 Borrowings from Banks	182566	199138	138779	128765	182429	199018	138752	128550
1.3 Other Demand and Time Liabilities	73100	68978	75768	78501	72452	68276	75507	78218
2 Liabilities to Others	22664868	21406268	23505257	24097455	22190597	20949742	23027643	23629065
2.1 Aggregate Deposits	20932067	19680101	21654100	22139250	20475226	19240961	21193568	21688112
(20823825)	(19533305)	(21570898)	(22061445)	(20366984)	(19094165)	(21110367)	(21610308)	
2.1.1 Demand	2492916	2256991	2493596	2715452	2443853	2212312	2444220	2666996
2.1.2 Time	18439151	17423111	19160504	19423797	18031373	17028649	18749348	19021116
2.2 Borrowings	782260	822369	939516	920015	777942	818074	935190	915858
2.3 Other Demand and Time Liabilities	950541	903798	911642	1038191	937428	890708	898885	1025094
3 Borrowings from Reserve Bank	222716	93310	7161	6968	222716	93310	7161	6968
3.1 Against Usance Bills /Promissory Notes	-	-	-	-	-	-	-	-
3.2 Others	222716	93310	7161	6968	222716	93310	7161	6968
4 Cash in Hand and Balances with Reserve Bank	1043272	1126135	1097637	1134910	1020916	1103506	1075424	1112899
4.1 Cash in Hand	91886	95460	101799	95928	89433	93145	99350	93444
4.2 Balances with Reserve Bank	951386	1030676	995838	1038982	931483	1010361	976073	1019456
5 Assets with the Banking System	455057	409036	432441	479881	374474	347187	363113	414893
5.1 Balances with Other Banks	246384	226965	242359	284096	198327	185201	193127	233398
5.1.1 In Current Account	12010	12120	12352	28162	8971	9164	9487	25424
5.1.2 In Other Accounts	234373	214845	230007	255934	189357	176037	183640	207974
5.2 Money at Call and Short Notice	39614	37031	29827	23818	12355	20919	13930	13637
5.3 Advances to Banks	51325	47079	42711	42175	48368	46290	41613	41391
5.4 Other Assets	117734	97961	117544	129792	115424	94777	114443	126467
6 Investment	6256962	6047925	6466548	6509652	6106558	5901589	6313767	6357943
(6165407)	(5935162)	(6401196)	(6445920)	(6015003)	(5788825)	(6248416)	(6294211)	
6.1 Government Securities	6249319	6041382	6458194	6501765	6105610	5900814	6312657	6357504
6.2 Other Approved Securities	7643	6543	8354	7887	949	775	1111	439
7 Bank Credit	16866336	15313741	17254613	17448862	16432164	14917312	16813935	17010621
(16335650)	(14711539)	(16760977)	(16966951)	(15901477)	(14315110)	(16320298)	(16528710)	
7a Food Credit	75472	67044	78811	77846	23081	19355	28190	24036
7.1 Loans, Cash-credits and Overdrafts	16565348	15056247	16938015	17133011	16134303	14662675	16500433	16697901
7.2 Inland Bills-Purchased	60471	43973	68987	68481	60467	43961	67638	67049
7.3 Inland Bills-Discounted	199761	171306	208216	208532	197358	169119	207073	207367
7.4 Foreign Bills-Purchased	16662	17545	16061	16582	16412	17323	15852	16397
7.5 Foreign Bills-Discounted	24094	24669	23334	22256	23624	24233	22940	21906

Note: Data in column Nos. (4) & (8) are Provisional

1. Data since July 2023 include the impact of the merger of a non-bank with a bank.

2. Figures in parentheses exclude the impact of the merger.

No. 15: Deployment of Gross Bank Credit by Major Sectors

(₹ Crore)

Sector	Outstanding as on				Growth(%)	
	Mar. 22, 2024	2023	2024		Financial year so far	Y-o-Y
			Aug. 25	Jul. 26	Aug. 23	2024-25
	1	2	3	4	%	%
I. Bank Credit (II + III)	16432164	14917312	16814792	16945162	3.1	13.6
	(15901477)	(14315110)	(16321156)	(16459830)	(3.5)	(15.0)
II. Food Credit	23081	19355	28190	24361	5.5	25.9
III. Non-food Credit	16409083	14897956	16786602	16920802	3.1	13.6
	(15878397)	(14295755)	(16292966)	(16435470)	(3.5)	(15.0)
1. Agriculture & Allied Activities	2071251	1835215	2156320	2160634	4.3	17.7
2. Industry (Micro and Small, Medium and Large)	3652804	3423736	3724547	3756194	2.8	9.7
	(3635810)	(3405466)	(3707719)	(3740619)	(2.9)	(9.8)
2.1 Micro and Small	726315	655556	729948	743704	2.4	13.4
2.2 Medium	303998	272435	317323	324747	6.8	19.2
2.3 Large	2622490	2495745	2677277	2687744	2.5	7.7
3. Services	4592227	4076334	4623910	4643586	1.1	13.9
	(4490467)	(3945238)	(4538080)	(4559593)	(1.5)	(15.6)
3.1 Transport Operators	230175	206113	244262	243486	5.8	18.1
3.2 Computer Software	25917	22953	27356	27990	8.0	21.9
3.3 Tourism, Hotels & Restaurants	77513	73913	79202	80570	3.9	9.0
3.4 Shipping	7067	6571	7076	7257	2.7	10.4
3.5 Aviation	43248	39063	44637	44837	3.7	14.8
3.6 Professional Services	167234	148659	171393	173738	3.9	16.9
3.7 Trade	1025752	911267	1043753	1052622	2.6	15.5
3.7.1. Wholesale Trade ¹	538744	469729	545170	553316	2.7	17.8
3.7.2 Retail Trade	487008	441538	498582	499305	2.5	13.1
3.8 Commercial Real Estate	469013	437615	484531	494809	5.5	13.1
	(400470)	(347121)	(426515)	(437854)	(9.3)	(26.1)
3.9 Non-Banking Financial Companies (NBFCs) ² of which,	1548027	1360082	1528856	1522204	-1.7	11.9
3.9.1 Housing Finance Companies (HFCs)	325626	311387	320205	322093	-1.1	3.4
3.9.2 Public Financial Institutions (PFIs)	226963	179094	202991	196565	-13.4	9.8
3.10 Other Services ³	998281	870098	992845	996074	-0.2	14.5
	(978198)	(845128)	(974349)	(977918)	(0.0)	(15.7)
4. Personal Loans	5331290	4876136	5507740	5555484	4.2	13.9
	(4919468)	(4423287)	(5117905)	(5170917)	(5.1)	(16.9)
4.1 Consumer Durables	23713	22164	24606	24396	2.9	10.1
4.2 Housing	2718715	2505634	2810108	2833166	4.2	13.1
	(2331935)	(2081117)	(2443529)	(2471488)	(6.0)	(18.8)
4.3 Advances against Fixed Deposits	125239	112334	120373	121817	-2.7	8.4
4.4 Advances to Individuals against share & bonds	8492	7668	9422	9722	14.5	26.8
4.5 Credit Card Outstanding	257016	230657	275601	276576	7.6	19.9
4.6 Education	119380	106578	123066	126148	5.7	18.4
4.7 Vehicle Loans	589251	536214	606174	610792	3.7	13.9
4.8 Loan against gold jewellery	102562	99626	132535	140391	36.9	40.9
4.9 Other Personal Loans	1386921	1255262	1405854	1412476	1.8	12.5
	(1362113)	(1227512)	(1382681)	(1389666)	(2.0)	(13.2)
5. Priority Sector (Memo)						
(i) Agriculture & Allied Activities ⁴	2081856	1851818	2196939	2152535	3.4	16.2
(ii) Micro & Small Enterprises ⁵	1974191	1786828	1998597	2027278	2.7	13.5
(iii) Medium Enterprises ⁶	490703	438500	511874	529582	7.9	20.8
(iv) Housing	755222	725674	748840	749534	-0.8	3.3
	(660572)	(624801)	(633763)	(661835)	(0.2)	(5.9)
(v) Education Loans	62235	60127	61523	61988	-0.4	3.1
(vi) Renewable Energy	5991	4727	7075	6844	14.2	44.8
(vii) Social Infrastructure	2613	2566	2937	1072	-59.0	-58.2
(viii) Export Credit	12855	13738	12163	11530	-10.3	-16.1
(ix) Others	61336	50079	58548	60587	-1.2	21.0
(x) Weaker Sections including net PSLC- SF/MF	1647778	1443758	1743686	1692726	2.7	17.2

Notes:

(1) Data are provisional. Bank credit, Food credit and Non-food credit data are based on Section-42 return, which covers all scheduled commercial banks (SCBs), while sectoral non-food credit data are based on sector-wise and industry-wise bank credit (SIBC) return, which covers select banks accounting for about 95 per cent of total non-food credit extended by all SCBs, pertaining to the last reporting Friday of the month.

(2) Data since July 28, 2023 include the impact of the merger of a non-bank with a bank. Figures in parentheses exclude the impact of the merger.

1 Wholesale trade includes food procurement credit outside the food credit consortium.

2 NBFCs include HFCs, PFIs, Microfinance Institutions (MFIs), NBFCs engaged in gold loan and others.

3 "Other Services" include Mutual Fund (MFs), Banking and Finance other than NBFCs and MFs and other services which are not indicated elsewhere under services.

4 "Agriculture and Allied Activities" under the priority sector also include priority sector lending certificates (PSLCs).

5 "Micro and Small Enterprises" under the priority sector include credit to micro and small enterprises in industry and services sectors and also include PSLCs.

6 "Medium Enterprises" under the priority sector include credit to medium enterprises in industry and services sectors.

No. 16: Industry-wise Deployment of Gross Bank Credit

(₹ Crore)

Industry	Outstanding as on				Growth(%)	
	Mar. 22, 2024	2024		Financial year so far	Y-o-Y	
		2023	2024			
		Aug. 25	Jul. 26	Aug. 23	2024-25	2024
	1	2	3	4	%	%
2 Industries (2.1 to 2.19)	3652804 (3635810)	3423736 (3405466)	3724547 (3707719)	3756194 (3740619)	2.8 (2.9)	9.7 (9.8)
2.1 Mining & Quarrying (incl. Coal)	54166	51165	54719	52810	-2.5	3.2
2.2 Food Processing	208864	174421	205744	199514	-4.5	14.4
2.2.1 Sugar	26383	17237	22622	20808	-21.1	20.7
2.2.2 Edible Oils & Vanaspati	19700	17624	18179	18436	-6.4	4.6
2.2.3 Tea	5692	5673	6058	6043	6.2	6.5
2.2.4 Others	157089	133887	158886	154227	-1.8	15.2
2.3 Beverage & Tobacco	31136	25040	30470	31077	-0.2	24.1
2.4 Textiles	256048	240548	255111	255993	0.0	6.4
2.4.1 Cotton Textiles	99199	92572	94890	94108	-5.1	1.7
2.4.2 Jute Textiles	4280	3714	4125	4130	-3.5	11.2
2.4.3 Man-Made Textiles	45111	40537	45754	46081	2.1	13.7
2.4.4 Other Textiles	107458	103725	110341	111675	3.9	7.7
2.5 Leather & Leather Products	12588	11947	12548	12615	0.2	5.6
2.6 Wood & Wood Products	23839	22037	24458	24731	3.7	12.2
2.7 Paper & Paper Products	46426	43610	47826	49051	5.7	12.5
2.8 Petroleum, Coal Products & Nuclear Fuels	132356	118231	136958	158505	19.8	34.1
2.9 Chemicals & Chemical Products	249347	221992	254881	257192	3.1	15.9
2.9.1 Fertiliser	37569	29693	34891	34119	-9.2	14.9
2.9.2 Drugs & Pharmaceuticals	81036	74023	82308	82683	2.0	11.7
2.9.3 Petro Chemicals	23157	21301	27879	29019	25.3	36.2
2.9.4 Others	107584	96974	109803	111370	3.5	14.8
2.10 Rubber, Plastic & their Products	90420	83334	89581	91839	1.6	10.2
2.11 Glass & Glassware	12090	10373	12431	12515	3.5	20.6
2.12 Cement & Cement Products	59757	59264	60728	60851	1.8	2.7
2.13 Basic Metal & Metal Product	384447	356361	402716	413557	7.6	16.1
2.13.1 Iron & Steel	273803	240583	285055	295207	7.8	22.7
2.13.2 Other Metal & Metal Product	110645	115778	117661	118350	7.0	2.2
2.14 All Engineering	196643	184962	204685	215640	9.7	16.6
2.14.1 Electronics	43175	41963	45156	52395	21.4	24.9
2.14.2 Others	153468	142998	159529	163244	6.4	14.2
2.15 Vehicles, Vehicle Parts & Transport Equipment	113185	108337	109189	112816	-0.3	4.1
2.16 Gems & Jewellery	84860	94630	82940	86229	1.6	-8.9
2.17 Construction	133520	127646	141194	141627	6.1	11.0
2.18 Infrastructure	1304096	1259843	1301135	1306202	0.2	3.7
2.18.1 Power	644042	613403	636926	638639	-0.8	4.1
2.18.2 Telecommunications	138192	134591	129614	132305	-4.3	-1.7
2.18.3 Roads	318072	314854	327581	328001	3.1	4.2
2.18.4 Airports	7280	7812	8004	8261	13.5	5.7
2.18.5 Ports	6681	7846	6331	6340	-5.1	-19.2
2.18.6 Railways	13062	11849	11835	11988	-8.2	1.2
2.18.7 Other Infrastructure	176767	169489	180844	180669	2.2	6.6
2.19 Other Industries	259016	229996	297232	273430	5.6	18.9

Note: (1) Data since July 28, 2023 include the impact of the merger of a non-bank with a bank. Figures in parentheses exclude the impact of the merger.

No. 17: State Co-operative Banks Maintaining Accounts with the Reserve Bank of India

(₹ Crore)

Item	Last Reporting Friday (in case of March)/Last Friday/ Reporting Friday								
	2023-24	2023		2024					
		Jul. 28	May 03	May 17	May 31	Jun. 14	Jun. 28	Jul. 12	Jul. 26
	1	2	3	4	5	6	7	8	9
Number of Reporting Banks	33	33	33	33	33	33	33	34	34
1 Aggregate Deposits (2.1.1.2+2.2.1.2)	138788.9	139476.4	137855.6	135672.9	135938.7	134828.9	133938.0	134144.6	134816.8
2 Demand and Time Liabilities									
2.1 Demand Liabilities	30226.7	28096.2	29748.9	27309.7	28297.6	28943.0	27801.7	27708.4	28112.2
2.1.1 Deposits									
2.1.1.1 Inter-Bank	9101.3	7260.0	7934.7	7634.3	7482.3	7685.6	7904.7	8145.7	8204.5
2.1.1.2 Others	15000.4	15206.0	16196.2	14617.1	15241.7	15296.8	14567.8	13823.1	13980.0
2.1.2 Borrowings from Banks	130.0		499.7		154.9	179.9			179.9
2.1.3 Other Demand Liabilities	5995.0	5630.2	5118.3	5058.3	5418.7	5780.7	5329.2	5739.6	5747.8
2.2 Time Liabilities	198141.8	184270.2	190499.2	189412.7	187897.4	185975.8	185708.9	183696.0	183917.4
2.2.1 Deposits									
2.2.1.1 Inter-Bank	72308.4	56504.5	66911.4	66378.9	65382.8	64573.2	64501.4	61491.5	61265.5
2.2.1.2 Others	123788.5	124270.4	121659.4	121055.8	120697.0	119532.1	119370.2	120321.5	120836.7
2.2.2 Borrowings from Banks	673.6	2399.5	879.3	920.1	663.8	653.2	653.2	651.8	653.8
2.2.3 Other Time Liabilities	1371.3	1095.8	1049.1	1057.9	1153.8	1217.2	1184.1	1231.2	1161.3
3 Borrowing from Reserve Bank	0.0		150.0						
4 Borrowings from a notified bank / Government	95914.5	69968.4	85136.5	84716.3	84175.6	84574.6	85281.4	86852.7	86318.6
4.1 Demand	27317.7	17964.1	23767.7	23507.7	23112.7	23242.7	23887.4	24191.9	24467.9
4.2 Time	68596.8	52004.3	61368.8	61208.6	61062.9	61331.9	61394.0	62660.8	61850.7
5 Cash in Hand and Balances with Reserve Bank	16263.7	11770.2	13141.4	10494.5	12165.3	11435.2	13323.7	12646.4	13611.0
5.1 Cash in Hand	960.0	766.7	819.5	853.6	714.6	770.9	759.4	797.8	687.9
5.2 Balance with Reserve Bank	15303.7	11003.5	12321.9	9640.9	11450.7	10664.3	12564.3	11848.6	12923.1
6 Balances with Other Banks in Current Account	2088.1	1704.7	1573.3	1480.0	1528.5	1694.6	1631.9	2109.0	1700.0
7 Investments in Government Securities	77700.5	72244.8	75604.0	76369.8	76376.5	76482.9	75500.4	76042.2	75409.2
8 Money at Call and Short Notice	34355.3	20748.8	22827.2	22441.5	21180.5	19092.4	20740.5	18751.9	18960.1
9 Bank Credit (10.1+11)	135141.9	127405.4	137182.4	135776.2	135733.7	137026.6	134324.1	137253.1	136993.2
10 Advances									
10.1 Loans, Cash-Credits and Overdrafts	134936.8	127329.1	136992.2	135600.7	135524.3	136811.1	134111.9	137025.2	136836.3
10.2 Due from Banks	142185.2	119210.1	135859.4	135411.7	136109.4	136794.5	135046.8	135412.8	134692.9
11 Bills Purchased and Discounted	205.1	76.3	190.2	175.5	209.4	215.5	212.2	227.9	156.9

Prices and Production

No. 18: Consumer Price Index (Base: 2012=100)

Group/Sub group	2023-24			Rural			Urban			Combined		
	Rural	Urban	Combined	Sep.23	Aug.24	Sep.24 (P)	Sep.23	Aug.24	Sep.24 (P)	Sep.23	Aug.24	Sep.24 (P)
	1	2	3	4	5	6	7	8	9	10	11	12
1 Food and beverages	185.9	192.7	188.4	186.7	200.2	202.1	193.0	207.1	209.5	189.0	202.7	204.8
1.1 Cereals and products	181.4	181.7	181.5	181.4	192.6	194.3	181.3	191.9	192.8	181.4	192.4	193.8
1.2 Meat and fish	213.0	221.3	215.9	214.5	220.1	220.2	223.7	229.2	229.5	217.7	223.3	223.5
1.3 Egg	185.4	189.5	187.0	178.5	188.0	190.2	184.2	190.7	195.2	180.7	189.0	192.1
1.4 Milk and products	181.4	181.5	181.4	181.5	186.2	186.6	181.6	187.1	187.6	181.5	186.5	187.0
1.5 Oils and fats	165.3	158.7	162.9	164.5	164.1	169.4	158.3	157.1	160.8	162.2	161.5	166.2
1.6 Fruits	172.1	179.9	175.7	173.6	186.1	188.1	182.7	197.5	195.1	177.8	191.4	191.4
1.7 Vegetables	183.9	229.9	199.5	184.5	245.0	251.0	225.5	291.2	306.4	198.4	260.7	269.8
1.8 Pulses and products	192.2	196.5	193.7	195.0	212.5	214.1	200.1	219.0	219.7	196.7	214.7	216.0
1.9 Sugar and confectionery	126.2	128.1	126.9	126.6	130.7	131.0	128.4	132.8	132.9	127.2	131.4	131.6
1.10 Spices	238.0	228.4	234.8	246.3	229.6	229.6	236.0	225.0	224.7	242.9	228.1	228.0
1.11 Non-alcoholic beverages	180.7	168.2	175.5	180.5	183.8	184.7	168.2	172.8	173.3	175.4	179.2	179.9
1.12 Prepared meals, snacks, sweets	193.3	200.9	196.8	193.2	198.5	198.9	200.7	208.3	209.3	196.7	203.0	203.7
2 Pan, tobacco and intoxicants	202.0	207.1	203.3	202.2	206.8	206.9	207.2	213.1	213.3	203.5	208.5	208.6
3 Clothing and footwear	192.9	181.5	188.4	192.7	197.2	197.6	181.2	186.0	186.5	188.1	192.8	193.2
3.1 Clothing	193.5	183.5	189.6	193.3	198.0	198.5	183.2	188.1	188.7	189.3	194.1	194.6
3.2 Footwear	189.4	170.2	181.4	189.4	192.3	192.4	170.2	174.2	174.7	181.4	184.8	185.0
4 Housing	--	176.7	176.7	--	--	--	176.2	181.1	181.1	176.2	181.1	181.1
5 Fuel and light	183.0	178.9	181.4	181.6	180.9	181.0	175.5	169.8	169.8	179.3	176.7	176.8
6 Miscellaneous	181.7	173.7	177.8	181.6	188.3	189.0	173.7	180.1	180.8	177.8	184.3	185.0
6.1 Household goods and services	181.5	171.8	176.9	181.3	184.9	185.2	171.7	176.4	177.0	176.8	180.9	181.3
6.2 Health	190.8	185.2	188.7	190.4	197.3	197.9	184.9	192.2	193.0	188.3	195.4	196.0
6.3 Transport and communication	171.1	161.4	166.0	171.3	176.1	176.3	161.3	165.3	165.4	166.0	170.4	170.6
6.4 Recreation and amusement	175.8	171.1	173.2	175.9	179.6	179.8	171.2	174.9	175.4	173.3	177.0	177.3
6.5 Education	184.0	179.1	181.1	184.9	191.7	191.6	180.3	186.5	187.4	182.2	188.7	189.1
6.6 Personal care and effects	186.3	187.4	186.8	185.1	199.1	201.4	186.1	201.0	203.4	185.5	199.9	202.2
General Index (All Groups)	185.6	182.4	184.1	185.8	195.4	196.7	182.2	190.3	191.4	184.1	193.0	194.2

Source: National Statistical Office, Ministry of Statistics and Programme Implementation, Government of India.

P: Provisional

No. 19: Other Consumer Price Indices

Item	Base Year	Linking Factor	2023-24		2023	2024	
			1	2	3	4	5
							6
1 Consumer Price Index for Industrial Workers	2016	2.88	137.9		139.2	142.7	142.6
2 Consumer Price Index for Agricultural Labourers	1986-87	5.89	1229		1224	1290	1297
3 Consumer Price Index for Rural Labourers	1986-87	-	1240		1234	1302	1309

Source: Labour Bureau, Ministry of Labour and Employment, Government of India.

No. 20: Monthly Average Price of Gold and Silver in Mumbai

Item	2023-24	2023		2024	
		Aug.	Jul.	Aug.	Jul.
		1	2	3	4
1 Standard Gold (₹ per 10 grams)		60624	58738	71189	70441
2 Silver (₹ per kilogram)		72243	72135	88058	82751

Source: India Bullion & Jewellers Association Ltd., Mumbai for Gold and Silver prices in Mumbai.

No. 21: Wholesale Price Index

(Base: 2011-12 = 100)

Commodities	Weight	2023-24	2023		2024	
			Sep.	Jul.	Aug.(P)	Sep.(P)
	1	2	3	4	5	6
1 ALL COMMODITIES	100.000	151.4	151.8	155.3	154.5	154.6
1.1 PRIMARY ARTICLES	22.618	183.0	183.6	197.8	194.9	195.7
1.1.1 FOOD ARTICLES	15.256	191.3	189.1	213.1	209.1	210.9
1.1.1.1 Food Grains (Cereals+Pulses)	3.462	193.8	194.2	208.1	209.7	211.8
1.1.1.2 Fruits & Vegetables	3.475	210.2	198.5	277.6	259.1	263.8
1.1.1.3 Milk	4.440	180.3	180.0	186.0	185.9	185.7
1.1.1.4 Eggs, Meat & Fish	2.402	172.1	174.2	173.7	173.2	172.8
1.1.1.5 Condiments & Spices	0.529	235.4	254.0	237.0	237.0	244.6
1.1.1.6 Other Food Articles	0.948	189.5	180.7	207.8	207.3	209.1
1.1.2 NON-FOOD ARTICLES	4.119	162.4	164.6	158.9	159.8	161.9
1.1.2.1 Fibres	0.839	168.0	171.4	163.9	160.6	163.8
1.1.2.2 Oil Seeds	1.115	185.0	185.5	180.2	177.7	183.6
1.1.2.3 Other non-food Articles	1.960	134.9	137.9	137.1	140.0	140.2
1.1.2.4 Floriculture	0.204	279.7	277.6	232.6	248.6	244.7
1.1.3 MINERALS	0.833	217.7	220.9	226.6	223.5	227.6
1.1.3.1 Metallic Minerals	0.648	204.2	200.6	212.4	212.4	217.4
1.1.3.2 Other Minerals	0.185	265.0	292.1	276.5	262.4	263.4
1.1.4 CRUDE PETROLEUM & NATURAL GAS	2.410	153.6	168.0	157.9	155.0	146.1
1.2 FUEL & POWER	13.152	152.0	153.1	148.2	148.1	146.9
1.2.1 COAL	2.138	136.4	136.7	135.6	135.6	135.6
1.2.1.1 Coking Coal	0.647	143.4	143.4	143.4	143.4	143.4
1.2.1.2 Non-Coking Coal	1.401	124.8	125.8	125.8	125.8	125.8
1.2.1.3 Lignite	0.090	267.6	258.1	232.0	232.0	232.0
1.2.2 MINERAL OILS	7.950	159.0	163.7	157.4	156.9	154.2
1.2.3 ELECTRICITY	3.064	145.0	137.0	132.9	134.0	135.8
1.3 MANUFACTURED PRODUCTS	64.231	140.2	140.4	141.7	141.6	141.8
1.3.1 MANUFACTURE OF FOOD PRODUCTS	9.122	160.5	160.4	166.1	166.6	169.2
1.3.1.1 Processing and Preserving of meat	0.134	145.3	143.6	155.7	153.7	152.6
1.3.1.2 Processing and Preserving of fish, Crustaceans, Molluscs and products thereof	0.204	142.9	143.4	141.9	147.1	142.5
1.3.1.3 Processing and Preserving of fruit and Vegetables	0.138	130.4	130.8	131.8	131.8	132.8
1.3.1.4 Vegetable and Animal oils and Fats	2.643	145.0	142.7	149.3	150.2	157.7
1.3.1.5 Dairy products	1.165	179.1	180.0	178.5	178.5	179.6
1.3.1.6 Grain mill products	2.010	175.6	176.6	184.9	185.4	185.9
1.3.1.7 Starches and Starch products	0.110	157.1	152.7	169.4	173.2	174.3
1.3.1.8 Bakery products	0.215	165.4	165.5	167.3	167.3	168.7
1.3.1.9 Sugar, Molasses & honey	1.163	134.6	134.5	138.3	139.6	138.7
1.3.1.10 Cocoa, Chocolate and Sugar confectionery	0.175	139.8	138.3	155.2	157.1	160.3
1.3.1.11 Macaroni, Noodles, Couscous and Similar farinaceous products	0.026	149.9	149.6	150.8	150.8	153.6
1.3.1.12 Tea & Coffee products	0.371	176.2	178.9	205.9	199.4	202.6
1.3.1.13 Processed condiments & salt	0.163	192.1	193.8	191.6	192.9	192.4
1.3.1.14 Processed ready to eat food	0.024	146.3	146.4	151.9	151.1	151.5
1.3.1.15 Health supplements	0.225	179.1	181.7	184.6	186.2	186.8
1.3.1.16 Prepared animal feeds	0.356	208.3	212.1	207.4	208.4	210.6
1.3.2 MANUFACTURE OF BEVERAGES	0.909	131.5	131.3	133.5	133.9	133.9
1.3.2.1 Wines & spirits	0.408	133.3	133.3	135.1	135.7	135.9
1.3.2.2 Malt liquors and Malt	0.225	135.6	135.2	138.2	138.7	137.2
1.3.2.3 Soft drinks; Production of mineral waters and Other bottled waters	0.275	125.5	125.2	127.3	127.3	128.2
1.3.3 MANUFACTURE OF TOBACCO PRODUCTS	0.514	173.5	173.8	176.7	178.9	176.9
1.3.3.1 Tobacco products	0.514	173.5	173.8	176.7	178.9	176.9

No. 21: Wholesale Price Index (Contd.)

(Base: 2011-12 = 100)

Commodities	Weight	2023-24	2023		2024	
			Sep.	Jul.	Aug.(P)	Sep.(P)
			1	2	3	4
1.3.4 MANUFACTURE OF TEXTILES	4.881	134.6	134.3	136.8	136.5	135.8
1.3.4.1 Preparation and Spinning of textile fibres	2.582	120.1	120.0	122.4	122.5	121.6
1.3.4.2 Weaving & Finishing of textiles	1.509	157.5	157.1	158.2	157.6	156.3
1.3.4.3 Knitted and Crocheted fabrics	0.193	120.0	119.1	125.0	123.6	123.4
1.3.4.4 Made-up textile articles, Except apparel	0.299	156.6	156.8	159.1	160.2	160.7
1.3.4.5 Cordage, Rope, Twine and Netting	0.098	139.2	139.2	141.1	141.1	141.1
1.3.4.6 Other textiles	0.201	129.6	125.2	136.7	133.7	135.8
1.3.5 MANUFACTURE OF WEARING APPAREL	0.814	150.8	150.6	152.2	152.8	153.5
1.3.5.1 Manufacture of Wearing Apparel (woven), Except fur Apparel	0.593	148.7	148.4	150.1	150.2	150.9
1.3.5.2 Knitted and Crocheted apparel	0.221	156.6	156.4	157.7	159.7	160.5
1.3.6 MANUFACTURE OF LEATHER AND RELATED PRODUCTS	0.535	124.1	123.9	124.4	124.7	125.1
1.3.6.1 Tanning and Dressing of leather; Dressing and Dyeing of fur	0.142	107.3	106.2	103.8	103.6	105.1
1.3.6.2 Luggage, Handbags, Saddlery and Harness	0.075	140.9	141.2	141.9	142.9	142.7
1.3.6.3 Footwear	0.318	127.7	127.7	129.4	129.9	129.8
1.3.7 MANUFACTURE OF WOOD AND PRODUCTS OF WOOD AND CORK	0.772	146.6	146.5	149.4	149.5	148.8
1.3.7.1 Saw milling and Planing of wood	0.124	137.8	138.7	140.2	140.8	141.9
1.3.7.2 Veneer sheets; Manufacture of plywood, Laminboard, Particle board and Other panels and Boards	0.493	146.1	146.3	149.0	149.0	147.6
1.3.7.3 Builder's carpentry and Joinery	0.036	206.4	203.2	215.6	215.9	216.4
1.3.7.4 Wooden containers	0.119	139.8	138.7	141.2	141.1	140.9
1.3.8 MANUFACTURE OF PAPER AND PAPER PRODUCTS	1.113	140.3	138.4	138.5	139.7	139.4
1.3.8.1 Pulp, Paper and Paperboard	0.493	147.6	145.7	144.7	145.3	144.8
1.3.8.2 Corrugated paper and Paperboard and Containers of paper and Paperboard	0.314	140.9	140.1	144.9	146.1	145.8
1.3.8.3 Other articles of paper and Paperboard	0.306	128.0	124.9	121.9	124.1	124.0
1.3.9 PRINTING AND REPRODUCTION OF RECORDED MEDIA	0.676	182.3	182.5	186.5	186.0	185.2
1.3.9.1 Printing	0.676	182.3	182.5	186.5	186.0	185.2
1.3.10 MANUFACTURE OF CHEMICALS AND CHEMICAL PRODUCTS	6.465	136.9	136.3	136.7	136.6	136.4
1.3.10.1 Basic chemicals	1.433	139.9	139.0	137.6	137.7	138.0
1.3.10.2 Fertilizers and Nitrogen compounds	1.485	142.8	140.6	143.4	143.2	142.7
1.3.10.3 Plastic and Synthetic rubber in primary form	1.001	132.3	132.8	135.3	134.2	133.4
1.3.10.4 Pesticides and Other agrochemical products	0.454	132.8	132.8	128.9	128.8	129.4
1.3.10.5 Paints, Varnishes and Similar coatings, Printing ink and Mastics	0.491	143.7	144.2	140.2	140.3	141.1
1.3.10.6 Soap and Detergents, Cleaning and Polishing preparations, Perfumes and Toilet preparations	0.612	139.7	140.0	138.8	138.9	139.1
1.3.10.7 Other chemical products	0.692	134.4	134.1	136.1	136.4	136.2
1.3.10.8 Man-made fibres	0.296	103.6	103.4	107.0	106.9	104.7
1.3.11 MANUFACTURE OF PHARMACEUTICALS, MEDICINAL CHEMICAL AND BOTANICAL PRODUCTS	1.993	142.9	142.7	144.7	144.6	144.8
1.3.11.1 Pharmaceuticals, Medicinal chemical and Botanical products	1.993	142.9	142.7	144.7	144.6	144.8
1.3.12 MANUFACTURE OF RUBBER AND PLASTICS PRODUCTS	2.299	127.5	128.0	129.1	129.0	129.0
1.3.12.1 Rubber Tyres and Tubes; Retreading and Rebuilding of Rubber Tyres	0.609	113.7	113.4	114.6	114.6	115.1
1.3.12.2 Other Rubber Products	0.272	107.3	106.8	112.9	112.7	113.9
1.3.12.3 Plastics products	1.418	137.3	138.2	138.5	138.3	137.8
1.3.13 MANUFACTURE OF OTHER NON-METALLIC MINERAL PRODUCTS	3.202	134.7	135.0	130.0	129.8	130.4
1.3.13.1 Glass and Glass products	0.295	163.8	163.5	163.4	163.2	164.1
1.3.13.2 Refractory products	0.223	119.7	119.6	118.8	118.8	119.7
1.3.13.3 Clay Building Materials	0.121	123.9	130.3	119.0	121.6	123.9
1.3.13.4 Other Porcelain and Ceramic Products	0.222	122.3	122.1	124.6	124.6	124.6
1.3.13.5 Cement, Lime and Plaster	1.645	137.3	137.4	128.7	127.9	128.4

No. 21: Wholesale Price Index (Contd.)

(Base: 2011-12 = 100)

Commodities	Weight	2023-24	2023		2024		
			Sep.	Jul.	Aug.(P)	Sep.(P)	
	1	2	3	4	5	6	
1.3.13.6 Articles of Concrete, Cement and Plaster	0.292	137.7	138.2	138.3	138.2	138.0	
1.3.13.7 Cutting, Shaping and Finishing of Stone	0.234	130.3	131.3	133.2	133.7	135.4	
1.3.13.8 Other Non-Metallic Mineral Products	0.169	102.4	101.5	95.7	96.8	97.2	
1.3.14 MANUFACTURE OF BASIC METALS	9.646	141.0	143.0	140.8	139.5	138.5	
1.3.14.1 Inputs into steel making	1.411	140.3	145.7	135.6	133.1	130.4	
1.3.14.2 Metallic Iron	0.653	153.6	156.0	148.4	146.5	142.8	
1.3.14.3 Mild Steel - Semi Finished Steel	1.274	119.9	121.7	118.7	117.8	117.0	
1.3.14.4 Mild Steel -Long Products	1.081	141.3	143.8	139.7	138.9	138.8	
1.3.14.5 Mild Steel - Flat products	1.144	143.4	144.7	138.8	137.0	133.3	
1.3.14.6 Alloy steel other than Stainless Steel- Shapes	0.067	137.6	140.1	136.5	134.6	133.5	
1.3.14.7 Stainless Steel - Semi Finished	0.924	136.4	137.1	130.8	128.9	131.9	
1.3.14.8 Pipes & tubes	0.205	169.7	169.5	166.3	166.3	163.7	
1.3.14.9 Non-ferrous metals incl. precious metals	1.693	144.8	144.5	156.2	154.7	155.7	
1.3.14.10 Castings	0.925	141.0	144.4	145.2	145.4	144.4	
1.3.14.11 Forgings of steel	0.271	173.3	174.0	171.6	170.7	170.8	
1.3.15 MANUFACTURE OF FABRICATED METAL PRODUCTS, EXCEPT MACHINERY AND EQUIPMENT	3.155	138.6	139.4	136.3	136.8	136.4	
1.3.15.1 Structural Metal Products	1.031	132.3	134.5	131.1	131.2	131.4	
1.3.15.2 Tanks, Reservoirs and Containers of Metal	0.660	157.6	157.1	151.4	152.0	150.6	
1.3.15.3 Steam generators, Except Central Heating Hot Water Boilers	0.145	106.3	106.1	111.5	111.5	110.8	
1.3.15.4 Forging, Pressing, Stamping and Roll-Forming of Metal; Powder Metallurgy	0.383	141.4	143.3	135.6	138.4	138.6	
1.3.15.5 Cutlery, Hand Tools and General Hardware	0.208	108.4	108.4	101.7	101.9	102.0	
1.3.15.6 Other Fabricated Metal Products	0.728	143.8	143.5	145.1	145.1	144.3	
1.3.16 MANUFACTURE OF COMPUTER, ELECTRONIC AND OPTICAL PRODUCTS	2.009	119.3	119.8	121.1	121.3	121.7	
1.3.16.1 Electronic Components	0.402	115.0	116.7	117.7	117.4	117.6	
1.3.16.2 Computers and Peripheral Equipment	0.336	135.3	135.9	136.0	136.2	135.4	
1.3.16.3 Communication Equipment	0.310	136.1	136.1	145.4	145.4	145.1	
1.3.16.4 Consumer Electronics	0.641	103.6	103.5	100.5	100.5	101.2	
1.3.16.5 Measuring, Testing, Navigating and Control equipment	0.181	113.8	114.0	118.1	118.1	120.9	
1.3.16.6 Watches and Clocks	0.076	157.2	158.0	163.1	166.3	166.3	
1.3.16.7 Irradiation, Electromedical and Electrotherapeutic equipment	0.055	108.3	109.6	111.1	115.0	117.7	
1.3.16.8 Optical instruments and Photographic equipment	0.008	103.8	103.5	106.7	106.7	106.9	
1.3.17 MANUFACTURE OF ELECTRICAL EQUIPMENT	2.930	131.4	131.3	133.4	133.4	133.4	
1.3.17.1 Electric motors, Generators, Transformers and Electricity distribution and Control apparatus	1.298	130.1	129.9	131.1	131.4	131.6	
1.3.17.2 Batteries and Accumulators	0.236	137.8	137.2	141.7	141.8	141.3	
1.3.17.3 Fibre optic cables for data transmission or live transmission of images	0.133	123.4	124.8	120.7	120.7	121.2	
1.3.17.4 Other electronic and Electric wires and Cables	0.428	146.1	146.8	154.4	153.4	153.1	
1.3.17.5 Wiring devices, Electric lighting & display equipment	0.263	116.8	116.2	119.0	119.1	118.7	
1.3.17.6 Domestic appliances	0.366	133.8	133.2	132.1	132.4	132.3	
1.3.17.7 Other electrical equipment	0.206	120.9	120.8	123.3	122.6	123.0	
1.3.18 MANUFACTURE OF MACHINERY AND EQUIPMENT	4.789	129.0	129.2	130.5	130.7	130.8	
1.3.18.1 Engines and Turbines, Except aircraft, Vehicle and Two wheeler engines	0.638	128.9	129.3	133.0	132.4	133.6	
1.3.18.2 Fluid power equipment	0.162	131.9	131.2	134.5	133.9	133.7	
1.3.18.3 Other pumps, Compressors, Taps and Valves	0.552	117.4	116.6	118.2	118.2	118.5	
1.3.18.4 Bearings, Gears, Gearing and Driving elements	0.340	127.7	127.1	128.0	127.9	126.2	
1.3.18.5 Ovens, Furnaces and Furnace burners	0.008	83.7	82.3	86.7	83.8	88.4	
1.3.18.6 Lifting and Handling equipment	0.285	128.6	128.2	130.3	129.6	129.9	

No. 21: Wholesale Price Index (Concl'd.)
 (Base: 2011-12 = 100)

Commodities	Weight	2023-24	2023		2024		
			Sep.	Jul.	Aug.(P)	Sep.(P)	
		1	2	3	4	5	6
1.3.18.7 Office machinery and Equipment	0.006	130.2	130.2	130.2	130.2	130.2	130.2
1.3.18.8 Other general-purpose machinery	0.437	145.2	146.7	146.8	149.2	148.3	
1.3.18.9 Agricultural and Forestry machinery	0.833	142.5	142.2	143.5	144.3	145.0	
1.3.18.10 Metal-forming machinery and Machine tools	0.224	122.5	122.9	122.7	122.8	122.8	
1.3.18.11 Machinery for mining, Quarrying and Construction	0.371	88.6	89.6	89.0	88.9	88.9	
1.3.18.12 Machinery for food, Beverage and Tobacco processing	0.228	124.4	124.5	126.0	126.2	126.1	
1.3.18.13 Machinery for textile, Apparel and Leather production	0.192	137.2	139.3	139.3	141.9	141.1	
1.3.18.14 Other special-purpose machinery	0.468	144.7	144.5	145.3	145.1	144.9	
1.3.18.15 Renewable electricity generating equipment	0.046	70.8	71.0	69.7	69.1	69.0	
1.3.19 MANUFACTURE OF MOTOR VEHICLES, TRAILERS AND SEMI-TRAILERS	4.969	128.4	128.0	130.0	130.0	129.6	
1.3.19.1 Motor vehicles	2.600	128.5	128.2	130.8	130.5	130.0	
1.3.19.2 Parts and Accessories for motor vehicles	2.368	128.2	127.6	129.2	129.4	129.1	
1.3.20 MANUFACTURE OF OTHER TRANSPORT EQUIPMENT	1.648	143.1	144.6	144.6	144.6	144.8	
1.3.20.1 Building of ships and Floating structures	0.117	163.7	163.7	177.9	177.9	177.9	
1.3.20.2 Railway locomotives and Rolling stock	0.110	107.4	106.6	109.8	110.0	108.2	
1.3.20.3 Motor cycles	1.302	144.7	146.6	145.3	145.4	145.9	
1.3.20.4 Bicycles and Invalid carriages	0.117	137.9	138.1	136.0	135.2	133.7	
1.3.20.5 Other transport equipment	0.002	159.2	159.8	160.2	158.9	162.9	
1.3.21 MANUFACTURE OF FURNITURE	0.727	159.6	160.1	158.7	159.1	159.7	
1.3.21.1 Furniture	0.727	159.6	160.1	158.7	159.1	159.7	
1.3.22 OTHER MANUFACTURING	1.064	158.2	154.8	178.8	174.1	178.9	
1.3.22.1 Jewellery and Related articles	0.996	157.9	154.3	180.0	175.0	180.1	
1.3.22.2 Musical instruments	0.001	187.0	180.3	200.0	201.4	204.7	
1.3.22.3 Sports goods	0.012	155.2	155.9	163.0	163.6	164.4	
1.3.22.4 Games and Toys	0.005	159.6	159.9	162.2	164.1	163.2	
1.3.22.5 Medical and Dental instruments and Supplies	0.049	163.1	162.7	158.6	159.7	159.7	
2 FOOD INDEX	24.378	179.8	178.4	195.5	193.2	195.3	

Source: Office of the Economic Adviser, Ministry of Commerce and Industry, Government of India.

No. 22: Index of Industrial Production (Base:2011-12=100)

Industry	Weight	2022-23	2023-24	Apr-Aug		Aug	
				2023-24	2024-25	2023	2024
		1	2	3	4	5	6
General Index	100.00	138.5	146.7	143.7	149.7	145.8	145.6
1 Sectoral Classification							
1.1 Mining	14.37	119.9	128.9	119.4	125.1	111.9	107.1
1.2 Manufacturing	77.63	137.1	144.7	142.0	147.1	144.4	145.9
1.3 Electricity	7.99	185.2	198.3	204.7	219.3	220.5	212.3
2 Use-Based Classification							
2.1 Primary Goods	34.05	139.2	147.7	145.2	152.2	145.4	141.6
2.2 Capital Goods	8.22	100.3	106.6	102.4	106.8	107.4	108.1
2.3 Intermediate Goods	17.22	149.4	157.3	154.9	161.0	157.4	162.2
2.4 Infrastructure/ Construction Goods	12.34	160.7	176.3	172.2	182.4	176.8	180.2
2.5 Consumer Durables	12.84	114.5	118.6	116.1	126.6	123.2	129.6
2.6 Consumer Non-Durables	15.33	147.7	153.7	150.6	147.6	148.3	141.6

Source : Central Statistics Office, Ministry of Statistics and Programme Implementation, Government of India.

Government Accounts and Treasury Bills

No. 23: Union Government Accounts at a Glance

(₹ Crore)

Item	Financial Year		April – August		
	2024-25 (Budget Estimates)	2024-25 (Actuals)	2023-24 (Actuals)	Percentage to Budget Estimates	
				2024-25	2023-24
1	2	3	4	5	6
1 Revenue Receipts	3129200	1208312	1013526	38.6	38.5
1.1 Tax Revenue (Net)	2583499	873845	803944	33.8	34.5
1.2 Non-Tax Revenue	545701	334467	209582	61.3	69.5
2 Non Debt Capital Receipt	78000	8866	15405	11.4	18.3
2.1 Recovery of Loans	28000	8046	9804	28.7	42.6
2.2 Other Receipts	50000	820	5601	1.6	9.2
3 Total Receipts (excluding borrowings) (1+2)	3207200	1217178	1028931	38.0	37.9
4 Revenue Expenditure of which :	3709401	1351367	1297958	36.4	37.1
4.1 Interest Payments	1162940	400160	367539	34.4	34.0
5 Capital Expenditure	1111111	300987	373799	27.1	37.3
6 Total Expenditure (4+5)	4820512	1652354	1671757	34.3	37.1
7 Revenue Deficit (4-1)	580201	143055	284432	24.7	32.7
8 Fiscal Deficit (6-3)	1613312	435176	642826	27.0	36.0
9 Gross Primary Deficit (8-4.1)	450372	35016	275287	7.8	38.9

Source: Controller General of Accounts (CGA), Ministry of Finance, Government of India and Interim Union Budget 2024-25.

No. 24: Treasury Bills – Ownership Pattern

(₹ Crore)

Item	2023-24	2023		2024					
		Sep. 1	Jul. 26	Aug. 2	Aug. 9	Aug. 16	Aug. 23	Aug. 30	
		1	2	3	4	5	6	7	8
1 91-day									
1.1 Banks	18054	27168	2466	1874	2002	2128	3715	2796	
1.2 Primary Dealers	22676	20746	9749	8305	6419	5694	7947	9371	
1.3 State Governments	5701	32801	46140	46840	53840	59087	61087	66587	
1.4 Others	88670	104286	95885	92021	90779	87779	86638	90133	
2 182-day									
2.1 Banks	84913	73493	51248	51588	55151	53899	55945	55481	
2.2 Primary Dealers	87779	116497	57730	50971	50994	49915	46735	44716	
2.3 State Governments	4070	22413	14922	14947	14947	15947	15947	16093	
2.4 Others	102311	108010	119522	122541	115955	114286	106420	99903	
3 364-day									
3.1 Banks	91819	88017	90700	89256	87320	84064	86463	82259	
3.2 Primary Dealers	159085	165244	137182	137276	117206	117872	120165	123440	
3.3 State Governments	41487	46238	38525	38623	36122	37094	38128	37845	
3.4 Others	165095	152739	164118	165468	187474	190064	185373	186301	
4 14-day Intermediate									
4.1 Banks									
4.2 Primary Dealers									
4.3 State Governments	318736	118211	175531	139334	107480	159041	182562	180908	
4.4 Others	442	804	1008	2076	819	366	1298	1073	
Total Treasury Bills (Excluding 14 day Intermediate T Bills) #	871662	957652	828188	819711	818209	817829	814562	814924	

14D intermediate T-Bills are non-marketable unlike 91D, 182D and 364D T-Bills. These bills are 'intermediate' by nature as these are liquidated to replenish shortfall in the daily minimum cash balances of State Governments.

Note: Primary Dealers (PDs) include banks undertaking PD business.

No. 25: Auctions of Treasury Bills

(Amount in ₹ Crore)

Date of Auction	Notified Amount	Bids Received				Bids Accepted				Total Issue (6+7)	Cutoff Price (₹)	Implicit Yield at Cut-off Price (per cent)			
		Number	Total Face Value		Number	Total Face Value		Competitive	Non-Competitive						
			Competitive	Non-Competitive		Competitive	Non-Competitive								
		1	2	3	4	5	6	7	8	9	10				
91-day Treasury Bills															
2024-25															
Jul. 31	8000	95	19776	748	47	7952	748	8700	98.36	6.6736					
Aug. 7	8000	94	24049	9057	45	7943	9057	17000	98.37	6.6351					
Aug. 14	8000	91	19852	6085	57	7962	6085	14047	98.38	6.6152					
Aug. 21	8000	91	20717	9094	42	7906	9094	17000	98.37	6.6388					
Aug. 28	8000	82	20488	7044	41	7956	7044	15000	98.37	6.6342					
182-day Treasury Bills															
2024-25															
Jul. 31	6000	99	17547	1661	53	5964	1661	7625	96.73	6.7885					
Aug. 7	6000	132	24362	1524	49	5976	1524	7500	96.75	6.7284					
Aug. 14	6000	81	16569	1022	33	5978	1022	7000	96.75	6.7282					
Aug. 21	6000	119	23019	1029	41	5971	1029	7000	96.76	6.7239					
Aug. 28	6000	90	19914	168	38	5978	168	6145	96.76	6.7210					
364-day Treasury Bills															
2024-25															
Jul. 31	6000	124	25880	361	49	5984	361	6345	93.65	6.7985					
Aug. 7	6000	127	37186	278	13	5969	278	6247	93.71	6.7300					
Aug. 14	6000	111	26286	2777	30	5987	2777	8764	93.72	6.7240					
Aug. 21	6000	106	25730	2033	33	5985	2033	8019	93.71	6.7284					
Aug. 28	6000	107	27850	1127	21	5985	1127	7112	93.72	6.7175					

Financial Markets

No. 26: Daily Call Money Rates

(Per cent per annum)

As on	Range of Rates	Weighted Average Rates
	Borrowings/ Lendings	Borrowings/ Lendings
	1	2
August 01 ,2024	5.10-6.55	6.47
August 02 ,2024	5.10-6.55	6.45
August 03 ,2024	5.50-6.50	6.08
August 05 ,2024	5.10-6.55	6.45
August 06 ,2024	5.10-6.50	6.41
August 07 ,2024	5.10-6.75	6.47
August 08 ,2024	5.10-6.80	6.65
August 09 ,2024	5.10-6.65	6.53
August 12 ,2024	5.10-6.55	6.47
August 13 ,2024	5.10-6.55	6.48
August 14 ,2024	5.10-6.60	6.48
August 16 ,2024	5.10-6.55	6.47
August 17 ,2024	5.50-6.40	6.16
August 19 ,2024	5.70-6.55	6.49
August 20 ,2024	5.10-6.60	6.50
August 21 ,2024	5.10-6.60	6.53
August 22 ,2024	5.10-6.65	6.52
August 23 ,2024	5.10-6.60	6.51
August 26 ,2024	5.75-6.60	6.52
August 27 ,2024	5.10-6.60	6.51
August 28 ,2024	5.10-6.75	6.56
August 29 ,2024	5.10-7.00	6.66
August 30 ,2024	5.10-6.85	6.67
August 31 ,2024	5.75-6.40	6.13
September 02 ,2024	5.10-6.60	6.49
September 03 ,2024	5.10-6.55	6.47
September 04 ,2024	5.10-6.55	6.46
September 05 ,2024	5.10-6.65	6.49
September 06 ,2024	5.10-6.60	6.48
September 09 ,2024	5.10-6.60	6.52
September 10 ,2024	5.10-6.60	6.50
September 11 ,2024	5.10-6.65	6.54
September 12 ,2024	5.10-6.60	6.52
September 13 ,2024	5.10-6.75	6.62

Note: Includes Notice Money.

No. 27: Certificates of Deposit

Item	2023		2024		
	Aug. 25		Jul. 12	Jul. 26	Aug. 9
	1	2	3	4	5
1 Amount Outstanding (₹ Crore)	301277.83	424835.55	424747.21	435778.32	446580.44
1.1 Issued during the fortnight (₹ Crore)	34741.11	34710.85	23643.34	26212.32	46185.89
2 Rate of Interest (per cent)	6.88-7.67	6.95-7.24	7.02-7.26	6.96-7.56	7.03-7.68

No. 28: Commercial Paper

Item	2023		2024		
	Aug. 31		Jul. 15	Jul. 31	Aug. 15
	1	2	3	4	5
1 Amount Outstanding (₹ Crore)	450064.05	440818.85	458911.05	473153.85	471121.50
1.1 Reported during the fortnight (₹ Crore)	73816.05	37452.10	67966.95	63925.50	78270.05
2 Rate of Interest (per cent)	6.93-16.55	6.93-11.69	6.89-12.07	6.97-11.69	6.90-13.77

No. 29: Average Daily Turnover in Select Financial Markets

(₹ Crore)

Item	2023-24	2023		2024				
		Sep. 1	Jul. 26	Aug. 2	Aug. 9	Aug. 16	Aug. 23	Aug. 30
		1	2	3	4	5	6	7
1 Call Money	17761	12380	17812	18360	17702	16728	16016	17258
2 Notice Money	2550	5006	228	4315	669	4576	750	4045
3 Term Money	871	553	618	1147	454	1180	1024	958
4 Triparty Repo	601363	738384	693314	704592	561910	705300	644906	791363
5 Market Repo	574534	608900	566606	624795	520926	615520	503684	601046
6 Repo in Corporate Bond	1817	3438	3283	2792	3606	6329	4666	4270
7 Forex (US \$ million)	95115	98764	103577	110210	118541	100547	103856	127583
8 Govt. of India Dated Securities	90992	86297	139737	181718	153648	97768	125631	82172
9 State Govt. Securities	6102	3268	6747	8676	12077	6598	7229	2572
10 Treasury Bills								
10.1 91-Day	5378	5628	3301	4325	4632	3550	4528	3373
10.2 182-Day	6079	6870	4933	5911	6073	6089	5603	2703
10.3 364-Day	4307	1831	4467	4346	4005	3152	5403	2703
10.4 Cash Management Bills			0	0	0	0	0	0
11 Total Govt. Securities (8+9+10)	112858	103893	159184	204975	180434	117157	148394	93522
11.1 RBI	492	434	2077	440	1440	909	1310	648

No. 30: New Capital Issues by Non-Government Public Limited Companies

(Amount in ₹ Crore)

Security & Type of Issue	2023-24		2023-24 (Apr.-Aug.)		2024-25 (Apr.-Aug.) *		Aug. 2023		Aug. 2024 *	
	No. of Issues	Amount	No. of Issues	Amount	No. of Issues	Amount	No. of Issues	Amount	No. of Issues	Amount
	1	2	3	4	5	6	7	8	9	10
1 Equity Shares	339	80942	112	21593	196	69091	31	6467	42	18810
1A Premium	328	76319	104	19941	186	50014	29	5945	42	17764
1.1 Public	272	65832	78	15615	138	58055	21	5124	32	15464
1.1.1 Premium	272	62791	78	14882	138	40035	21	4842	32	14508
1.2 Rights	67	15110	34	5978	58	11036	10	1342	10	3346
1.2.1 Premium	56	13527	26	5060	48	9978	8	1103	10	3257
2 Preference Shares	-	-	-	-	-	-	-	-	-	-
2.1 Public	-	-	-	-	-	-	-	-	-	-
2.2 Rights	-	-	-	-	-	-	-	-	-	-
3 Bonds & Debentures	44	16342	14	5364	16	3161	2	1948	4	445
3.1 Convertible	-	-	-	-	-	-	-	-	-	-
3.1.1 Public	-	-	-	-	-	-	-	-	-	-
3.1.2 Rights	-	-	-	-	-	-	-	-	-	-
3.2 Non-Convertible	44	16342	14	5364	16	3161	2	1948	4	445
3.2.1 Public	44	16342	14	5364	16	3161	2	1948	4	445
3.2.2 Rights	-	-	-	-	-	-	-	-	-	-
4 Total (1+2+3)	383	97284	126	26957	212	72252	33	8415	46	19255
4.1 Public	316	82174	92	20979	154	61216	23	7072	36	15909
4.2 Rights	67	15110	34	5978	58	11036	10	1342	10	3346

Note : 1. Since April 2020, monthly data on equity issues is compiled on the basis of their listing date.

2. Figures in the columns might not add up to the total due to rounding off numbers.

Source : Securities and Exchange Board of India.

* : Data is Provisional

External Sector

No. 31: Foreign Trade

Item	Unit	2023-24		2024					
		2023		2024					
		Aug.	Mar.	Apr.	May	Jun.	Jul.	Aug.	
		1	2	3	4	5	6	7	8
1 Exports	₹ Crore	3618952	316942	346040	294495	330267	293508	283020	291193
	US \$ Million	437072	38285	41693	35309	39604	35163	33856	34709
1.1 Oil	₹ Crore	696850	78986	44950	58803	67645	45824	43468	49929
	US \$ Million	84157	9541	5416	7050	8112	5490	5200	5951
1.2 Non-oil	₹ Crore	2922102	237956	301089	235693	262621	247684	239552	241264
	US \$ Million	352915	28744	36277	28258	31492	29673	28656	28757
2 Imports	₹ Crore	5616042	515738	473312	456075	518026	473159	480421	539817
	US \$ Million	678215	62298	57027	54681	62119	56686	57470	64343
2.1 Oil	₹ Crore	1480232	134882	135638	137615	166312	125589	115946	92431
	US \$ Million	178733	16293	16342	16499	19943	15046	13870	11017
2.2 Non-oil	₹ Crore	4135810	380855	337674	318460	351714	347570	364475	447386
	US \$ Million	499482	46005	40685	38182	42176	41640	43600	53326
3 Trade Balance	₹ Crore	-1997090	-198796	-127272	-161579	-187759	-179651	-197401	-248624
	US \$ Million	-241143	-24013	-15334	-19373	-22515	-21523	-23614	-29635
3.1 Oil	₹ Crore	-783382	-55896	-90687	-78812	-98667	-79766	-72478	-42501
	US \$ Million	-94576	-6752	-10927	-9449	-11832	-9556	-8670	-5066
3.2 Non-oil	₹ Crore	-1213708	-142900	-36584	-82767	-89093	-99885	-124923	-206123
	US \$ Million	-146567	-17261	-4408	-9923	-10683	-11967	-14944	-24569

Note: Data in the table are provisional.

Source: Directorate General of Commercial Intelligence and Statistics.

No. 32: Foreign Exchange Reserves

Item	Unit	2023		2024					
		2023		2024					
		Oct. 06	Aug. 23	Aug. 30	Sep. 06	Sep. 13	Sep. 20	Sep. 27	
		1	2	3	4	5	6	7	
1 Total Reserves	₹ Crore	4867956	5719971	5736861	5785515	5784739	5785706	5900138	
	US \$ Million	584742	681688	683987	689235	689458	692296	704885	
1.1 Foreign Currency Assets	₹ Crore	4325067	5014012	5024359	5071259	5064604	5061914	5157443	
	US \$ Million	519529	597552	599037	604144	603629	605686	616154	
1.2 Gold	₹ Crore	352200	511818	518835	520331	527636	531633	550741	
	US \$ Million	42306	60997	61859	61988	62887	63613	65796	
1.3 SDRs	Volume (Metric Tonnes)	803.58	848.98	848.98	853.64	853.64	853.64	853.64	
	SDRs Million	13681	13702	13702	13702	13702	13702	13702	
	₹ Crore	149212	154888	154901	155056	154540	154941	155249	
	US \$ Million	17923	18459	18468	18472	18419	18540	18547	
1.4 Reserve Tranche Position in IMF	₹ Crore	41477	39253	38766	38869	37960	37218	36706	
	US \$ Million	4983	4680	4622	4631	4523	4458	4387	

*Difference, if any, is due to rounding off.

Note: Exclude investment in foreign currency denominated bonds issued by IIFC (UK), SDRs transferred by Government of India to RBI and foreign currency received under SAARC and ACU currency swap arrangements. Foreign currency assets in US dollar take into account appreciation/depreciation of non-US currencies (such as Euro, Sterling, Yen and Australian Dollar) held in reserves. Foreign exchange holdings are converted into rupees at rupee-US dollar RBI holding rates.

No. 33: Non-Resident Deposits

(US \$ Million)

Scheme	Outstanding				Flows	
	2023-24	2023		2024		2023-24
		Aug.	Jul.	Aug. (P)	Apr.-Aug.	Apr.-Aug.(P)
	1	2	3	4	5	6
1 NRI Deposits	151879	141987	157157	158945	3743	7828
1.1 FCNR(B)	25733	20915	28572	29204	1552	3471
1.2 NR(E)RA	98624	96179	99981	100543	868	2512
1.3 NRO	27522	24892	28603	29198	1323	1845

P: Provisional.

No. 34: Foreign Investment Inflows

(US \$ Million)

Item	2023-24	2023-24	2024-25 (P)	2023	2024 (P)	
		Apr.-Aug.	Apr.-Aug.	Aug.	Jul.	Aug.
		1	2	3	4	5
1.1 Net Foreign Direct Investment (1.1.1-1.1.2)	10129	3263	6626	-540	-1439	1751
1.1.1 Direct Investment to India (1.1.1.1-1.1.1.2)	26807	8478	15351	739	1285	3950
1.1.1.1 Gross Inflows/Gross Investments	71279	27363	36118	4968	5217	8614
1.1.1.1.1 Equity	45817	16942	26232	3019	3325	6504
1.1.1.1.1.1 Government (SIA/FIPB)	585	176	377	78	112	56
1.1.1.1.1.2 RBI	31826	12590	18137	1605	2099	4273
1.1.1.1.1.3 Acquisition of shares	12013	3634	7271	1225	1002	2064
1.1.1.1.1.4 Equity capital of unincorporated bodies	1394	543	447	111	111	111
1.1.1.1.2 Reinvested earnings	19768	7701	8056	1580	1580	1580
1.1.1.1.3 Other capital	5694	2720	1830	368	312	530
1.1.1.2 Repatriation/Disinvestment	44472	18885	20768	4229	3932	4665
1.1.1.2.1 Equity	41334	17536	19755	4093	3555	4527
1.1.1.2.2 Other capital	3137	1349	1013	136	377	138
1.1.2 Foreign Direct Investment by India (1.1.2.1+1.1.2.2+1.1.2.3-1.1.2.4)	16678	5215	8724	1279	2724	2199
1.1.2.1 Equity capital	9111	2940	5655	616	2230	1078
1.1.2.2 Reinvested Earnings	5786	2411	2464	482	482	482
1.1.2.3 Other Capital	5406	1929	2121	468	278	741
1.1.2.4 Repatriation/Disinvestment	3624	2064	1516	288	266	103
1.2 Net Portfolio Investment (1.2.1+1.2.2+1.2.3-1.2.4)	44081	22904	10378	2880	5108	4325
1.2.1 GDRs/ADRs	-	-	-	-	-	-
1.2.2 FIIs	44626	23488	10359	2993	5192	4270
1.2.3 Offshore funds and others	-	-	-	-	-	-
1.2.4 Portfolio investment by India	544	585	-18	113	84	-55
1 Foreign Investment Inflows	54210	26166	17004	2340	3669	6076

P: Provisional

No. 35: Outward Remittances under the Liberalised Remittance Scheme (LRS) for Resident Individuals

(US \$ Million)

Item	2023-24	2023		2024		
		Aug.	Jun.	Jul.	Aug.	
				3		
1 Outward Remittances under the LRS	31735.74	3379.54	2181.85	2754.05	3211.54	
1.1 Deposit	916.45	60.74	39.02	41.68	45.56	
1.2 Purchase of immovable property	242.51	16.29	18.77	24.54	22.49	
1.3 Investment in equity/debt	1510.89	94.08	120.22	120.86	125.30	
1.4 Gift	3580.27	268.89	228.81	275.26	244.41	
1.5 Donations	11.31	0.63	2.01	0.68	0.67	
1.6 Travel	17006.27	2039.72	1275.63	1662.13	2013.30	
1.7 Maintenance of close relatives	4611.53	378.41	270.72	337.40	315.40	
1.8 Medical Treatment	79.62	4.41	6.42	8.62	7.65	
1.9 Studies Abroad	3478.65	483.29	177.07	272.16	416.39	
1.10 Others	298.24	33.10	43.19	10.72	20.36	

**No. 36: Indices of Nominal Effective Exchange Rate (NEER) and
Real Effective Exchange Rate (REER) of the Indian Rupee**

Item	2022-23	2023-24	2023	2024	
			Sep	Aug	Sep
	1	2	3	4	5
40-Currency Basket (Base: 2015-16=100)					
1 Trade-Weighted					
1.1 NEER	91.20	90.73	91.29	90.81	90.40
1.2 REER	102.78	103.69	104.11	105.44	105.17
2 Export-Weighted					
2.1 NEER	93.01	93.11	93.55	93.45	93.08
2.2 REER	101.10	101.21	101.41	102.80	102.52
6-Currency Basket (Trade-weighted)					
1 Base : 2015-16 =100					
1.1 NEER	85.93	83.62	84.24	82.04	81.54
1.2 REER	101.80	101.66	102.20	102.53	102.56
2 Base : 2022-23 =100					
2.1 NEER	100.00	97.31	98.04	95.47	94.89
2.2 REER	100.00	99.86	100.39	100.71	100.74

No. 37: External Commercial Borrowings (ECBs) – Registrations

(Amount in US \$ Million)

Item	2023-24	2023	2024	
		Aug.	Jul.	Aug.
		1	2	3
1 Automatic Route				
1.1 Number	1188	92	119	99
1.2 Amount	29461	1498	3581	5460
2 Approval Route				
2.1 Number	33	2	0	3
2.2 Amount	19748	1270	0	449
3 Total (1+2)				
3.1 Number	1221	94	119	102
3.2 Amount	49209	2768	3581	5909
4 Weighted Average Maturity (in years)	5.60	4.90	5.20	4.50
5 Interest Rate (per cent)				
5.1 Weighted Average Margin over alternative reference rate (ARR) for Floating Rate Loans@	1.66	1.30	1.45	1.49
5.2 Interest rate range for Fixed Rate Loans	0.00-27.00	0.00-11.60	0.00-10.00	0.01-10.00

Borrower Category

I. Corporate Manufacturing	15836	988	626	1452
II. Corporate-Infrastructure	15916	713	1393	1042
a.) Transport	1505	182	0	0
b.) Energy	3513	3	559	983
c.) Water and Sanitation	33	6	0	0
d.) Communication	6309	0	0	0
e.) Social and Commercial Infrastructure	115	61	0	0
f.) Exploration,Mining and Refinery	2480	460	800	0
g.) Other Sub-Sectors	1961	1	34	59
III. Corporate Service-Sector	1526	64	349	372
IV. Other Entities	1728	0	4	0
a.) units in SEZ	1	0	4	0
b.) SIDBI	0	0	0	0
c.) Exim Bank	1727	0	0	0
V. Banks	0	0	0	0
VI. Financial Institution (Other than NBFC)	20	0	0	0
VII. NBFCs	13361	795	1195	3009
a). NBFC- IFC/AFC	7734	712	0	773
b). NBFC-MFI	531	44	16	18
c). NBFC-Others	5096	39	1179	2218
VIII. Non-Government Organization (NGO)	0	0	0	0
IX. Micro Finance Institution (MFI)	0	0	0	0
X. Others	822	208	14	34

Note: Based on applications for ECB/Foreign Currency Convertible Bonds (FCCBs) which have been allotted loan registration number during the period.

@ With effect from July 01, 2023, the benchmark rate is changed to Alternative Reference Rate (ARR)

No. 38: India's Overall Balance of Payments

(US\$ Million)

Item	Apr-Jun 2023			Apr-Jun 2024 (P)		
	Credit	Debit	Net	Credit	Debit	Net
	1	2	3	4	5	6
Overall Balance Of Payments (1+2+3)	403470	379039	24432	506715	501489	5226
1 Current Account (1.1+ 1.2)	221636	230603	-8967	241638	251403	-9765
1.1 Merchandise	104936	161637	-56701	111175	176297	-65122
1.2 Invisibles (1.2.1+1.2.2+1.2.3)	116700	68967	47734	130463	75106	55357
1.2.1 Services	80569	45449	35121	88466	48740	39725
1.2.1.1 Travel	6412	9489	-3077	7352	9171	-1819
1.2.1.2 Transportation	7408	7693	-285	8507	8609	-102
1.2.1.3 Insurance	761	591	170	903	593	310
1.2.1.4 G.n.i.e.	159	250	-91	161	309	-147
1.2.1.5 Miscellaneous	65830	27427	38404	71542	30058	41484
1.2.1.5.1 Software Services	38172	4243	33928	41926	4479	37447
1.2.1.5.2 Business Services	21831	15203	6627	23000	16625	6375
1.2.1.5.3 Financial Services	1891	1152	739	2215	1267	948
1.2.1.5.4 Communication Services	831	324	507	519	444	75
1.2.2 Transfers	27117	4279	22838	29519	3169	26350
1.2.2.1 Official	20	255	-235	18	266	-248
1.2.2.2 Private	27097	4024	23073	29502	2904	26598
1.2.3 Income	9014	19239	-10225	12478	23196	-10718
1.2.3.1 Investment Income	7187	18372	-11185	10341	22218	-11878
1.2.3.2 Compensation of Employees	1827	868	959	2137	978	1159
2 Capital Account (2.1+2.2+2.3+2.4+2.5)	181834	148018	33816	264492	250086	14406
2.1 Foreign Investment (2.1.1+2.1.2)	109054	88595	20459	183279	176019	7259
2.1.1 Foreign Direct Investment	19278	14551	4728	23435	17120	6315
2.1.1.1 In India	17790	10427	7362	22287	12171	10116
2.1.1.1.1 Equity	11266	9351	1915	16402	11673	4729
2.1.1.1.2 Reinvested Earnings	4541	0	4541	4897		4897
2.1.1.1.3 Other Capital	1983	1077	906	988	498	490
2.1.1.2 Abroad	1489	4123	-2634	1147	4949	-3801
2.1.1.2.1 Equity	1489	1864	-375	1147	2346	-1199
2.1.1.2.2 Reinvested Earnings	0	1446	-1446	0	1500	-1500
2.1.1.2.3 Other Capital	0	813	-813	0	1102	-1102
2.1.2 Portfolio Investment	89775	74045	15731	159844	158899	945
2.1.2.1 In India	88743	72654	16089	159240	158343	897
2.1.2.1.1 FIIs	88743	72654	16089	159240	158343	897
2.1.2.1.1.1 Equity	77174	63525	13649	139824	140833	-1009
2.1.2.1.1.2 Debt	11569	9129	2440	19416	17510	1906
2.1.2.1.2 ADR/GDRs	0	0	0	0	0	0
2.1.2.2 Abroad	1032	1391	-358	604	556	48
2.2 Loans (2.2.1+2.2.2+2.2.3)	30359	28188	2171	31905	25940	5965
2.2.1 External Assistance	3032	1603	1429	3641	2271	1371
2.2.1.1 By India	9	49	-40	8	30	-22
2.2.1.2 To India	3023	1553	1470	3634	2241	1393
2.2.2 Commercial Borrowings	15452	9721	5731	12618	10951	1667
2.2.2.1 By India	2212	2071	140	4138	4255	-117
2.2.2.2 To India	13241	7650	5591	8481	6696	1785
2.2.3 Short Term to India	11875	16864	-4989	15645	12718	2927
2.2.3.1 Buyers' credit & Suppliers' Credit >180 days	11875	14352	-2477	13572	12718	854
2.2.3.2 Suppliers' Credit up to 180 days	0	2512	-2512	2073	0	2073
2.3 Banking Capital (2.3.1+2.3.2)	33279	20339	12940	36380	33511	2870
2.3.1 Commercial Banks	33107	20339	12769	36259	33511	2749
2.3.1.1 Assets	13315	3382	9934	10705	13570	-2865
2.3.1.2 Liabilities	19792	16957	2835	25554	19941	5614
2.3.1.2.1 Non-Resident Deposits	18896	16688	2208	23426	19401	4025
2.3.2 Others	172	0	172	121	0	121
2.4 Rupee Debt Service	0	62	-62	0	61	-61
2.5 Other Capital	9143	10834	-1691	12928	14556	-1627
3 Errors & Omissions	0	418	-418	585	0	585
4 Monetary Movements (4.1+ 4.2)	0	24432	-24432	0	5226	-5226
4.1 I.M.F.	0	0	0	0	0	0
4.2 Foreign Exchange Reserves (Increase - / Decrease +)	0	24432	-24432	5226	5226	-5226

Note: P: Preliminary.

No. 39: India's Overall Balance of Payments

(₹ Crore)

Item	Apr-Jun 2023			Apr-Jun 2024 (P)		
	Credit	Debit	Net	Credit	Debit	Net
	1	2	3	4	5	6
Overall Balance Of Payments (1+2+3)	3316497	3115671	200826	4227182	4183585	43597
1 Current Account (1.1+ 1.2)	1821831	1895540	-73709	2015823	2097284	-81461
1.1 Merchandise	862564	1328641	-46077	927458	1470724	-543266
1.2 Invisibles (1.2.1+1.2.2+1.2.3)	959267	566900	392367	1088365	626560	461805
1.2.1 Services	662275	373584	288691	738010	406609	331401
1.2.1.1 Travel	52702	77997	-25295	61335	76511	-15177
1.2.1.2 Transportation	60895	63237	-2342	70965	71816	-851
1.2.1.3 Insurance	6251	4854	1398	7535	4950	2585
1.2.1.4 G.n.i.e.	1305	2051	-746	1346	2575	-1229
1.2.1.5 Miscellaneous	541121	225445	315676	596830	250757	346073
1.2.1.5.1 Software Services	313769	34880	278889	349760	37363	312397
1.2.1.5.2 Business Services	179448	124971	54477	191873	138694	53178
1.2.1.5.3 Financial Services	15546	9473	6073	18478	10572	7906
1.2.1.5.4 Communication Services	6827	2663	4165	4331	3702	629
1.2.2 Transfers	222898	35170	187728	246261	26440	219821
1.2.2.1 Official	160	2094	-1934	150	2216	-2066
1.2.2.2 Private	222738	33076	189662	246112	24225	221887
1.2.3 Income	74093	158146	-84052	104093	193510	-89417
1.2.3.1 Investment Income	59076	151014	-91938	86265	185352	-99087
1.2.3.2 Compensation of Employees	15018	7132	7886	17829	8158	9670
2 Capital Account (2.1+2.2+2.3+2.4+2.5)	1494666	1216698	277968	2206479	2086302	120178
2.1 Foreign Investment (2.1.1+2.1.2)	896414	728246	168169	1528971	1468411	60560
2.1.1 Foreign Direct Investment	158467	119605	38862	195500	142821	52679
2.1.1.1 In India	146230	85713	60517	185930	101538	84392
2.1.1.1.1 Equity	92604	76861	15743	136835	97382	39453
2.1.1.1.2 Reinvested Earnings	37323	0	37323	40849	0	40849
2.1.1.1.3 Other Capital	16303	8853	7450	8246	4156	4090
2.1.1.2 Abroad	12237	33892	-21654	9570	41283	-31713
2.1.1.2.1 Equity	12237	15322	-3085	9570	19574	-10004
2.1.1.2.2 Reinvested Earnings	0	11889	-11889	0	12515	-12515
2.1.1.2.3 Other Capital	0	6681	-6681	0	9194	-9194
2.1.2 Portfolio Investment	737947	608641	129306	1333471	1325590	7881
2.1.2.1 In India	729461	597209	132252	1328434	1320949	7485
2.1.2.1.1 FIIs	729461	597209	132252	1328434	1320949	7485
2.1.2.1.1.1 Equity	634364	522169	112195	1166461	1174878	-8416
2.1.2.1.1.2 Debt	95097	75040	20058	161973	146071	15901
2.1.2.1.2 ADR/GDRs	0	0	0	0	0	0
2.1.2.2 Abroad	8486	11432	-2946	5037	4641	396
2.2 Loans (2.2.1+2.2.2+2.2.3)	249550	231703	17847	266160	216400	49760
2.2.1 External Assistance	24921	13173	11749	30377	18943	11433
2.2.1.1 By India	72	404	-331	64	247	-184
2.2.1.2 To India	24849	12769	12080	30313	18696	11617
2.2.2 Commercial Borrowings	127016	79909	47107	105264	91357	13907
2.2.2.1 By India	18179	17027	1153	34517	35497	-980
2.2.2.2 To India	108837	62882	45955	70747	55860	14887
2.2.3 Short Term to India	97612	138621	-41009	130519	106100	24420
2.2.3.1 Buyers' credit & Suppliers' Credit >180 days	97612	117969	-20357	113225	106100	7125
2.2.3.2 Suppliers' Credit up to 180 days	0	20652	-20652	17295	0	17295
2.3 Banking Capital (2.3.1+2.3.2)	273549	167181	106367	303498	279556	23942
2.3.1 Commercial Banks	272138	167181	104957	302487	279556	22931
2.3.1.1 Assets	109451	27797	81653	89303	113205	-23902
2.3.1.2 Liabilities	162687	139384	23304	213184	166351	46833
2.3.1.2.1 Non-Resident Deposits	155328	137175	18153	195426	161851	33575
2.3.2 Others	1410	0	1410	1011	0	1011
2.4 Rupee Debt Service	0	512	-512	0	508	-508
2.5 Other Capital	75153	89057	-13904	107850	121427	-13577
3 Errors & Omissions	0	3432	-3432	4880	0	4880
4 Monetary Movements (4.1+ 4.2)	0	200826	-200826	0	43597	-43597
4.1 I.M.F.	0	0	0	0	0	0
4.2 Foreign Exchange Reserves (Increase - / Decrease +)	0	200826	-200826	0	43597	-43597

Note: P: Preliminary.

No. 40: Standard Presentation of BoP in India as per BPM6

Item	(US\$ Million)					
	Apr-Jun 2023			Apr-Jun 2024 (P)		
	Credit	Debit	Net	Credit	Debit	Net
	1	2	3	4	5	6
1 Current Account (1.A+1.B+1.C)	221635	230581	-8945	241638	251377	-9739
1.A Goods and Services (1.A.a+1.A.b)	185505	207085	-21580	199641	225037	-25396
1.A.a Goods (1.A.a.1 to 1.A.a.3)	104936	161637	-56701	111175	176297	-65122
1.A.a.1 General merchandise on a BOP basis	104497	151939	-47442	111136	166784	-55648
1.A.a.2 Net exports of goods under merchanting	438	0	438	39	0	39
1.A.a.3 Nonmonetary gold	0	9698	-9698	9512	9512	-9512
1.A.b Services (1.A.b.1 to 1.A.b.13)	80569	45449	35121	88466	48740	39725
1.A.b.1 Manufacturing services on physical inputs owned by others	481	42	439	268	22	246
1.A.b.2 Maintenance and repair services n.i.e.	47	431	-385	81	238	-157
1.A.b.3 Transport	7408	7693	-285	8507	8609	-102
1.A.b.4 Travel	6412	9489	-3077	7352	9171	-1819
1.A.b.5 Construction	870	697	174	1478	563	915
1.A.b.6 Insurance and pension services	761	591	170	903	593	310
1.A.b.7 Financial services	1891	1152	739	2215	1267	948
1.A.b.8 Charges for the use of intellectual property n.i.e.	381	3647	-3266	341	4448	-4107
1.A.b.9 Telecommunications, computer, and information services	39091	4859	34231	42541	5215	37326
1.A.b.10 Other business services	21831	15203	6627	23000	16625	6375
1.A.b.11 Personal, cultural, and recreational services	968	1279	-312	1175	1249	-74
1.A.b.12 Government goods and services n.i.e.	159	250	-91	161	309	-147
1.A.b.13 Others n.i.e.	272	116	156	444	432	12
1.B Primary Income (1.B.1 to 1.B.3)	9014	19239	-10225	12478	23196	-10718
1.B.1 Compensation of employees	1827	868	959	2137	978	1159
1.B.2 Investment income	5777	17935	-12158	8448	21594	-13146
1.B.2.1 Direct investment	2355	9950	-7595	3173	12343	-9170
1.B.2.2 Portfolio investment	208	2250	-2042	70	2411	-2341
1.B.2.3 Other investment	517	5546	-5029	1110	6620	-5510
1.B.2.4 Reserve assets	2697	189	2508	4095	220	3876
1.B.3 Other primary income	1410	436	973	1892	624	1268
1.C Secondary Income (1.C.1+1.C.2)	27116	4256	22860	29519	3144	26376
1.C.1 Financial corporations, nonfinancial corporations, households, and NPISHs	27097	4024	23073	29502	2904	26598
1.C.1.1 Personal transfers (Current transfers between resident and/non-resident households)	26325	2680	23645	28644	1989	26655
1.C.1.2 Other current transfers	772	1343	-571	857	914	-57
1.C.2 General government	19	232	-214	18	240	-222
2 Capital Account (2.1+2.2)	150	145	5	185	146	40
2.1 Gross acquisitions (DR.)/disposals (CR.) of non-produced nonfinancial assets	12	51	-39	4	45	-41
2.2 Capital transfers	138	94	44	182	101	81
3 Financial Account (3.1 to 3.5)	181685	172328	9358	264307	255192	9114
3.1 Direct Investment (3.1A+3.1B)	19278	14551	4728	23435	17120	6315
3.1.A Direct Investment in India	17790	10427	7362	22287	12171	10116
3.1.A.1 Equity and investment fund shares	15806	9351	6456	21299	11673	9626
3.1.A.1.1 Equity other than reinvestment of earnings	11266	9351	1915	16402	11673	4729
3.1.A.1.2 Reinvestment of earnings	4541	0	4541	4897	4897	
3.1.A.2 Debt instruments	1983	1077	906	988	498	490
3.1.A.2.1 Direct investor in direct investment enterprises	1983	1077	906	988	498	490
3.1.B Direct Investment by India	1489	4123	-2634	1147	4949	-3801
3.1.B.1 Equity and investment fund shares	1489	3310	-1822	1147	3847	-2699
3.1.B.1.1 Equity other than reinvestment of earnings	1489	1864	-375	1147	2346	-1199
3.1.B.1.2 Reinvestment of earnings	0	1446	-1446	0	1500	-1500
3.1.B.2 Debt instruments	0	813	-813	0	1102	-1102
3.1.B.2.1 Direct investor in direct investment enterprises	0	813	-813	0	1102	-1102
3.2 Portfolio Investment	89775	74045	15731	159844	158899	945
3.2.A Portfolio Investment in India	88743	72654	16089	159240	158343	897
3.2.1 Equity and investment fund shares	77174	63525	13649	139824	140833	-1009
3.2.2 Debt securities	11569	9129	2440	19416	17510	1906
3.2.B Portfolio Investment by India	1032	1391	-358	604	556	48
3.3 Financial derivatives (other than reserves) and employee stock options	5013	5736	-723	6053	9666	-3613
3.4 Other investment	67619	53565	14053	74976	64281	10694
3.4.1 Other equity (ADRs/GDRs)	0	0	0	0	0	0
3.4.2 Currency and deposits	19068	16688	2380	23547	19401	4146
3.4.2.1 Central bank (Rupee Debt Movements; NRG)	172	0	172	121	0	121
3.4.2.2 Deposit-taking corporations, except the central bank (NRI Deposits)	18896	16688	2208	23426	19401	4025
3.4.2.3 General government	0	0	0	0	0	0
3.4.2.4 Other sectors	0	0	0	0	0	0
3.4.3 Loans (External Assistance, ECBs and Banking Capital)	32695	14974	17720	29093	27331	1762
3.4.3.A Loans to India	30474	12854	17621	24948	23046	1901
3.4.3.B Loans by India	2220	2120	100	4145	4285	-139
3.4.4 Insurance, pension, and standardized guarantee schemes	38	168	-130	47	133	-86
3.4.5 Trade credit and advances	11875	16864	-4989	15645	12718	2927
3.4.6 Other accounts receivable/payable - other	3943	4871	-928	6643	4698	1945
3.4.7 Special drawing rights	0	0	0	0	0	0
3.5 Reserve assets	0	24432	-24432	0	5226	-5226
3.5.1 Monetary gold	0	0	0	0	0	0
3.5.2 Special drawing rights n.a.	0	0	0	0	0	0
3.5.3 Reserve position in the IMF n.a.	0	0	0	0	0	0
3.5.4 Other reserve assets (Foreign Currency Assets)	0	24432	-24432	0	5226	-5226
4 Total assets/liabilities	181685	172328	9358	264307	255192	9114
4.1 Equity and investment fund shares	100552	83480	17072	168975	166708	2266
4.2 Debt instruments	77190	59545	17645	88689	78560	10129
4.3 Other financial assets and liabilities	3943	29302	-25359	6643	9924	-3281
5 Net errors and omissions	0	418	-418	585	0	585

Note: P: Preliminary.

No. 41: Standard Presentation of BoP in India as per BPM6

(₹ Crore)

Item	Apr-Jun 2023			Apr-Jun 2024 (P)		
	Credit	Debit	Net	Credit	Debit	Net
	1	2	3	4	5	6
1 Current Account (1.A+1.B+1.C)	1821825	1895356	-73531	2015820	2097068	-81248
1.A Goods and Services (1.A.a+1.A.b)	1524839	1702225	-177386	1665468	1877333	-211865
1.A.a Goods (1.A.a.1 to 1.A.a.3)	862564	1328641	-466077	927458	1470724	-543266
1.A.a.1 General merchandise on a BOP basis	858960	1248927	-389967	927134	1391370	-464235
1.A.a.2 Net exports of goods under merchanting	3604	0	3604	324	0	324
1.A.a.3 Nonmonetary gold	0	79714	-79714	0	79355	-79355
1.A.b Services (1.A.b.1 to 1.A.b.13)	662275	373584	288691	738010	406609	331401
1.A.b.1 Manufacturing services on physical inputs owned by others	3955	345	3610	2234	183	2051
1.A.b.2 Maintenance and repair services n.i.e.	382	3546	-3164	676	1983	-1307
1.A.b.3 Transport	60895	63237	-2342	70965	71816	-851
1.A.b.4 Travel	52702	77997	-25295	61335	76511	-15177
1.A.b.5 Construction	7153	5726	1427	12327	4693	7635
1.A.b.6 Insurance and pension services	6251	4854	1398	7535	4950	2585
1.A.b.7 Financial services	15546	9473	6073	18478	10572	7906
1.A.b.8 Charges for the use of intellectual property n.i.e.	3128	29977	-26849	2843	37103	-34261
1.A.b.9 Telecommunications, computer, and information services	321321	39942	281380	354891	43507	311384
1.A.b.10 Other business services	179448	124971	54477	191873	138694	53178
1.A.b.11 Personal, cultural, and recreational services	7953	10515	-2562	9803	10418	-615
1.A.b.12 Government goods and services n.i.e.	1305	2051	-746	1346	2575	-1229
1.A.b.13 Others n.i.e.	2235	950	1285	3706	3604	102
1.B Primary Income (1.B.1 to 1.B.3)	74093	158146	-84052	104093	193510	-89417
1.B.1 Compensation of employees	15018	7132	7886	17829	8158	9670
1.B.2 Investment income	47486	147426	-99940	70478	180146	-109668
1.B.2.1 Direct investment	19356	81790	-62434	26468	102971	-76503
1.B.2.2 Portfolio investment	1710	18491	-16781	582	20112	-19530
1.B.2.3 Other investment	4252	45590	-41337	9262	55229	-45968
1.B.2.4 Reserve assets	22167	1555	20612	34166	1833	32333
1.B.3 Other primary income	11590	3588	8002	15787	5206	10581
1.C Secondary Income (1.C.1+1.C.2)	222893	34986	187907	246259	26225	220034
1.C.1 Financial corporations, nonfinancial corporations, households, and NPISHs	222738	33076	189662	246112	24225	221887
1.C.1.1 Personal transfers (Current transfers between resident and/non-resident households)	216392	22033	194358	238960	16597	222364
1.C.1.2 Other current transfers	6346	11042	-4696	7151	7628	-477
1.C.2 General government	155	1910	-1755	147	2000	-1852
2 Capital Account (2.1+2.2)	1232	1188	44	1547	1214	333
2.1 Gross acquisitions (DR.)/disposals (CR.) of non-produced nonfinancial assets	100	418	-319	32	375	-343
2.2 Capital transfers	1132	770	362	1515	839	675
3 Financial Account (3.1 to 3.5)	1493440	1416520	76920	2204934	2128900	76035
3.1 Direct Investment (3.1A+3.1B)	158467	119605	38862	195500	142821	52679
3.1.A Direct Investment in India	146230	85713	60517	185930	101538	84392
3.1.A.1 Equity and investment fund shares	129927	76861	53067	177683	97382	80301
3.1.A.1.1 Equity other than reinvestment of earnings	92604	76861	15743	136835	97382	39453
3.1.A.1.2 Reinvestment of earnings	37323	0	37323	40849	0	40849
3.1.A.2 Debt instruments	16303	8853	7450	8246	4156	4090
3.1.A.2.1 Direct investor in direct investment enterprises	16303	8853	7450	8246	4156	4090
3.1.B Direct Investment by India	12237	33892	-21654	9570	41283	-31713
3.1.B.1 Equity and investment fund shares	12237	27211	-14974	9570	32089	-22519
3.1.B.1.1 Equity other than reinvestment of earnings	12237	15322	-3085	9570	19574	-10004
3.1.B.1.2 Reinvestment of earnings	0	11889	-11889	0	12515	-12515
3.1.B.2 Debt instruments	0	6681	-6681	0	9194	-9194
3.1.B.2.1 Direct investor in direct investment enterprises	0	6681	-6681	0	9194	-9194
3.2 Portfolio Investment	737947	608641	129306	1333471	1325590	7881
3.2.A Portfolio Investment in India	729461	597209	132252	1328434	1320949	7485
3.2.1 Equity and investment fund shares	634364	522169	112195	1166461	1174878	-8416
3.2.2 Debt securities	95097	75040	20058	161973	146071	15901
3.2.B Portfolio Investment by India	8486	11432	-2946	5037	4641	396
3.3 Financial derivatives (other than reserves) and employee stock options	41207	47148	-5941	50493	80637	-30144
3.4 Other investment	555819	440301	115518	625470	536255	89216
3.4.1 Other equity (ADRs/GDRs)	0	0	0	0	0	0
3.4.2 Currency and deposits	156738	137175	19563	196437	161851	34586
3.4.2.1 Central bank (Rupee Debt Movements; NRG)	1410	0	1410	1011	0	1011
3.4.2.2 Deposit-taking corporations, except the central bank (NRI Deposits)	155328	137175	18153	195426	161851	33575
3.4.2.3 General government	0	0	0	0	0	0
3.4.2.4 Other sectors	0	0	0	0	0	0
3.4.3 Loans (External Assistance, ECBs and Banking Capital)	268748	123088	145661	242702	228005	14697
3.4.3.A Loans to India	250497	105658	144839	208121	192261	15861
3.4.3.B Loans by India	18252	17430	821	34581	35744	-1164
3.4.4 Insurance, pension, and standardized guarantee schemes	308	1380	-1072	396	1109	-714
3.4.5 Trade credit and advances	97612	138621	-41009	130519	106100	24420
3.4.6 Other accounts receivable/payable - other	32413	40037	-7624	55416	39189	16227
3.4.7 Special drawing rights	0	0	0	0	0	0
3.5 Reserve assets	0	200826	-200826	0	43597	-43597
3.5.1 Monetary gold	0	0	0	0	0	0
3.5.2 Special drawing rights n.a.	0	0	0	0	0	0
3.5.3 Reserve position in the IMF n.a.	0	0	0	0	0	0
3.5.4 Other reserve assets (Foreign Currency Assets)	0	200826	-200826	0	43597	-43597
4 Total assets/liabilities	1493440	1416520	76920	2204934	2128900	76035
4.1 Equity and investment fund shares	826529	686201	140328	1409641	1390737	18904
4.2 Debt instruments	634499	489457	145042	739877	655377	84500
4.3 Other financial assets and liabilities	32413	240863	-208450	55416	82786	-27370
5 Net errors and omissions	0	3432	-3432	4880	0	4880

Note: P: Preliminary.

No. 42: India's International Investment Position

(US\$ Million)

Item	As on Financial Year/Quarter End							
	2023-24		2023		2024			
			Jun.		Mar.		Jun.	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
	1	2	3	4	5	6	7	8
1. Direct investment Abroad/in India	242271	542777	228227	532278	242271	542777	246072	552178
1.1 Equity Capital*	153343	511142	143893	501412	153343	511142	156042	520277
1.2 Other Capital	88927	31635	84334	30866	88927	31635	90029	31900
2. Portfolio investment	12162	277118	14511	258539	12162	277118	12103	277272
2.1 Equity	10644	162061	12567	152928	10644	162061	10367	160898
2.2 Debt	1517	115057	1944	105611	1517	115057	1736	116374
3. Other investment	128450	571045	105256	531184	128450	571045	141261	590312
3.1 Trade credit	33450	123659	29658	119317	33450	123659	32874	126577
3.2 Loan	13578	221886	13037	206940	13578	221886	16837	225023
3.3 Currency and Deposits	52803	154787	33117	144069	52803	154787	57032	160628
3.4 Other Assets/Liabilities	28619	48804	29443	38848	28619	48804	34518	56319
4. Reserves	646419		595051		646419		651997	
5. Total Assets/ Liabilities	1029301	1390940	943044	1322001	1029301	1390940	1051433	1419761
6. Net IIP (Assets - Liabilities)	-361639		-378956		-361639		-368329	

Note: * Equity capital includes share of investment funds and reinvested earnings.

Payment and Settlement Systems

No.43: Payment System Indicators

PART I - Payment System Indicators - Payment & Settlement System Statistics

System	Volume (Lakh)				Value (₹ Crore)						
	FY 2023-24	2023		2024		FY 2023-24	2023		2024		
		Aug.	Jul.	Aug.	0		5	2	3	4	
A. Settlement Systems											
Financial Market Infrastructures (FMIs)											
1 CCIL Operated Systems (1.1 to 1.3)											
1.1 Govt. Securities Clearing (1.1.1 to 1.1.3)	43.04	3.83	4.54	3.88	259206893	21796085	25280807	23205978			
1.1.1 Outright	16.80	1.46	1.71	1.62	170464587	14374901	17139102	15544033			
1.1.1 Repo	9.51	0.82	1.03	0.99	13463848	1075273	1524120	1468219			
1.1.2 Repo	4.94	0.44	0.44	0.41	76718788	6265271	7150905	6391039			
1.1.3 Tri-party Repo	2.35	0.20	0.23	0.22	80281951	7034358	8464077	7684775			
1.2 Forex Clearing	24.92	2.23	2.71	2.13	80984671	6636448	7417106	6911072			
1.3 Rupee Derivatives @	1.31	0.14	0.12	0.13	7757636	784735	724598	750873			
B. Payment Systems											
I Financial Market Infrastructures (FMIs)											
1 Credit Transfers - RTGS (1.1 to 1.2)											
1.1 Customer Transactions	2700.16	218.08	246.68	237.53	170886670	13742007	15970680	15910436			
1.2 Interbank Transactions	2686.04	216.88	245.48	236.33	152406168	12202747	14531533	14385410			
II Retail											
2 Credit Transfers - Retail (2.1 to 2.6)											
2.1 AePS (Fund Transfers) @	1486106.89	119823.49	161225.51	166465.50	67542859	5374181	6480748	6408703			
2.2 APBS \$	3.92	0.34	0.31	0.31	261	22	13	13			
2.3 IMPS	25888.17	1791.92	2481.39	2783.25	390743	20129	28605	35283			
2.4 NACH Cr \$	60053.35	4891.65	4902.84	4533.37	6495652	514280	593177	577888			
2.5 NEFT	16227.27	1627.49	1479.29	1534.87	1525104	128612	132397	144196			
2.6 UPI @	72639.50	5651.92	8006.14	7983.23	39136014	3134602	3662264	3590588			
2.6.1 of which USSD @	1311294.68	105860.16	144355.54	149630.47	19995086	1576537	2064292	2060736			
3.1 BHIM Aadhaar Pay @	26.19	2.60	1.40	1.45	352	41	15	15			
3.2 NACH Dr \$	193.59	13.96	19.25	19.06	6112	416	575	576			
3.3 NETC (linked to bank account) @	16426.49	1374.16	1588.11	1621.10	1678769	134543	175014	176386			
4 Card Payments (4.1 to 4.2)											
4.1 Credit Cards (4.1.1 to 4.1.2)	58469.79	4981.72	5294.35	5323.13	2423563	201282	217435	211744			
4.1.1 PoS based \$	35610.15	2905.78	3837.80	3900.68	1831134	148602	172670	168202			
4.1.1 PoS based \$	18614.08	1520.79	1970.94	2023.83	651911	52961	62284	63208			
4.1.2 Others \$	16996.08	1384.99	1866.86	1876.85	1179223	95641	110386	104994			
4.2 Debit Cards (4.2.1 to 4.2.1)	22859.64	2075.94	1456.56	1422.45	592429	52680	44765	43542			
4.2.1 PoS based \$	16477.95	1495.72	1068.60	1061.41	393589	34605	28600	29346			
4.2.2 Others \$	6381.69	580.22	387.96	361.04	198840	18075	16165	14196			
5 Prepaid Payment Instruments (5.1 to 5.2)											
5.1 Wallets	78775.40	6366.80	5356.71	5466.90	283048	23669	16327	16555			
5.2 Cards (5.2.1 to 5.2.2)	63256.69	5067.34	4009.69	4092.83	234353	20002	11386	11599			
5.2.1 PoS based \$	15518.71	1299.47	1347.01	1374.07	48695	3667	4941	4956			
5.2.2 Others \$	8429.87	729.39	713.97	710.24	11247	855	940	908			
6 Paper-based Instruments (6.1 to 6.2)											
6.1 CTS (NPCI Managed)	6632.10	565.42	531.00	508.49	7212333	593323	610685	568848			
6.2 Others	6632.10	565.42	531.00	508.49	7212333	593323	610685	568848			
Total - Retail Payments (2+3+4+5+6)	1648233.71	133260.26	174142.33	179538.79	79149461	6327649	7500984	7383012			
Total Payments (1+2+3+4+5+6)	1650933.88	133478.34	174389.01	179776.32	250036131	20069656	23471665	23293447			
Total Digital Payments (1+2+3+4+5)	1644301.78	132912.92	173858.01	179267.83	242823799	19476333	22860979	22724600			

CURRENT STATISTICS

PART II - Payment Modes and Channels

System	Volume (Lakh)					Value (₹ Crore)				
	FY 2023-24	2023		2024		FY 2023-24	2023		2024	
		Aug.	Jul.	Aug.	Aug.		Aug.	Jul.	Aug.	
	1	2	3	4	5	6	7	8		
A. Other Payment Channels										
1 Mobile Payments (mobile app based) (1.1 to 1.2)	1252599.21	101423.21	139896.66	143776.73	30687088	2423257	3175688	3190071		
1.1 Intra-bank \$	83000.56	6553.02	9299.87	9197.29	5676805	439916	599279	605042		
1.2 Inter-bank \$	1169598.65	94870.20	130596.79	134579.45	25010283	1983340	2576409	2585028		
2 Internet Payments (Netbanking / Internet Browser Based) @ (2.1 to 2.2)	45034.98	3790.98	4237.05	3971.96	102117736	8295085	9894532	9528184		
2.1 Intra-bank @	12033.28	1033.68	1225.09	1157.09	53247042	4490488	5064291	4883018		
2.2 Inter-bank @	33001.71	2757.30	3011.95	2814.87	48870694	3804596	4830241	4645167		
B. ATMs										
3 Cash Withdrawal at ATMs \$ (3.1 to 3.3)	66440.72	5723.31	5069.38	5157.20	3259388	273107	250318	255021		
3.1 Using Credit Cards \$	95.80	8.09	8.54	8.46	4648	383	433	434		
3.2 Using Debit Cards \$	66001.01	5685.10	5040.14	5128.53	3241538	271612	248968	253703		
3.3 Using Pre-paid Cards \$	343.90	30.12	20.70	20.20	13202	1112	917	883		
4 Cash Withdrawal at PoS \$ (4.1 to 4.2)	15.18	1.26	0.29	0.30	148	12	3	3		
4.1 Using Debit Cards \$	15.06	1.25	0.27	0.28	147	12	3	3		
4.2 Using Pre-paid Cards \$	0.12	0.01	0.02	0.02	1	0	0	0		
5 Cash Withdrawal at Micro ATMs @	11754.95	1055.42	944.29	972.97	314003	27023	23498	23935		
5.1 AePS @	11754.95	1055.42	944.29	972.97	314003	27023	23498	23935		

PART III - Payment Infrastructures (Lakh)

System	As on March 2024	2023		2024	
		Aug.	Jul.	Aug.	Aug.
	1	2	3	4	
Payment System Infrastructures					
1 Number of Cards (1.1 to 1.2)	10667.22	10693.35	10850.30	10912.03	
1.1 Credit Cards	1018.03	912.78	1045.68	1054.92	
1.2 Debit Cards	9649.19	9780.57	9804.62	9857.10	
2 Number of PPIs @ (2.1 to 2.2)	16743.63	16625.74	15211.55	15182.14	
2.1 Wallets @	13381.80	13483.91	11419.62	11322.72	
2.2 Cards @	3361.82	3141.84	3791.93	3859.42	
3 Number of ATMs (3.1 to 3.2)	2.58	2.58	2.55	2.55	
3.1 Bank owned ATMs \$	2.23	2.23	2.21	2.20	
3.2 White Label ATMs \$	0.35	0.35	0.34	0.35	
4 Number of Micro ATMs @	17.55	15.29	14.71	14.42	
5 Number of PoS Terminals	89.03	82.47	89.72	93.01	
6 Bharat QR @	62.50	58.99	61.87	63.97	
7 UPI QR *	3434.93	2881.64	3286.40	3412.10	

@: New inclusion w.e.f. November 2019

#: Data reported by Co-operative Banks, LABs and RRBs included with effect from December 2021.

\$: Inclusion separately initiated from November 2019 - would have been part of other items hitherto.

*: New inclusion w.e.f. September 2020; Includes only static UPI QR Code

Note : 1. Data is provisional.

2. ECS (Debit and Credit) has been merged with NACH with effect from January 31, 2020.

3. The data from November 2019 onwards for card payments (Debit/Credit cards) and Prepaid Payment Instruments (PPIs) may not be comparable with earlier months/ periods, as more granular data is being published along with revision in data definitions.

4. Only domestic financial transactions are considered. The new format captures e-commerce transactions; transactions using FASTags, digital bill payments and card-to-card transfer through ATMs, etc.. Also, failed transactions, chargebacks, reversals, expired cards/wallets, are excluded.

Part I-A. Settlement systems

1.1.3: Tri-party Repo under the securities segment has been operationalised from November 05, 2018.

Part I-B. Payments systems

4.1.2: 'Others' includes e-commerce transactions and digital bill payments through ATMs, etc.

4.2.2: 'Others' includes e-commerce transactions, card to card transfers and digital bill payments through ATMs, etc.

5: Available from December 2010.

5.1: includes purchase of goods and services and fund transfer through wallets.

5.2.2: includes usage of PPI Cards for online transactions and other transactions.

6.1: Pertain to three grids – Mumbai, New Delhi and Chennai.

6.2: 'Others' comprises of Non-MICR transactions which pertains to clearing houses managed by 21 banks.

Part II-A. Other payment channels

1: Mobile Payments

o Include transactions done through mobile apps of banks and UPI apps.

o The data from July 2017 includes only individual payments and corporate payments initiated, processed, and authorised using mobile device. Other corporate payments which are not initiated, processed, and authorised using mobile device are excluded.

2: Internet Payments – includes only e-commerce transactions through 'netbanking' and any financial transaction using internet banking website of the bank.

Part II-B. ATMs

3.3 and 4.2: only relates to transactions using bank issued PPIs.

Part III. Payment systems infrastructure

3: Includes ATMs deployed by Scheduled Commercial Banks (SCBs) and White Label ATM Operators (WLAs). WLAs are included from April 2014 onwards.

Occasional Series

No. 44: Small Savings

(₹ Crore)

Scheme		2023-24	2023		2024	
			Mar.	Jan.	Feb.	Mar.
			1	2	3	4
1 Small Savings						
	Receipts	232460	38052	16076	14570	46460
	Outstanding	1865029	1636935	1805716	1819758	1865029
1.1 Total Deposits						
	Receipts	161344	24221	11340	10025	29876
	Outstanding	1298795	1137451	1258895	1268920	1298795
1.1.1 Post Office Saving Bank Deposits	Receipts	17229	8856	3014	1520	7844
	Outstanding	191692	209112	216978	218498	191692
1.1.2 Sukanya Samridhi Yojna	Receipts	35174	10316	2130	2233	13740
	Outstanding	157611	87787	106989	109222	157611
1.1.3 National Saving Scheme, 1987	Receipts		0	0	0	
	Outstanding		0	0	0	
1.1.4 National Saving Scheme, 1992	Receipts		0	0	0	
	Outstanding		0	0	0	
1.1.5 Monthly Income Scheme	Receipts	26696	114	1895	1927	1802
	Outstanding	269007	242313	265278	267205	269007
1.1.6 Senior Citizen Scheme 2004	Receipts	38167	1318	2290	2153	1996
	Outstanding	175472	137304	171323	173476	175472
1.1.7 Post Office Time Deposits	Receipts	25341	1497	2379	2632	2776
	Outstanding	305776	280436	300368	303000	305776
1.1.7.1 1 year Time Deposits	Outstanding	140423	125951	136762	138552	140423
1.1.7.2 2 year Time Deposits	Outstanding	11967	9497	11483	11730	11967
1.1.7.3 3 year Time Deposits	Outstanding	8932	7543	8628	8782	8932
1.1.7.4 5 year Time Deposits	Outstanding	144454	137445	143495	143936	144454
1.1.8 Post Office Recurring Deposits	Receipts	18713	1585	-344	-420	1407
	Outstanding	197134	178422	196147	195727	197134
1.1.9 Post Office Cumulative Time Deposits	Receipts		0	0	0	
	Outstanding		0	0	0	
1.1.10 Other Deposits	Receipts	8	306	-24	-20	310
	Outstanding	1754	1745	1464	1444	1754
1.1.11 PM Care for children	Receipts	16	229	0	0	1
	Outstanding	349	332	348	348	349
1.2 Saving Certificates						
	Receipts	56069	3064	4247	3940	4612
	Outstanding	418021	366317	411185	414597	418021
1.2.1 National Savings Certificate VIII issue	Receipts	16853	1086	1581	1446	2508
	Outstanding	183905	165836	178735	180181	183905
1.2.2 Indira Vikas Patras	Receipts		0	0	0	
	Outstanding		0	0	0	
1.2.3 Kisan Vikas Patras	Receipts		0	0	0	
	Outstanding		0	0	0	
1.2.4 Kisan Vikas Patras - 2014	Receipts	20939	1978	1561	1428	1062
	Outstanding	220560	199624	218070	219498	220560
1.2.5 National Saving Certificate VI issue	Receipts		0	0	0	
	Outstanding		0	0	0	
1.2.6 National Saving Certificate VII issue	Receipts		0	0	0	
	Outstanding		0	0	0	
1.2.7 M.S. Certificates	Receipts	18277	0	1105	1066	1042
	Outstanding	18277	0	16169	17235	18277
1.2.8 Other Certificates	Outstanding	-4721	857	-1789	-2317	-4721
1.3 Public Provident Fund						
	Receipts	15047	10767	489	605	11972
	Outstanding	148213	133167	135636	136241	148213

Note : Data on receipts from April 2017 are net receipts, i.e., gross receipt minus gross payment.

Source: Accountant General, Post and Telegraphs.

No. 45 : Ownership Pattern of Central and State Governments Securities

(Per cent)

Category	Central Government Dated Securities				
	2023			2024	
	Jun.	Sep.	Dec.	Mar.	Jun.
	1	2	3	4	5
(A) Total (in ₹. Crore)	9898751	10383607	10538792	10740389	10946860
1 Commercial Banks	36.58	37.96	37.55	37.66	37.52
2 Co-operative Banks	1.56	1.52	1.49	1.47	1.42
3 Non-Bank PDs	0.73	0.66	0.67	0.66	0.70
4 Insurance Companies	26.21	26.05	26.16	25.98	26.11
5 Mutual Funds	2.69	3.02	3.03	2.90	2.87
6 Provident Funds	4.59	4.42	4.57	4.47	4.41
7 Pension Funds	4.18	4.32	4.44	4.52	4.74
8 Financial Institutions	1.20	0.54	0.55	0.55	0.57
9 Corporates	1.22	1.21	1.33	1.35	1.44
10 Foreign Portfolio Investors	1.59	1.61	1.92	2.34	2.34
11 RBI	13.78	13.06	12.54	12.31	11.92
12 Others	5.67	5.64	5.74	5.79	5.97
12.1 State Governments	2.03	2.04	2.07	2.04	2.13

Category	State Governments Securities				
	2023			2024	
	Jun.	Sep.	Dec.	Mar.	Jun.
	1	2	3	4	5
(B) Total (in ₹. Crore)	5050874	5161642	5338587	5646219	5727482
1 Commercial Banks	34.13	33.87	33.90	34.14	33.85
2 Co-operative Banks	3.68	3.60	3.53	3.39	3.38
3 Non-Bank PDs	0.50	0.61	0.63	0.60	0.59
4 Insurance Companies	26.73	26.97	26.64	26.14	25.85
5 Mutual Funds	2.08	1.86	2.00	2.09	2.08
6 Provident Funds	21.19	21.70	22.00	22.35	22.94
7 Pension Funds	4.84	4.82	4.56	4.76	4.87
8 Financial Institutions	1.82	1.65	1.63	1.59	1.58
9 Corporates	1.92	1.87	2.03	2.02	2.03
10 Foreign Portfolio Investors	0.02	0.02	0.03	0.07	0.05
11 RBI	0.70	0.69	0.66	0.63	0.62
12 Others	2.39	2.34	2.37	2.20	2.17
12.1 State Governments	0.27	0.27	0.27	0.25	0.26

Category	Treasury Bills				
	2023			2024	
	Jun.	Sep.	Dec.	Mar.	Jun.
	1	2	3	4	5
(C) Total (in ₹. Crore)	1012301	925317	849151	871662	858193
1 Commercial Banks	47.64	56.35	57.18	58.53	47.79
2 Co-operative Banks	1.20	1.20	1.28	1.67	1.49
3 Non-Bank PDs	1.99	0.54	1.70	1.66	2.69
4 Insurance Companies	4.93	5.26	5.50	5.06	5.78
5 Mutual Funds	17.04	12.74	11.21	11.89	14.50
6 Provident Funds	1.46	1.52	0.08	0.15	0.60
7 Pension Funds	0.01	0.01	0.00	0.01	0.00
8 Financial Institutions	7.96	4.10	5.34	7.16	6.56
9 Corporates	4.42	4.00	4.58	4.50	4.79
10 Foreign Portfolio Investors	0.12	0.10	0.07	0.01	0.20
11 RBI	0.00	0.00	0.00	0.00	0.00
12 Others	13.23	14.17	13.06	9.36	15.59
12.1 State Governments	10.33	11.36	9.26	5.88	11.55

Note: (-) represents nil or negligible

The Table format is revised since Monthly Bulletin for the month of June 2023.

State Government Securities include special bonds issued under Ujwal DISCOM Assurance Yojana (UDAY).

Bank PDs are clubbed under Commercial Banks. However, they form a small fraction of total outstanding securities.

The category 'Others' comprises State Governments, DICGC, PSUs, Trusts, Foreign Central Banks, HUF/Individuals etc.

Data since September 2023 includes the impact of the merger of a non-bank with a bank.

No. 46: Combined Receipts and Disbursements of the Central and State Governments

Item	(₹ Crore)					
	2018-19 1	2019-20 2	2020-21 3	2021-22 4	2022-23 RE 5	2023-24 BE 6
1 Total Disbursements	5040747	5410887	6353359	7098451	8376972	9045119
1.1 Developmental	2882758	3074492	3823423	4189146	5073367	5426440
1.1.1 Revenue	2224367	2446605	3150221	3255207	3838714	3836447
1.1.2 Capital	596774	588233	550358	861777	1146013	1471534
1.1.3 Loans	61617	39654	122844	72163	88639	118460
1.2 Non-Developmental	2078276	2253027	2442941	2810388	3188699	3490946
1.2.1 Revenue	1965907	2109629	2271637	2602750	2988556	3277722
1.2.1.1 Interest Payments	894520	955801	1060602	1226672	1403183	1589435
1.2.2 Capital	111029	141457	169155	175519	196688	208268
1.2.3 Loans	1340	1941	2148	32119	3455	4957
1.3 Others	79713	83368	86995	98916	114906	127733
2 Total Receipts	5023352	5734166	6397162	7156342	8258187	9149787
2.1 Revenue Receipts	3797731	3851563	3688030	4823821	5706246	6337126
2.1.1 Tax Receipts	3278947	3231582	3193390	4160414	4837048	5477428
2.1.1.1 Taxes on commodities and services	2030050	2012578	2076013	2626553	2967610	3372525
2.1.1.2 Taxes on Income and Property	1246083	1216203	1114805	1530636	1865298	2100430
2.1.1.3 Taxes of Union Territories (Without Legislature)	2814	2800	2572	3225	4140	4473
2.1.2 Non-Tax Receipts	518783	619981	494640	663407	869198	859698
2.1.2.1 Interest Receipts	36273	31137	33448	35250	37974	45199
2.2 Non-debt Capital Receipts	140287	110094	64994	44077	88273	119373
2.2.1 Recovery of Loans & Advances	44667	59515	16951	27665	25661	34501
2.2.2 Disinvestment proceeds	95621	50578	48044	16412	62611	84872
3 Gross Fiscal Deficit [1 - (2.1 + 2.2)]	1102729	1449230	2600335	2230553	2582453	2588620
3A Sources of Financing: Institution-wise						
3A.1 Domestic Financing	1097210	1440548	2530155	2194406	2558579	2566503
3A.1.1 Net Bank Credit to Government	387091	571872	890012	627255	687904	...
3A.1.1.1 Net RBI Credit to Government	325987	190241	107493	350911	529	...
3A.1.2 Non-Bank Credit to Government	710119	868676	1640143	1567151	1870675	...
3A.2 External Financing	5519	8682	70180	36147	23874	22118
3B Sources of Financing: Instrument-wise						
3B.1 Domestic Financing	1097210	1440548	2530155	2194406	2558579	2566503
3B.1.1 Market Borrowings (net)	795845	971378	1696012	1213169	1776747	1902862
3B.1.2 Small Savings (net)	88961	209232	458801	526693	403838	441189
3B.1.3 State Provident Funds (net)	51004	38280	41273	28100	36454	37114
3B.1.4 Reserve Funds	-18298	10411	4545	42153	3524	24429
3B.1.5 Deposits and Advances	66289	-14227	25682	42203	82485	58404
3B.1.6 Cash Balances	17395	-323279	-43802	-57891	118784	-104667
3B.1.7 Others	96014	548753	347643	399980	136748	207172
3B.2 External Financing	5519	8682	70180	36147	23874	22118
4 Total Disbursements as per cent of GDP	26.7	26.9	32.0	30.1	31.1	30.0
5 Total Receipts as per cent of GDP	26.6	28.5	32.2	30.3	30.6	30.3
6 Revenue Receipts as per cent of GDP	20.1	19.2	18.6	20.4	21.2	21.0
7 Tax Receipts as per cent of GDP	17.3	16.1	16.1	17.6	17.9	18.2
8 Gross Fiscal Deficit as per cent of GDP	5.8	7.2	13.1	9.5	9.6	8.6

... : Not available; RE: Revised Estimates; BE: Budget Estimates

Source : Budget Documents of Central and State Governments.

Note: GDP data is based on 2011-12 base. GDP for 2023-24 is from Union Budget 2023-24.

Data pertains to all States and Union Territories.

1 & 2: Data are net of repayments of the Central Government (including repayments to the NSSF) and State Governments.

1.3: Represents compensation and assignments by States to local bodies and Panchayati Raj institutions.

2: Data are net of variation in cash balances of the Central and State Governments and includes borrowing receipts of the Central and State Governments.

3A.1.1: Data as per RBI records.

3B.1.1: Borrowings through dated securities.

3B.1.2: Represent net investment in Central and State Governments' special securities by the National Small Savings Fund (NSSF).

This data may vary from previous publications due to adjustments across components with availability of new data.

3B.1.6: Include Ways and Means Advances by the Centre to the State Governments.

3B.1.7: Include Treasury Bills, loans from financial institutions, insurance and pension funds, remittances, cash balance investment account.

No. 47: Financial Accommodation Availed by State Governments under various Facilities

(₹ Crore)

Sr. No	State/Union Territory	During August-2024					
		Special Drawing Facility (SDF)		Ways and Means Advances (WMA)		Overdraft (OD)	
		Average amount availed	Number of days availed	Average amount availed	Number of days availed	Average amount availed	Number of days availed
1	2	3	4	5	6	7	8
1	Andhra Pradesh	5714.85	31	2094.74	20	2022.88	5
2	Arunachal Pradesh	-	-	-	-	-	-
3	Assam	826.34	20	-	-	-	-
4	Bihar	-	-	-	-	-	-
5	Chhattisgarh	-	-	-	-	-	-
6	Goa	-	-	-	-	-	-
7	Gujarat	-	-	-	-	-	-
8	Haryana	873.30	8	-	-	-	-
9	Himachal Pradesh	-	-	448.88	10	160.06	3
10	Jammu & Kashmir UT	-	-	721.62	23	-	-
11	Jharkhand	-	-	-	-	-	-
12	Karnataka	-	-	-	-	-	-
13	Kerala	1358.99	31	1150.33	23	1243.02	5
14	Madhya Pradesh	-	-	-	-	-	-
15	Maharashtra	-	-	-	-	-	-
16	Manipur	102.66	29	273.16	29	154.65	21
17	Meghalaya	419.35	31	81.14	11	-	-
18	Mizoram	139.60	10	-	-	-	-
19	Nagaland	10.92	3	-	-	-	-
20	Odisha	-	-	-	-	-	-
21	Puducherry	-	-	-	-	-	-
22	Punjab	3772.69	31	351.22	10	-	-
23	Rajasthan	3837.79	27	884.32	18	-	-
24	Tamil Nadu	-	-	-	-	-	-
25	Telangana	4543.75	31	1901.27	25	746.92	11
26	Tripura	-	-	-	-	-	-
27	Uttar Pradesh	-	-	-	-	-	-
28	Uttarakhand	546.48	15	-	-	-	-
29	West Bengal	-	-	-	-	-	-

- Notes:**
1. SDF is availed by State Governments against the collateral of Consolidated Sinking Fund (CSF), Guarantee Redemption Fund (GRF) & Auction Treasury Bills (ATBs) balances and other investments in government securities.
 2. WMA is advance by Reserve Bank of India to State Governments for meeting temporary cash mismatches.
 3. OD is advanced to State Governments beyond their WMA limits.
 4. Average Availed is the total accommodation (SDF/WMA/OD) availed divided by number of days for which accommodation was extended during the month.
 - 5.- : Nil.

Source: Reserve Bank of India.

No. 48: Investments by State Governments

(₹ Crore)

Sr. No	State/Union Territory	As on end of August 2024			
		Consolidated Sinking Fund (CSF)	Guarantee Redemption Fund (GRF)	Government Securities	Auction Treasury Bills (ATBs)
1	2	3	4	5	
1	Andhra Pradesh	11222	1108	0	0
2	Arunachal Pradesh	2572	6	0	2850
3	Assam	7541	87	0	0
4	Bihar	12128	-	0	11700
5	Chhattisgarh	7573	477	0	8005
6	Goa	1019	444	0	0
7	Gujarat	13948	649	0	6000
8	Haryana	2270	1655	0	0
9	Himachal Pradesh	-	-	0	0
10	Jammu & Kashmir UT	19	18	0	0
11	Jharkhand	2347	-	0	750
12	Karnataka	19708	727	0	55612
13	Kerala	3021	-	0	0
14	Madhya Pradesh	-	1237	0	0
15	Maharashtra	69705	1696	0	0
16	Manipur	67	136	0	0
17	Meghalaya	1237	105	0	0
18	Mizoram	446	61	0	0
19	Nagaland	1830	45	0	0
20	Odisha	17631	1986	114	7401
21	Puducherry	563	-	0	1300
22	Punjab	8891	0	0	0
23	Rajasthan	1142	-	129	8100
24	Tamil Nadu	3331	-	0	3481
25	Telangana	7673	1683	0	0
26	Tripura	1189	26	0	325
27	Uttarakhand	4862	204	0	0
28	Uttar Pradesh	10363	-	89	15000
29	West Bengal	12798	1002	239	0
Total		225096	13352	571	120524

Notes: 1. CSF and GRF are reserve funds maintained by some State Governments with the Reserve Bank of India.

2. ATBs include Treasury bills of 91 days, 182 days and 364 days invested by State Governments in the primary market.

3. - : Not Applicable (not a member of the scheme).

No. 49: Market Borrowings of State Governments

(₹ Crore)

Sr. No.	State	2022-23		2023-24		2024-25				Total amount raised, so far in 2024-25		
						June		July				
		Gross Amount Raised	Net Amount Raised	Gross	Net							
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Andhra Pradesh	57478	45814	68400	55330	6000	4000	10000	10000	2000	40000	31918
2	Arunachal Pradesh	559	389	902	672	-	-	-	-	-	-	-146
3	Assam	17100	16105	18500	16000	-	-450	1000	1000	2000	1500	6000
4	Bihar	36800	27467	47612	29910	-	-	-	-	6000	6000	6000
5	Chhattisgarh	2000	-2287	32000	26213	-	-250	-	-	1500	-550	1500
6	Goa	1350	500	2550	1560	-	-200	200	100	150	-50	350
7	Gujarat	43000	28300	30500	11947	2000	-1000	-	-	2500	2500	4500
8	Haryana	45158	28638	47500	28364	5500	3925	3500	3345	4500	3500	16500
9	Himachal Pradesh	14000	11941	8072	5856	1200	1000	500	350	500	350	2650
10	Jammu & Kashmir UT	8473	5969	16337	13904	2300	2150	3000	2700	1550	1550	9350
11	Jharkhand	4000	-155	1000	-2505	-	-	-	-	-	-	-
12	Karnataka	36000	26000	81000	63003	-	-1000	-	-2000	-	-	-4500
13	Kerala	30839	15620	42438	26638	3500	2500	4500	3000	6000	4300	20500
14	Madhya Pradesh	40158	26849	38500	26264	-	-350	-	-2200	10000	10000	6450
15	Maharashtra	72000	42815	110000	79738	-	-2200	6000	3800	24000	21600	40000
16	Manipur	1422	1147	1426	1076	-	-60	200	200	200	200	540
17	Meghalaya	1753	1356	1364	912	200	120	400	400	-	-	900
18	Mizoram	1315	1129	901	641	71	51	90	90	90	90	451
19	Nagaland	1854	1199	2551	2016	300	300	-	-	-	-	100
20	Odisha	0	-7500	0	-4658	-	-	-	-500	-	-	-1000
21	Puducherry	1200	698	1100	475	250	150	-	-	-	-	250
22	Punjab	45500	33660	42386	29517	5500	3658	4993	4993	3200	3200	24893
23	Rajasthan	46057	30110	73624	49718	8000	3688	7000	5500	5000	3750	30500
24	Sikkim	1414	1320	1916	1701	-	-	-	-	-130	-	-130
25	Tamil Nadu	87000	65722	113001	75970	8000	4750	12000	9500	8000	6000	41000
26	Telangana	40150	30922	49618	39385	5000	5000	8000	8000	6000	6000	23082
27	Tripura	0	-645	0	-550	-	-	-	-	-	-	-
28	Uttar Pradesh	55612	41797	97650	85335	-	-1233	-	-	-	-	-4233
29	Uttarakhand	3200	1450	6300	3800	500	500	-	-	-	1400	1400
30	West Bengal	63000	42500	69910	48910	3500	2500	7000	5500	5000	3500	9900
	Grand Total	758392	518829	1007058	717140	51821	27549	68383	53778	89190	75310	303394
												210351

- : Nil.

Note: The State of J&K has ceased to exist constitutionally from October 31, 2019 and the liabilities of the State continue to remain as liabilities of the new UT of Jammu and Kashmir.

Source: Reserve Bank of India.

No. 50 (a): Flow of Financial Assets and Liabilities of Households - Instrument-wise

(Amount in ₹ Crore)

Item	2020-21				
	Q1	Q2	Q3	Q4	Annual
Net Financial Assets (I-II)	583412.7	554437.6	463583.5	679174.4	2280608.2
<i>Per cent of GDP</i>	<i>15.0</i>	<i>11.7</i>	<i>8.5</i>	<i>11.8</i>	<i>11.5</i>
I. Financial Assets	788786.3	592945.3	633317.9	1047276.1	3062325.6
<i>Per cent of GDP</i>	<i>20.3</i>	<i>12.5</i>	<i>11.6</i>	<i>18.2</i>	<i>15.4</i>
<i>of which:</i>					
1. Total Deposits (a+b)	297412.4	278631.7	158172.2	506213.3	1240429.7
(a) Bank Deposits	281191.3	264565.3	147096.0	507719.3	1200571.8
i. Commercial Banks	279010.5	262033.7	143558.6	462689.8	1147292.5
ii. Co-operative Banks	2180.8	2531.6	3537.3	45029.5	53279.3
(b) Non-Bank Deposits	16221.1	14066.4	11076.3	-1506.0	39857.9
<i>of which:</i>					
Other Financial Institutions (i+ii)	11040.9	8886.2	5896.0	-6686.2	19137.0
i. Non-Banking Financial Companies	1441.0	3763.0	3514.8	3521.2	12240.0
ii. Housing Finance Companies	9599.9	5123.2	2381.3	-10207.3	6897.0
2. Life Insurance Funds	124387.9	143462.2	157535.1	142216.5	567601.8
3. Provident and Pension Funds (including PPF)	114496.3	107087.9	105344.6	175769.3	502698.2
4. Currency	202432.7	21286.9	91456.0	66800.5	381976.1
5. Investments	6249.8	-12956.4	67659.3	63624.0	124576.7
<i>of which:</i>					
(a) Mutual Funds	-16021.0	-28837.7	57675.4	51267.0	64083.8
(b) Equity	18599.4	8291.5	5307.1	6333.3	38531.2
6. Small Savings (excluding PPF)	42751.6	54377.4	52095.1	91597.0	240821.1
II. Financial Liabilities	205373.6	38507.7	169734.4	368101.7	781717.4
<i>Per cent of GDP</i>	<i>5.3</i>	<i>0.8</i>	<i>3.1</i>	<i>6.4</i>	<i>3.9</i>
Loans/Borrowings					
1. Financial Corporations (a+b)	205490.3	38624.3	169851.0	368219.1	782184.7
(a) Banking Sector	211058.8	13213.0	139622.0	276579.8	640473.6
<i>of which:</i>					
i. Commercial Banks	211259.3	13213.8	140514.3	240050.4	605037.9
(b) Other Financial Institutions	-5568.6	25411.3	30229.0	91639.4	141711.1
i. Non-Banking Financial Companies	-15450.4	21627.1	15921.2	64881.1	86979.0
ii. Housing Finance Companies	10516.6	2875.1	13048.5	25336.1	51776.2
iii. Insurance Corporations	-634.8	909.2	1259.3	1422.2	2955.9
2. Non-Financial Corporations (Private Corporate Business)	33.8	33.8	33.8	33.0	134.4
3. General Government	-150.4	-150.4	-150.4	-150.4	-601.7

No. 50 (a): Flow of Financial Assets and Liabilities of Households - Instrument-wise (Contd.)

(Amount in ₹ Crore)

Item	2021-22				
	Q1	Q2	Q3	Q4	Annual
Net Financial Assets (I-II)	370115.8	334234.9	489774.4	503089.0	1696155.6
<i>Per cent of GDP</i>	7.2	6.0	7.9	7.7	7.2
I. Financial Assets	364661.7	527896.1	818355.4	887657.3	2597511.9
<i>Per cent of GDP</i>	7.1	9.4	13.1	13.6	11.1
<i>of which:</i>					
1. Total Deposits (a+b)	-82726.1	204033.6	426977.3	277625.7	824852.1
(a) Bank Deposits	-106428.9	197105.1	422392.9	264882.9	777952.1
i. Commercial Banks	-107940.7	195441.8	418267.0	262326.1	768094.3
ii. Co-operative Banks	1511.8	1663.4	4125.9	2556.8	9857.8
(b) Non-Bank Deposits	23702.8	6928.5	4584.5	12742.8	46900.0
<i>of which:</i>					
Other Financial Institutions (i+ii)	16950.0	170.7	-2178.3	5960.0	20902.3
i. Non-Banking Financial Companies	4972.6	-765.5	73.3	4211.8	8492.2
ii. Housing Finance Companies	11977.3	936.2	-2251.6	1748.2	12410.1
2. Life Insurance Funds	114711.5	127449.8	103248.6	121541.6	466951.5
3. Provident and Pension Funds (including PPF)	127624.0	115463.1	98146.0	221372.4	562605.5
4. Currency	128660.2	-68631.2	62793.3	146845.0	269667.4
5. Investments	24929.6	82305.4	69760.9	50972.1	227967.9
<i>of which:</i>					
(a) Mutual Funds	14573.0	63151.3	37912.2	44963.7	160600.1
(b) Equity	4502.5	13218.5	27808.2	3084.1	48613.3
6. Small Savings (excluding PPF)	50405.2	66218.1	56372.0	68243.2	241238.4
II. Financial Liabilities	-5454.1	193661.2	328581.0	384568.3	901356.3
<i>Per cent of GDP</i>	-0.1	3.5	5.3	5.9	3.8
Loans/Borrowings					
1. Financial Corporations (a+b)	-5562.3	193553.0	328472.8	384460.1	900923.7
(a) Banking Sector	21436.5	138722.6	267950.7	348360.4	776470.2
<i>of which:</i>					
i. Commercial Banks	26978.6	140268.7	265271.5	337009.8	769528.5
(b) Other Financial Institutions	-26998.8	54830.4	60522.2	36099.7	124453.5
i. Non-Banking Financial Companies	-34757.9	28876.8	29476.5	-2163.2	21432.2
ii. Housing Finance Companies	7132.0	24403.8	29494.8	37436.2	98466.8
iii. Insurance Corporations	627.1	1549.8	1550.9	826.7	4554.5
2. Non-Financial Corporations (Private Corporate Business)	33.8	33.8	33.8	33.8	135.1
3. General Government	74.4	74.4	74.4	74.4	297.4

No. 50 (a): Flow of Financial Assets and Liabilities of Households - Instrument-wise (Concl.)

(Amount in ₹ Crore)

Item	2022-23				Annual
	Q1	Q2	Q3	Q4	
Net Financial Assets (I-II)	297770.4	293705.1	279460.1	505937.8	1376873.5
Per cent of GDP	4.6	4.5	4.0	7.0	5.1
I. Financial Assets	586920.5	646714.8	750856.7	974558.5	2959050.5
Per cent of GDP	9.0	9.8	10.8	13.6	10.9
of which:					
1. Total Deposits (a+b)	183072.0	315216.2	276593.9	324746.6	1099628.6
(a) Bank Deposits	163162.9	299545.0	256363.7	307491.6	1026563.1
i. Commercial Banks	158613.3	300565.0	248459.8	284968.0	992606.2
ii. Co-operative Banks	4549.6	-1020.1	7903.8	22523.6	33956.9
(b) Non-Bank Deposits	19909.1	15671.3	20230.2	17255.0	73065.5
of which:					
Other Financial Institutions (i+ii)	6314.4	2076.7	6635.6	3660.4	18687.1
i. Non-Banking Financial Companies	4040.2	3267.2	1800.9	5372.2	14480.5
ii. Housing Finance Companies	2274.2	-1190.5	4834.7	-1711.8	4206.6
2. Life Insurance Funds	73669.9	152049.5	167894.1	141206.6	534820.1
3. Provident and Pension Funds (including PPF)	155604.2	132126.0	140204.4	235093.2	663027.7
4. Currency	66438.9	-54579.3	76760.1	148990.2	237609.8
5. Investments	51603.2	48630.6	49879.2	64168.5	214281.5
of which:					
(a) Mutual Funds	35443.5	44484.0	40205.9	58954.5	179087.8
(b) Equity	13560.9	1378.2	6434.1	1664.9	23038.1
6. Small Savings (excluding PPF)	54375.1	51114.5	37367.7	58196.2	201053.5
II. Financial Liabilities	289150.0	353009.7	471396.5	468620.7	1582177.0
Per cent of GDP	4.4	5.4	6.8	6.5	5.8
Loans/Borrowings					
1. Financial Corporations (a+b)	289141.6	353001.2	471388.1	468612.3	1582143.3
(a) Banking Sector	234845.3	263782.5	368167.4	349555.0	1216350.1
of which:					
i. Commercial Banks	230283.8	261265.3	365304.6	331292.5	1188146.3
(b) Other Financial Institutions	54296.3	89218.8	103220.8	119057.3	365793.1
i. Non-Banking Financial Companies	29281.6	54439.6	75878.8	80295.9	239895.9
ii. Housing Finance Companies	22336.7	33031.2	24903.3	36745.8	117017.0
iii. Insurance Corporations	2678.0	1747.9	2438.7	2015.6	8880.3
2. Non-Financial Corporations (Private Corporate Business)	33.7	33.7	33.7	33.7	135.0
3. General Government	-25.3	-25.3	-25.3	-25.3	-101.3

Notes : 1. Net Financial Savings of households refer to the net financial assets, which are measured as difference of financial asset and liabilities flows.

2. Preliminary estimates for 2022-23 and revised estimates for 2020-21 and 2021-22.

3. The preliminary estimates for 2022-23 will undergo revision with the release of first revised estimates of national income, consumption expenditure, savings, and capital formation, 2022-23 by the NSO.

4. Non-bank deposits apart from other financial institutions, comprises state power utilities, co-operative non credit societies etc.

5. Figures in the columns may not add up to the total due to rounding off.

No. 50 (b): Stocks of Financial Assets and Liabilities of Households- Select Indicators

(Amount in ₹ Crore)

Item	Jun-2020	Sep-2020	Dec-2020	Mar-2021
Financial Assets (a+b+c+d+e+f+g+h)	20405824.2	21066027.8	21906338.5	22874301.5
<i>Per cent of GDP</i>	107.2	111.5	114.0	115.4
(a) Bank Deposits (i+ii)	9977865.6	10242430.9	10389526.9	10897246.1
i. Commercial Banks	9192702.5	9454736.2	9598294.8	10060984.6
ii. Co-operative Banks	785163.1	787694.7	791232.1	836261.6
(b) Non-Bank Deposits				
<i>of which:</i>				
Other Financial Institutions	180857.4	189743.6	195639.6	188953.5
i. Non-Banking Financial Companies	51463.0	55226.1	58740.8	62262.0
ii. Housing Finance Companies	129394.4	134517.6	136898.8	126691.5
(c) Life Insurance Funds	4102000.7	4274424.9	4551882.0	4752932.3
(d) Currency	2434693.7	2455980.6	2547436.6	2614237.0
(e) Mutual funds	1343752.0	1443784.4	1648999.0	1730461.0
(f) Public Provident Fund (PPF)	663478.0	671884.3	678997.2	742189.5
(g) Pension Funds	464705.0	494930.0	548913.0	578025.0
(h) Small Savings (excluding PPF)	1238471.7	1292849.1	1344944.2	1370257.1
Financial Liabilities (a+b)	7190710.8	7229335.1	7399186.1	7767405.3
<i>Per cent of GDP</i>	37.8	38.3	38.5	39.2
Loans/Borrowings				
(a) Banking Sector	5728735.3	5741948.3	5881570.2	6158150.0
<i>of which:</i>				
i. Commercial Banks	5226482.2	5239696.0	5380210.4	5620260.7
ii. Co-operative Banks	500870.2	500865.3	499968.8	536494.1
(b) Other Financial Institutions	1461975.5	1487386.9	1517615.9	1609255.3
<i>of which:</i>				
i. Non-Banking Financial Companies	687643.6	709270.7	725191.9	790073.0
ii. Housing Finance Companies	673118.3	675993.4	689041.8	714377.9
iii. Insurance Corporations	101213.7	102122.8	103382.2	104804.4

No. 50 (b): Stocks of Financial Assets and Liabilities of Households- Select Indicators (Contd.)

(Amount in ₹ Crore)

Item	Jun-2021	Sep-2021	Dec-2021	Mar-2022
Financial Assets (a+b+c+d+e+f+g+h)	23318920.4	23991428.3	24700622.2	25435684.2
<i>Per cent of GDP</i>	110.7	109.3	108.7	108.4
(a) Bank Deposits (i+ii)	10790817.3	10987922.4	11410315.3	11675198.2
i. Commercial Banks	9953043.9	10148485.7	10566752.7	10829078.8
ii. Co-operative Banks	837773.4	839436.7	843562.6	846119.4
(b) Non-Bank Deposits				
<i>of which:</i>				
Other Financial Institutions	205903.4	206074.1	203895.8	209855.7
i. Non-Banking Financial Companies	67234.6	66469.1	66542.3	70754.2
ii. Housing Finance Companies	138668.8	139605.0	137353.4	139101.6
(c) Life Insurance Funds	4929725.2	5142278.8	5213527.2	5357350.2
(d) Currency	2742897.3	2674266.1	2737059.4	2883904.4
(e) Mutual funds	1855000.1	2064363.5	2126112.0	2152140.5
(f) Public Provident Fund (PPF)	757397.8	762264.0	767287.3	834147.6
(g) Pension Funds	616517.0	667379.0	699173.0	736592.0
(h) Small Savings (excluding PPF)	1420662.3	1486880.4	1543252.3	1586495.5
Financial Liabilities (a+b)	7755119.8	7868215.0	8256715.7	8668329.0
<i>Per cent of GDP</i>	36.8	35.9	36.3	36.9
Loans/Borrowings				
(a) Banking Sector	6172863.3	6231128.1	6559106.7	6934620.2
<i>of which:</i>				
i. Commercial Banks	5640516.1	5700327.0	6025626.4	6389789.3
ii. Co-operative Banks	530937.1	529376.2	532040.6	543376.3
(b) Other Financial Institutions	1582256.5	1637086.9	1697609.1	1733708.8
<i>of which:</i>				
i. Non-Banking Financial Companies	755315.1	784191.9	813668.4	811505.2
ii. Housing Finance Companies	721510.0	745913.7	775408.5	812844.7
iii. Insurance Corporations	105431.4	106981.2	108532.1	109358.8

No. 50 (b): Stocks of Financial Assets and Liabilities of Households- Select Indicators (Concl.)

(Amount in ₹ Crore)

Item	Jun-2022	Sep-2022	Dec-2022	Mar-2023
Financial Assets (a+b+c+d+e+f+g+h)	25689017.4	26240728.5	27208717.9	28083947.0
<i>Per cent of GDP</i>	<i>103.2</i>	<i>101.5</i>	<i>102.4</i>	<i>103.1</i>
(a) Bank Deposits (i+ii)	11911196.2	11956360.9	12421907.5	12701761.3
i. Commercial Banks	11060527.2	11106712.0	11564354.7	11821685.0
ii. Co-operative Banks	850669.0	849648.9	857552.8	880076.4
(b) Non-Bank Deposits				
<i>of which:</i>				
Other Financial Institutions	216170.2	218246.9	224882.5	228542.9
i. Non-Banking Financial Companies	74794.4	78061.6	79862.5	85234.7
ii. Housing Finance Companies	141375.8	140185.3	145020.0	143308.2
(c) Life Insurance Funds	5325967.3	5559681.9	5786592.6	6038630.4
(d) Currency	2950343.2	2895763.9	2972524.0	3121514.2
(e) Mutual funds	2048097.3	2260209.7	2355315.8	2367792.5
(f) Public Provident Fund (PPF)	851913.4	858591.1	864730.6	939814.6
(g) Pension Funds	744459.2	799889.0	853412.0	898342.0
(h) Small Savings (excluding PPF)	1640870.6	1691985.1	1729352.9	1787549.1
Financial Liabilities (a+b)	8957470.6	9310471.8	9781859.9	10253472.2
<i>Per cent of GDP</i>	<i>36.0</i>	<i>36.0</i>	<i>36.8</i>	<i>37.6</i>
Loans/Borrowings				
(a) Banking Sector	7169465.5	7433248.0	7801415.3	8153970.3
<i>of which:</i>				
i. Commercial Banks	6620073.1	6881338.5	7246643.0	7580935.6
ii. Co-operative Banks	547894.8	550354.8	553201.4	571339.8
(b) Other Financial Institutions	1788005.1	1877223.8	1980444.6	2099501.9
<i>of which:</i>				
i. Non-Banking Financial Companies	840786.9	895226.5	971105.3	1051401.1
ii. Housing Finance Companies	835181.3	868212.5	893115.8	929861.7
iii. Insurance Corporations	112036.9	113784.8	116223.5	118239.1

Note : 1. Data as ratios to GDP have been calculated based on the Provisional Estimates of National Income 2022-23, released by NSO on May 31, 2023.

2. Pension funds comprises funds with the National Pension Scheme.

3. Outstanding deposits with Small Savings are sourced from the Controller General of Accounts, Government of India.

4. Non-bank deposits apart from other financial institutions, comprises state power utilities, co-operative non credit societies etc. Data for outstanding deposits are available only for other financial institutions.

5. Figures in the columns may not add up to the total due to rounding off.

Explanatory Notes to the Current Statistics

Table No. 1

- 1.2& 6: Annual data are average of months.
 3.5 & 3.7: Relate to ratios of increments over financial year so far.
 4.1 to 4.4, 4.8, 4.9 & 5: Relate to the last Friday of the month/financial year.
 4.5, 4.6 & 4.7: Relate to five major banks on the last Friday of the month/financial year.
 4.10 to 4.12: Relate to the last auction day of the month/financial year.
 4.13: Relate to last day of the month/ financial year
 7.1&7.2: Relate to Foreign trade in US Dollar.

Table No. 2

- 2.1.2: Include paid-up capital, reserve fund and Long-Term Operations Funds.
 2.2.2: Include cash, fixed deposits and short-term securities/bonds, e.g., issued by IIFC (UK).

Table No. 4

Maturity-wise position of outstanding forward contracts is available at <http://nsdp.rbi.org.in> under "Reserves Template".

Table No. 5

Special refinance facility to Others, i.e. to the EXIM Bank, is closed since March 31, 2013.

Table No. 6

- For scheduled banks, March-end data pertain to the last reporting Friday.
 2.2: Exclude balances held in IMF Account No.1, RBI employees' provident fund, pension fund, gratuity and superannuation fund.

Table Nos. 7 & 11

- 3.1 in Table 7 and 2.4 in Table 11: Include foreign currency denominated bonds issued by IIFC (UK).

Table No. 8

- NM₂ and NM₃ do not include FCNR (B) deposits.
 2.4: Consist of paid-up capital and reserves.
 2.5: includes other demand and time liabilities of the banking system.

Table No. 9

- Financial institutions comprise EXIM Bank, SIDBI, NABARD and NHB.
 L₁ and L₂ are compiled monthly and L₃ quarterly.
 Wherever data are not available, the last available data have been repeated.

Table No. 13

Data against column Nos. (1), (2) & (3) are Final and for column Nos. (4) & (5) data are Provisional.

Table No. 14

Data in column Nos. (4) & (8) are Provisional.

Table No. 17

2.1.1: Exclude reserve fund maintained by co-operative societies with State Co-operative Banks

2.1.2: Exclude borrowings from RBI, SBI, IDBI, NABARD, notified banks and State Governments.

4: Include borrowings from IDBI and NABARD.

Table No. 24

Primary Dealers (PDs) include banks undertaking PD business.

Table No. 30

Exclude private placement and offer for sale.

1: Exclude bonus shares.

2: Include cumulative convertible preference shares and equi-preference shares.

Table No. 32

Exclude investment in foreign currency denominated bonds issued by IIFC (UK), SDRs transferred by Government of India to RBI and foreign currency received under SAARC and ACU currency swap arrangements. Foreign currency assets in US dollar take into account appreciation/depreciation of non-US currencies (such as Euro, Sterling, Yen and Australian Dollar) held in reserves. Foreign exchange holdings are converted into rupees at rupee-US dollar RBI holding rates.

Table No. 34

1.1.1.1.2 & 1.1.1.1.4: Estimates.

1.1.1.2: Estimates for latest months.

'Other capital' pertains to debt transactions between parent and subsidiaries/branches of FDI enterprises.

Data may not tally with the BoP data due to lag in reporting.

Table No. 35

1.10: Include items such as subscription to journals, maintenance of investment abroad, student loan repayments and credit card payments.

Table No. 36

Increase in indices indicates appreciation of rupee and *vice versa*. For 6-Currency index, base year 2021-22 is a moving one, which gets updated every year. REER figures are based on Consumer Price Index (combined). The details on methodology used for compilation of NEER/REER indices are available in December 2005, April 2014 and January 2021 issues of the RBI Bulletin.

Table No. 37

Based on applications for ECB/Foreign Currency Convertible Bonds (FCCBs) which have been allotted loan registration number during the period.

Table Nos. 38, 39, 40 & 41

Explanatory notes on these tables are available in December issue of RBI Bulletin, 2012.

Table No. 43

Part I-A. Settlement systems

1.1.3: Tri- party Repo under the securities segment has been operationalised from November 05, 2018.

Part I-B. Payments systems

4.1.2: 'Others' includes e-commerce transactions and digital bill payments through ATMs, etc.

4.2.2: 'Others' includes e-commerce transactions, card to card transfers and digital bill payments through ATMs, etc.

5: Available from December 2010.

5.1: includes purchase of goods and services and fund transfer through wallets.

5.2.2: includes usage of PPI Cards for online transactions and other transactions.

6.1: Pertain to three grids – Mumbai, New Delhi and Chennai.

6.2: 'Others' comprises of Non-MICR transactions which pertains to clearing houses managed by 21 banks.

Part II-A. Other payment channels

1: Mobile Payments –

- Include transactions done through mobile apps of banks and UPI apps.
- The data from July 2017 includes only individual payments and corporate payments initiated, processed, and authorised using mobile device. Other corporate payments which are not initiated, processed, and authorised using mobile device are excluded.

2: Internet Payments – includes only e-commerce transactions through 'netbanking' and any financial transaction using internet banking website of the bank.

Part II-B. ATMs

3.3 and 4.2: only relates to transactions using bank issued PPIs.

Part III. Payment systems infrastructure

3: Includes ATMs deployed by Scheduled Commercial Banks (SCBs) and White Label ATM Operators (WLAs). WLAs are included from April 2014 onwards.

Table No. 45

(-) represents nil or negligible

The table format is revised since June 2023 issue of the bulletin.

State Government Securities include special bonds issued under Ujjwal DISCOM Assurance Yojana (UDAY).

Bank PDs are clubbed under Commercial Banks. However, they form very small fraction of total outstanding securities.

The category 'Others' comprises State Governments, DICGC, PSUs, Trusts, Foreign Central Banks, HUF/ Individuals etc.

Data since September 2023 includes the impact of the merger of a non-bank with a bank.

Table No. 46

GDP data is based on 2011-12 base. GDP for 2023-24 is from Union Budget 2023-24.

Data pertains to all States and Union Territories.

1 & 2: Data are net of repayments of the Central Government (including repayments to the NSSF) and State Governments.

1.3: Represents compensation and assignments by States to local bodies and Panchayati Raj institutions.

2: Data are net of variation in cash balances of the Central and State Governments and includes borrowing receipts of the Central and State Governments.

3A.1.1: Data as per RBI records.

3B.1.1: Borrowings through dated securities.

3B.1.2: Represent net investment in Central and State Governments' special securities by the National Small Savings Fund (NSSF).

This data may vary from previous publications due to adjustments across components with availability of new data.

3B.1.6: Include Ways and Means Advances by the Centre to the State Governments.

3B.1.7: Include Treasury Bills, loans from financial institutions, insurance and pension funds, remittances, cash balance investment account.

Table No. 47

SDF is availed by State Governments against the collateral of Consolidated Sinking Fund (CSF), Guarantee Redemption Fund (GRF) & Auction Treasury Bills (ATBs) balances and other investments in government securities.

WMA is advance by Reserve Bank of India to State Governments for meeting temporary cash mismatches.

OD is advanced to State Governments beyond their WMA limits.

Average amount Availed is the total accommodation (SDF/WMA/OD) availed divided by number of days for which accommodation was extended during the month.

- : Nil.

Table No. 48

CSF and GRF are reserve funds maintained by some State Governments with the Reserve Bank of India.

ATBs include Treasury bills of 91 days, 182 days and 364 days invested by State Governments in the primary market.

--: Not Applicable (not a member of the scheme).

The concepts and methodologies for Current Statistics are available in Comprehensive Guide for Current Statistics of the RBI Monthly Bulletin (<https://rbi.org.in/Scripts/PublicationsView.aspx?id=17618>)

Time series data of 'Current Statistics' is available at <https://data.rbi.org.in>.

Detailed explanatory notes are available in the relevant press releases issued by RBI and other publications/releases of the Bank such as **Handbook of Statistics on the Indian Economy**.

Recent Publications of the Reserve Bank of India

Name of Publication	Price	
	India	Abroad
1. Reserve Bank of India Bulletin 2024	₹350 per copy ₹250 per copy (concessional rate*) ₹4,000 (one year subscription) ₹3,000 (one year concessional rate*)	US\$ 15 per copy US\$ 150 (one-year subscription) (inclusive of air mail courier charges)
2. Handbook of Statistics on the Indian States 2022-23	₹550 (Normal) ₹600 (inclusive of postage)	US\$ 24 (inclusive of air mail courier charges)
3. Handbook of Statistics on the Indian Economy 2023-24	₹600 (Normal) ₹650 (inclusive of postage) ₹450 (concessional) ₹500 (concessional with postage)	US\$ 50 (inclusive of air mail courier charges)
4. State Finances - A Study of Budgets of 2023-24	₹600 per copy (over the counter) ₹650 per copy (inclusive of postal charges)	US\$ 24 per copy (inclusive of air mail courier charges)
5. Report on Currency and Finance 2023-24	₹575 per copy (over the counter) ₹625 per copy (inclusive of postal charges)	US\$ 22 per copy (inclusive of air mail courier charges)
6. Reserve Bank of India Occasional Papers Vol. 44, No. 2, 2023	₹200 per copy (over the counter) ₹250 per copy (inclusive of postal charges)	US\$ 18 per copy (inclusive of air mail courier charges)
7. Finances of Panchayati Raj Institutions	₹300 per copy (over the counter) ₹350 per copy (inclusive of postal charges)	US\$ 16 per copy (inclusive of air mail courier charges)
8. Report on Trend and Progress of Banking in India 2022-23	Issued as Supplement to RBI Bulletin January, 2024	
9. Annual Report 2023-24	Issued as Supplement to RBI Bulletin June, 2024	
10. Financial Stability Report, June 2024	Issued as Supplement to RBI Bulletin July, 2024	
11. Monetary Policy Report - October 2024	Included in RBI Bulletin October 2024	
12. Banking Glossary (English-Hindi)	₹100 per copy (over the counter) ₹150 per copy (inclusive of postal charges)	

Notes

1. Many of the above publications are available at the RBI website (www.rbi.org.in).
 2. Time Series data are available at the Database on Indian Economy (<https://data.rbi.org.in>).
 3. The Reserve Bank of India History 1935-2008 (5 Volumes) are available at leading book stores in India.
- * Concession is available for students, teachers/lecturers, academic/education institutions, public libraries and Booksellers in India provided the proof of eligibility is submitted.

RECENT PUBLICATIONS

General Instructions

1. All communications should be addressed to:
Director, Division of Reports and Knowledge Dissemination,
Department of Economic and Policy Research (DRKD, DEPR),
Reserve Bank of India, Amar Building, Ground Floor,
Sir P. M. Road, Fort, P. B. No.1036, Mumbai - 400 001.
Telephone: 022- 2260 3000 Extn: 4002, Email: spsdepr@rbi.org.in.
2. Publications are available for sale between 10:30 am to 3:00 pm (Monday to Friday).
3. Publications will not be supplied on a cash-on-delivery basis.
4. Publications once sold will not be taken back.
5. Back issues of the publication are generally not available.
6. Wherever concessional price is not indicated, a discount of 25 per cent is available for students, faculty, academic/education institutions, public libraries, and book sellers in India provided the proof of eligibility is submitted.
7. Subscription should be made preferably by NEFT and transaction details including payer's name, subscription number (if any), account number, date and amount should be emailed to spsdepr@rbi.org.in, or sent by post.
 - a. Details required for NEFT transfer are as follows:

Beneficiary Name	Department of Economic and Policy Research, RBI
Name of the Bank	Reserve Bank of India
Branch and address	Fort, Mumbai
IFSC of Bank Branch	RBISOMBPA04
Type of Account	Current Account
Account Number	41-8024129-19

 - b. In case of subscription through non-digital modes, please send the demand draft/cheque payable at Mumbai in favour of Reserve Bank of India, Mumbai.
8. Complaints regarding 'non-receipt of publication' may be sent within a period of two months.